APPENDIX E
WETALNDS

Chase Jelden

From: Stanek, Katrina G CIV (USA) <Katrina.G.Stanek@usace.army.mil>
Sent: Wednesday, June 21, 2023 9:06 AM
To: Chase Jelden
Subject: USDA-Rural Development, Bluestem Energy Solutions, LLC, Madison, Nebraska Solar Array

Hello Mr. Jelden

This email pertains to your correspondence, received in our office on June 13, 2023, regarding the above-referenced project. The Corps' comments were requested by Olsson on behalf of USDA-Rural Development.

The U.S. Army Corps of Engineers is responsible for administering federal laws that regulate certain activities within waters of the United States. The authority applicable to this responsibility is Section 404 of the Clean Water Act (33 U.S.C. 1344), which prohibits the discharge of dredge or fill materials into lakes, streams or wetlands without authorization in the form of a Department of the Army permit and Section 10 of the Rivers and Harbors Act of 1899 which regulates all work or structures in or affecting the course, condition, or capacity of navigable waters of the United States.

A Department of the Army Section 404 permit is required to place fill material into any waters of the United States (wetlands, rivers, streams, ponds, lakes, etc.), which includes any staging areas, temporary roads, etc. It appears from your correspondence that your project may impact waters of the United States. If you plan on placing fill material into a water of the United States (includes wetlands and channel), a permit from this office may be required.

> More information about the Corps' Regulatory Program can be found here: https://www.nwo.usace.army.mil/Missions/Regulatory-Program/

From your correspondence, the work that you described may require a permit from the Corps. The work may be covered by a Nationwide Permit (NWP). A NWP a Pre-Construction Notification (PCN) would most likely be needed for this work. If a PCN is required, please provided the following form to this office. A PCN form can be found here: https://www.publications.usace.army.mil/Portals/76/Eng_Form_6082_2019Oct.pdf?ver=2019-10-22-081550-710. If the work cannot be covered by a NWP, an individual permit may be required. An individual permit form can be found here: https://www.nwk.usace.army.mil/Portals/29/docs/regulatory/2019-02_ENG_4345.pdf.

> More information about the NWPs can be found here: https://www.nwo.usace.army.mil/Missions/Regulatory-Program/Nation-Wide-Permit-Information/

PCNs or applications and associated material can be emailed to ne404reg@usace.army.mil or mailed to the address below. When we receive the material, we will determine what type of permits, if any, are required.

Thanks,

Katrina Stanek
Nebraska Regulatory Office
8901 S 154th St. Suite 2

Omaha, NE 68138
Office: (402) 896-0896
Cell: (402) 512-2298
Email: katrina.g.stanek@usace.army.mil

June 12, 2023

Mr. Jeremy Grauf
U. S. Army Corps of Engineers
NE State Regulatory Office
8901 South 154th St, Suite 1
Omaha, NE 68138-0723

RE: United States Department of Agriculture - Rural Development
Bluestem Energy Solutions, LLC. Madison, Nebraska

Dear Mr. Grauf:

Olsson, Inc (Olsson), on behalf of Bluestem Energy Solutions, LLC (Bluestem), is to provide information to the United States Department of Agriculture (USDA)-Rural Development in the process of completing a National Environmental Policy Act (NEPA) review to assess the environmental impacts of the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison, Madison County, Nebraska. After construction of the property, the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the solar array to the southwest corner of the property to connect to the existing overhead power lines along 829th Road. The purpose of the Project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources. Enclosed are a series of maps that depict the proposed Project's area of potential affect for all construction activities.

A wetland delineation has not been completed; however, the National Wetlands Inventory (NWI) and the National Hydrography Dataset (NHD) databases do not depict any stream channels or wetlands within the Project Area of the solar array. A soil survey report and a natural resource map depicting NWI and NHD resources have been included below for your review. If Waters of the United States are affected, the Project applicant would prepare and submit a Pre-Construction Notification for a Section 404 permit.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the Project, please contact Chase Jelden at 308-708-7650 or cjelden@olsson.com

Sincerely,

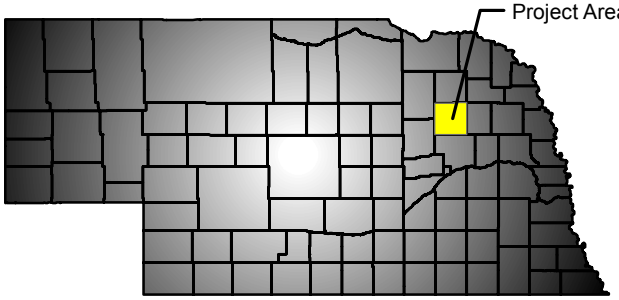
Chase Jelden
Natural Resources and Planning

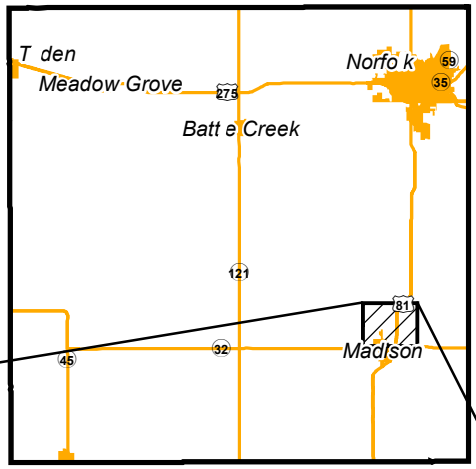
Olsson
2111 South 67th Street, Suite 200
Omaha, NE 68106

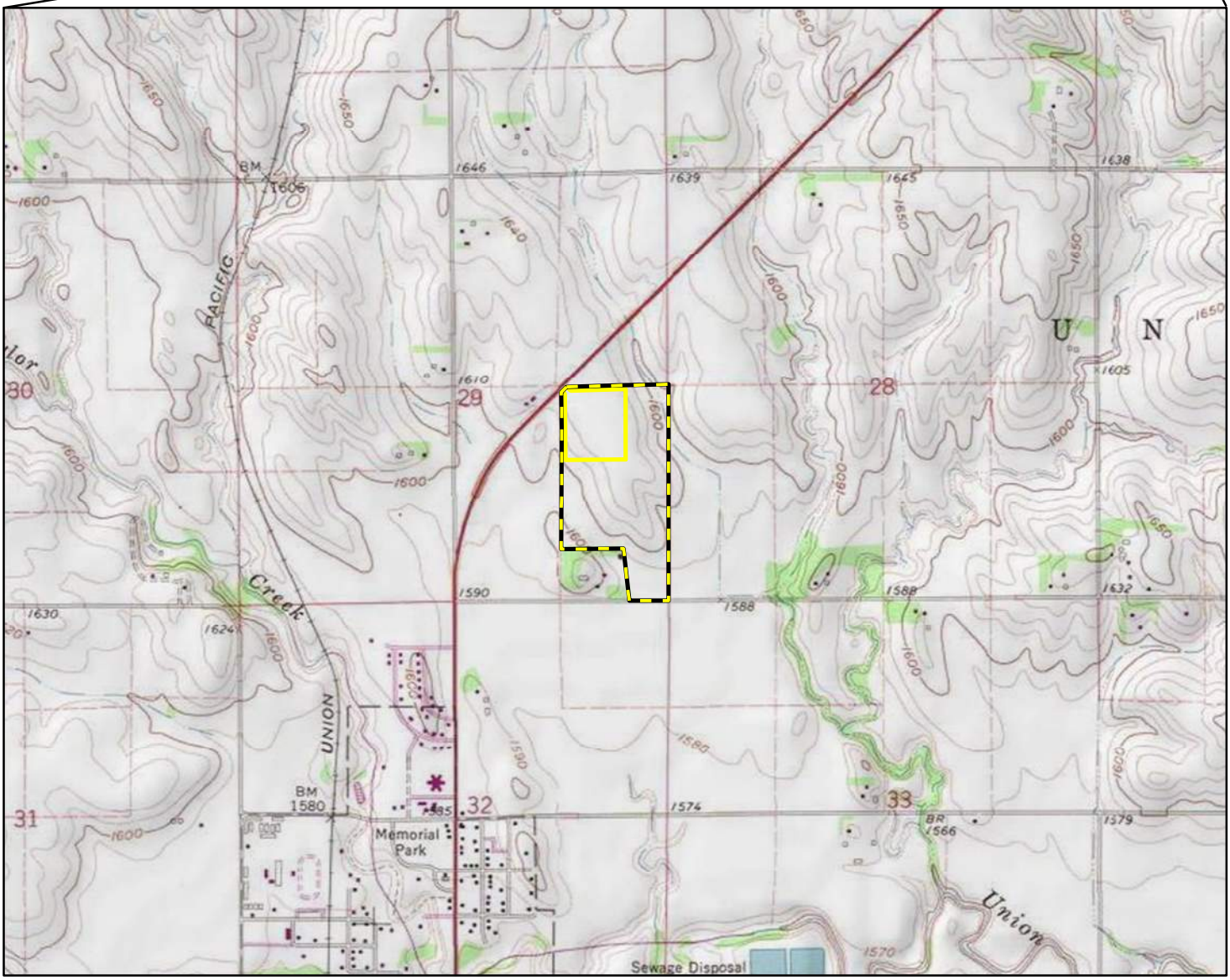
Enclosure: Location Map
Natural Resources Map
Site Plan Map
NRCS Custom Soils Resource Report

NEBRASKA

MADISON COUNTY







N

0 500 1,000 2,000 ft

1 " = 2,000 '

Solar Array

Property

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

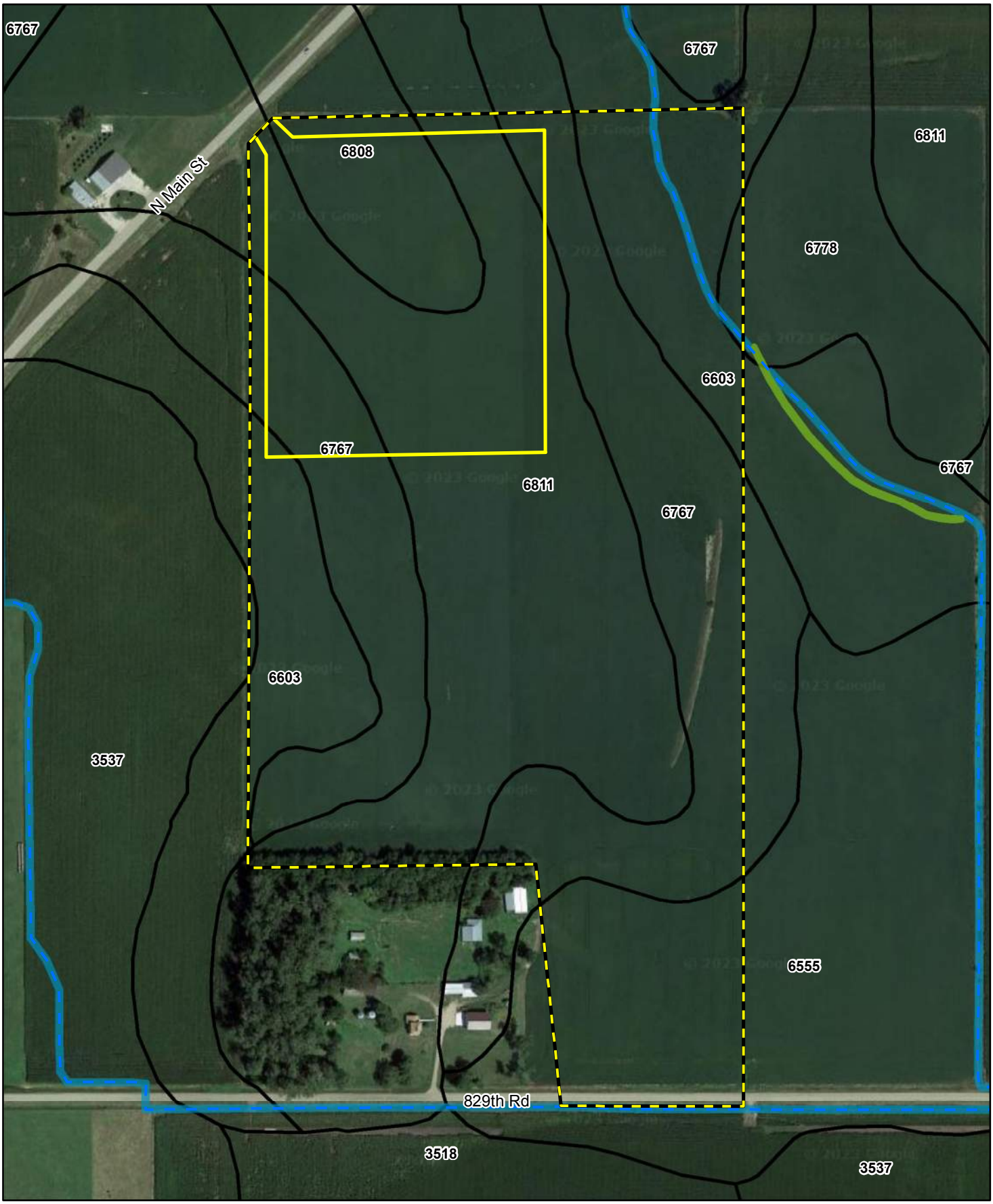
Project Location Map

Figure 1

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: June 07, 2023

WGS 1984 ARC System Zone 11

Basemap: USA Topo Maps



N

0 87.5 175 350 ft

1 " = 350 '

olsson

Intermittent Stream

SSURGO Soils

Solar Array

Property

Wetland Class (NWI)

Freshwater Emergent Wetland

Riverine Habitat

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Natural Resources Map

Figure 3

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: June 07, 2023

WGS 1984 ARC System Zone 11

Basemap: Google Satellite

MADISON COUNTY SOLAR LAYOUT
SYSTEM SIZE DC: 2.88 MW
SYSTEM SIZE AC: 2.00 MW

MODULE: ET SOLAR 385 WATTS
TOTAL # OF MODULES: 7,488
TOTAL # OF STRINGS: 288
MODULES PER STRING: 26
STRINGS PER INVERTER: 18

SINGLE AXIS TRACKER SYSTEM

INVERTERS:
CHINT CPS-SCH125KTL-DO-US-600
TOTAL # OF INVERTERS: 16

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

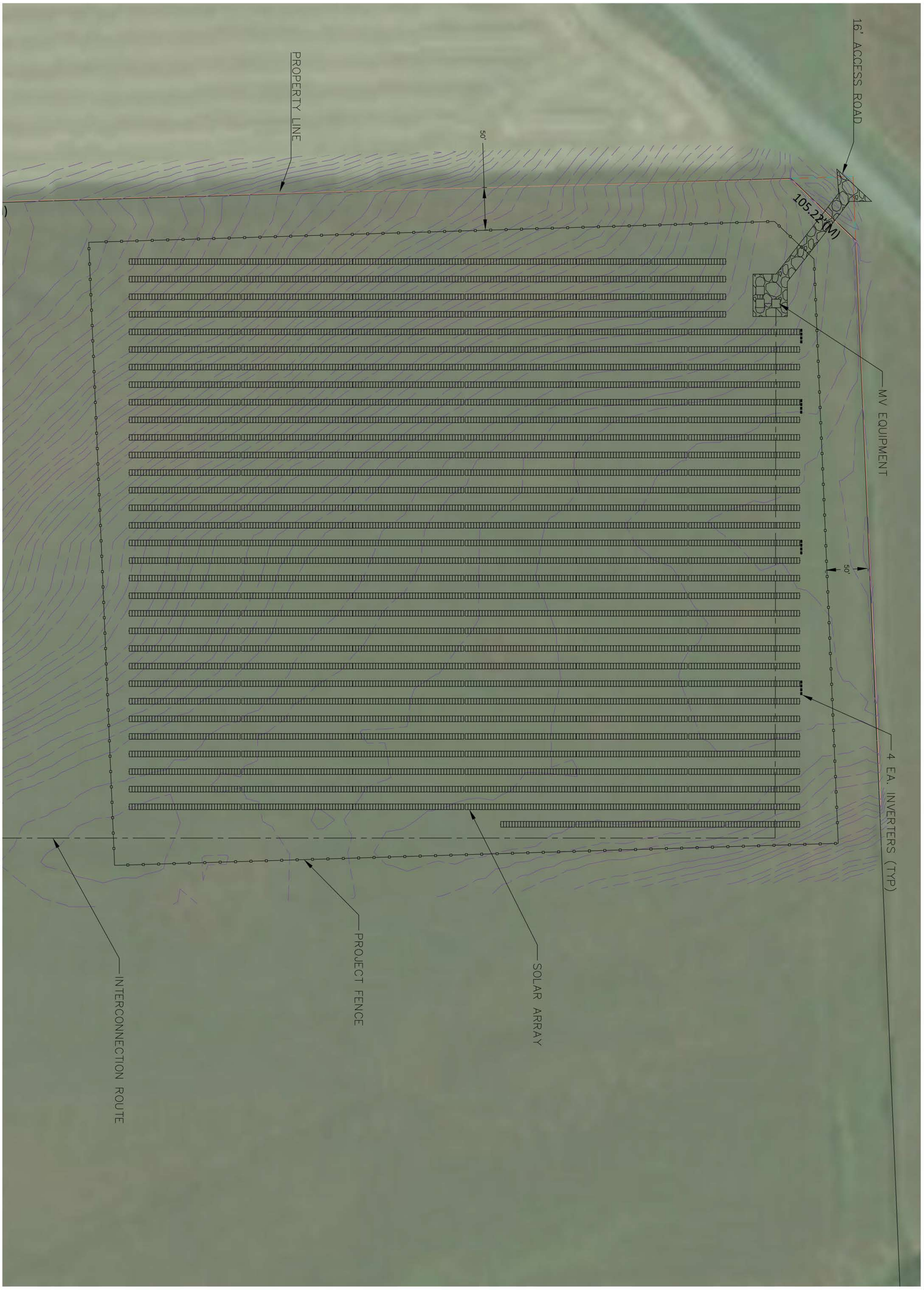
The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 200'

OVERALL SITE

G1.0



MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

SOLAR ARRAY

SCALE 1" = 50'

DATE: 1/27/2022

G1.1

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 30'

POI LOCATION

G1.2

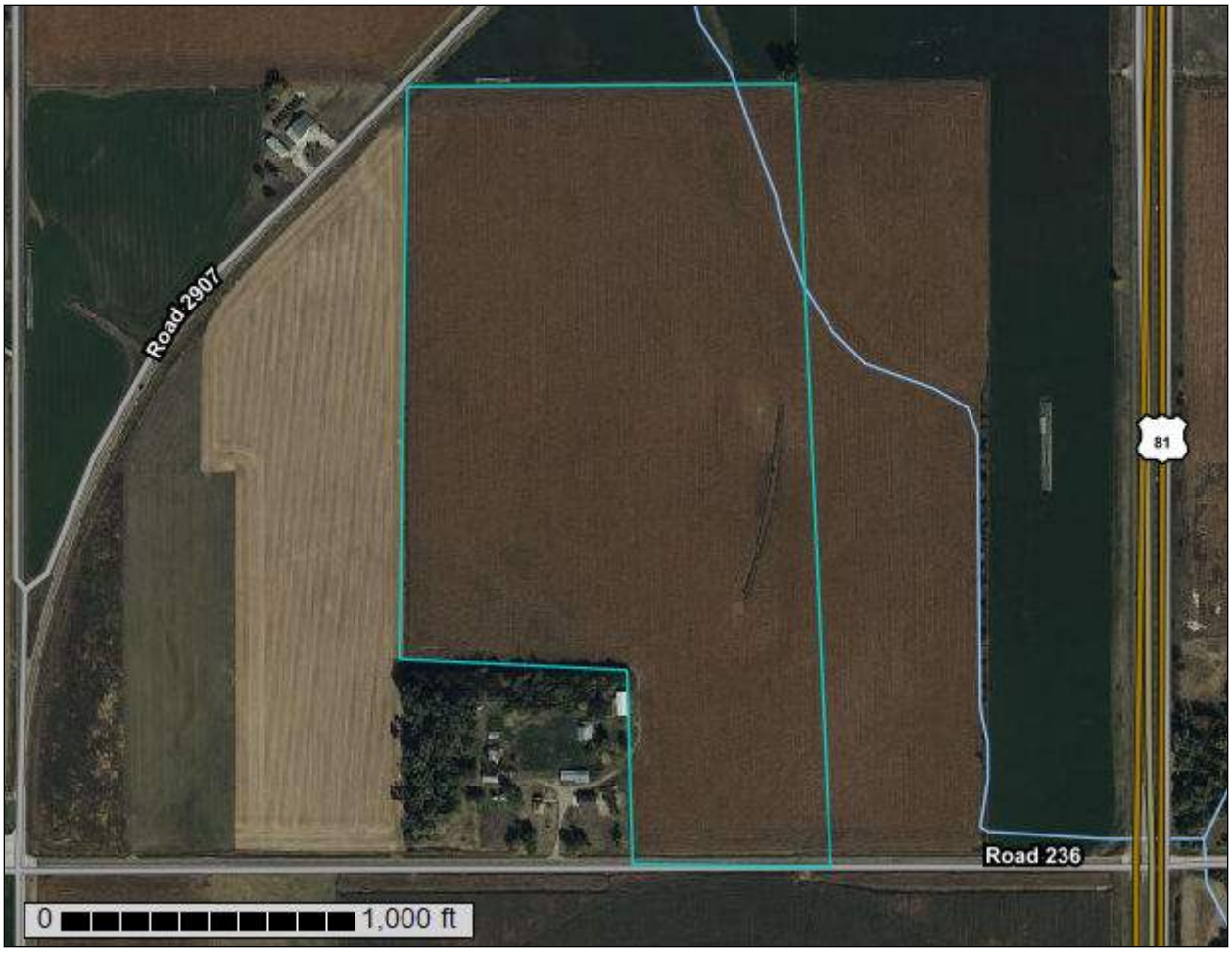
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Madison County, Nebraska



June 6, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,720 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Madison County, Nebraska
Survey Area Data: Version 21, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 13, 2022—Oct 9, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3537	Gibbon silty clay loam, occasionally flooded	0.4	0.5%
6555	Shell silty clay loam, 0 to 2 percent slopes, occasionally flooded	8.8	12.1%
6603	Alcester silty clay loam, 2 to 6 percent slopes	11.1	15.3%
6767	Nora silty clay loam, 6 to 11 percent slopes	22.1	30.5%
6778	Nora-Crofton complex, 6 to 11 percent slopes, eroded	0.5	0.7%
6808	Moody silty clay loam, 0 to 2 percent slopes	4.4	6.0%
6811	Moody silty clay loam, 2 to 6 percent slopes	25.2	34.9%
Totals for Area of Interest		**72.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Madison County, Nebraska

3537—Gibbon silty clay loam, occasionally flooded

Map Unit Setting

National map unit symbol: gbr5
Elevation: 1,200 to 2,500 feet
Mean annual precipitation: 26 to 28 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Gibbon and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gibbon

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified calcareous silty alluvium

Typical profile

H1 - 0 to 19 inches: silty clay loam
H2 - 19 to 45 inches: silt loam
H3 - 45 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Very high (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: R102CY046NE - Subirrigated
Other vegetative classification: Subirrigated - Veg. zone 4 (102BY066NE)
Hydric soil rating: No

Minor Components

Lamo

Percent of map unit: 3 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R102CY045NE - WET SUBIRRIGATED
Hydric soil rating: Yes

6555—Shell silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2y21n
Elevation: 1,360 to 1,880 feet
Mean annual precipitation: 28 to 30 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 150 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Shell and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shell

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified silty alluvium

Typical profile

Ap - 0 to 26 inches: silty clay loam
C - 26 to 46 inches: silty clay loam
Ab - 46 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: R102CY050NE - Loamy Lowland
Forage suitability group: Not suited (G102CY000NE)
Other vegetative classification: Silty Lowland - Veg. zone 4 (102BY070NE_3), Not suited (G102CY000NE)
Hydric soil rating: No

Minor Components

Hobbs

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R102CY048NE - Loamy Overflow
Other vegetative classification: Overflow (G102CY500NE)
Hydric soil rating: No

Colo

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R106XY032NE - Subirrigated
Hydric soil rating: Yes

6603—Alcester silty clay loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tv2m
Elevation: 1,020 to 2,230 feet
Mean annual precipitation: 24 to 31 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Alcester and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alcester

Setting

Landform: Hillslopes, hillslopes
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Parent material: Silty alluvium and/or silty colluvium

Typical profile

Ap - 0 to 8 inches: silty clay loam
A - 8 to 16 inches: silty clay loam
Bw1 - 16 to 23 inches: silty clay loam
Bw2 - 23 to 47 inches: silty clay loam
Bk - 47 to 67 inches: silty clay loam
C - 67 to 79 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R102CY058NE - Loamy Upland
Forage suitability group: Loam (G102CY100NE)
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Minor Components

Moody

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R102CY058NE - Loamy Upland
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Crofton

Percent of map unit: 3 percent

Landform: Hillslopes, hillslopes
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Nose slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Ecological site: R102CY059NE - Limy Upland
Other vegetative classification: Limy Upland (G102CY400NE)
Hydric soil rating: No

Thurman

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R102CY054NE - Sandy
Other vegetative classification: Sand (G102CY300NE)
Hydric soil rating: No

Kezan, occasionally flooded

Percent of map unit: 1 percent
Landform: Drainageways on hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R102CY045NE - WET SUBIRRIGATED
Other vegetative classification: Subirrigated (G102CY700NE)
Hydric soil rating: Yes

6767—Nora silty clay loam, 6 to 11 percent slopes

Map Unit Setting

National map unit symbol: 2pwrf
Elevation: 1,000 to 1,950 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 160 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nora and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nora

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Calcareous loess

Typical profile

Ap - 0 to 9 inches: silty clay loam
Bw - 9 to 20 inches: silty clay loam
Bk - 20 to 34 inches: silty clay loam
C - 34 to 80 inches: silt loam

Properties and qualities

Slope: 6 to 11 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 11 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R102CY058NE - Loamy Upland
Forage suitability group: Loam (G102CY100NE)
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Minor Components

Crofton

Percent of map unit: 9 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R102CY059NE - Limy Upland
Other vegetative classification: Limy Upland (G102CY400NE)
Hydric soil rating: No

Alcester

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R107XY075NE - Silty - Veg. zone 4
Other vegetative classification: Overflow (G102CY500NE)

Hydric soil rating: No

Thurman

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R102CY054NE - Sandy
Other vegetative classification: Sand (G102CY300NE)
Hydric soil rating: No

6778—Nora-Crofton complex, 6 to 11 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2ts6g
Elevation: 1,020 to 2,230 feet
Mean annual precipitation: 24 to 31 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Nora, eroded, and similar soils: 50 percent
Crofton and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nora, Eroded

Setting

Landform: Hillslopes on interfluves
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Parent material: Calcareous loess

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 17 inches: silty clay loam
BCk - 17 to 29 inches: silt loam
C - 29 to 79 inches: silt loam

Properties and qualities

Slope: 6 to 11 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R102CY058NE - Loamy Upland
Forage suitability group: Loam (G102CY100NE)
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Description of Crofton

Setting
Landform: Hillslopes on interfluves
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Calcareous loess

Typical profile
Ap - 0 to 6 inches: silt loam
AC - 6 to 14 inches: silt loam
C - 14 to 79 inches: silt loam

Properties and qualities
Slope: 6 to 11 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.6 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R102CY059NE - Limy Upland
Forage suitability group: Limy Upland (G102CY400NE)
Other vegetative classification: Limy Upland (G102CY400NE)
Hydric soil rating: No

Minor Components

Alcester

Percent of map unit: 10 percent
Landform: Hillslopes on interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Ecological site: R102CY050NE - Loamy Lowland
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

6808—Moody silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tv2j
Elevation: 1,020 to 2,230 feet
Mean annual precipitation: 24 to 31 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Moody and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moody

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous loess

Typical profile

Ap - 0 to 7 inches: silty clay loam
A - 7 to 12 inches: silty clay loam
Bw - 12 to 37 inches: silty clay loam
BCk - 37 to 46 inches: silty clay loam
C - 46 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R102CY058NE - Loamy Upland
Forage suitability group: Loam (G102CY100NE)
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Minor Components

Alcester

Percent of map unit: 7 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R102CY050NE - Loamy Lowland
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Belfore

Percent of map unit: 2 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R102CY058NE - Loamy Upland
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Fillmore, frequently ponded

Percent of map unit: 1 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R102CY049NE - CLAYEY OVERFLOW
Other vegetative classification: Wet (G102CY900NE)
Hydric soil rating: Yes

6811—Moody silty clay loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2sx9l
Elevation: 1,020 to 2,230 feet
Mean annual precipitation: 24 to 31 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Moody and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moody

Setting

Landform: Hillslopes on interfluves
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, head slope, nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex, concave
Parent material: Calcareous loess

Typical profile

Ap - 0 to 7 inches: silty clay loam
A - 7 to 12 inches: silty clay loam
Bw - 12 to 37 inches: silty clay loam
BCk - 37 to 46 inches: silty clay loam
C - 46 to 79 inches: silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Ecological site: R102CY058NE - Loamy Upland
Forage suitability group: Loam (G102CY100NE)
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Minor Components

Crofton
Percent of map unit: 3 percent
Landform: Hillslopes on interfluves
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Ecological site: R102CY059NE - Limy Upland
Other vegetative classification: Limy Upland (G102CY400NE)
Hydric soil rating: No

Alcester
Percent of map unit: 2 percent
Landform: Hillslopes on interfluves
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R102CY058NE - Loamy Upland
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

Fillmore, frequently ponded
Percent of map unit: 2 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R102CY049NE - CLAYEY OVERFLOW
Other vegetative classification: Wet (G102CY900NE)
Hydric soil rating: Yes

Colo, occasionally flooded
Percent of map unit: 1 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Open depressions
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R102CY046NE - Subirrigated
Other vegetative classification: Wet (G102CY900NE)
Hydric soil rating: Yes

Belfore
Percent of map unit: 1 percent
Landform: Interfluves
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R102CY058NE - Loamy Upland
Other vegetative classification: Loam (G102CY100NE)
Hydric soil rating: No

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APPENDIX F
WATER RESOUCES

June 12, 2023

Brian Bruckner, District Manager
Lower Elkhorn Natural Resource District
1508 Square Turn Boulevard
Norfolk, Nebraska 68701

RE: United States Department of Agriculture - Rural Development
Bluestem Energy Solutions, LLC. Madison, Nebraska

Dear Brian Bruckner:

Olsson, Inc (Olsson), on behalf of Bluestem Energy Solutions, LLC (Bluestem), is to provide information to the United States Department of Agriculture (USDA)-Rural Development in the process of completing a National Environmental Policy Act (NEPA) review to assess the environmental impacts of the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison, Madison County, Nebraska. After construction of the property, the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the solar array to the southwest corner of the property to connect to the existing overhead power lines along 829th Road. The purpose of the Project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources. Enclosed are a series of maps that depict the proposed Project's area of potential affect for all construction activities.

We request that your office review the proposed Project for any effects on natural resources under your jurisdiction. If resources are affected, please provide any recommendations you may have to mitigate or avoid these impacts. The Nebraska Department of Natural Resources has also been notified of the Project.

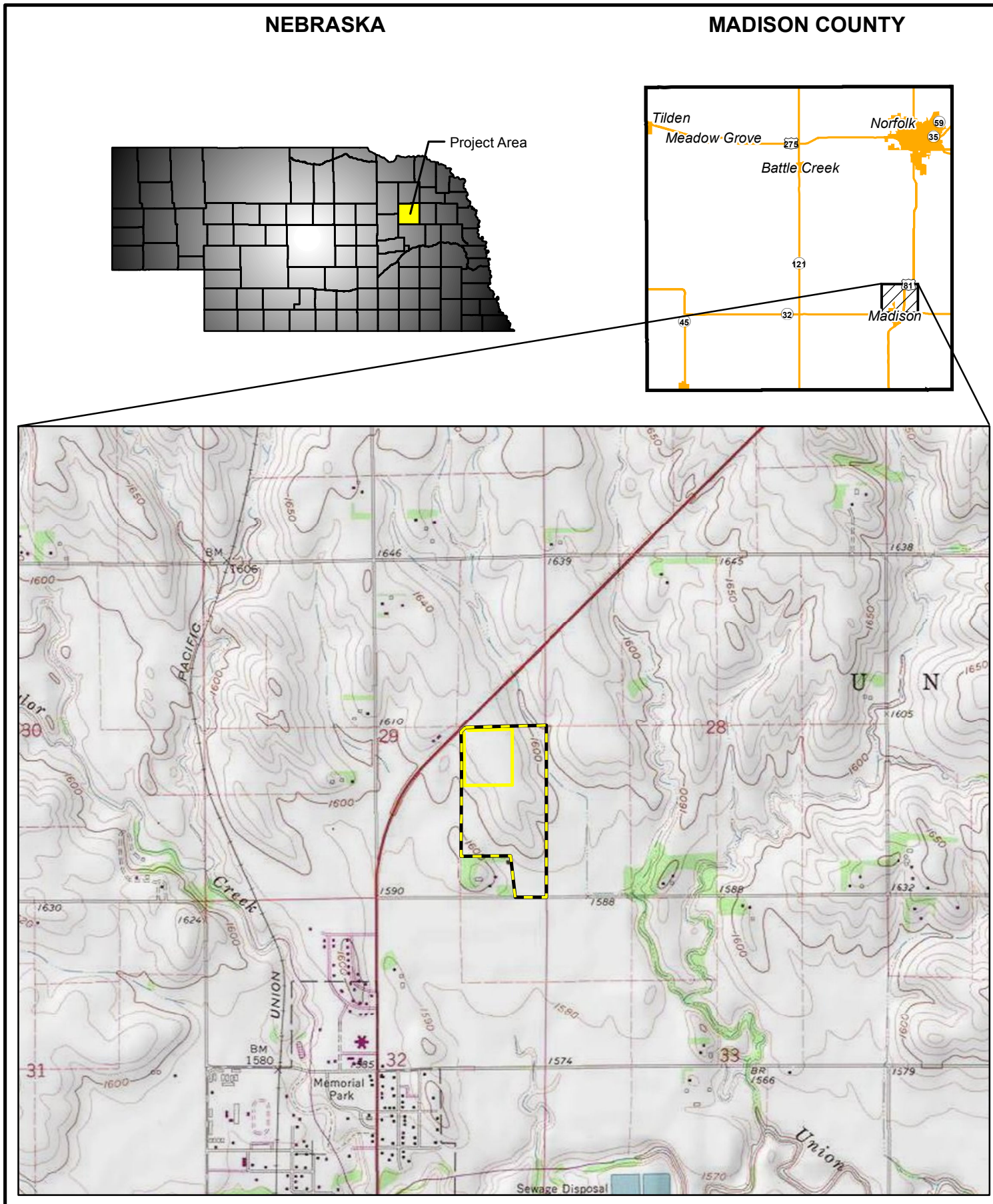
We would appreciate a response within 30 days. If you need any further information or wish to discuss the Project, please contact Chase Jelden at 308-708-7650 or cjelden@olsson.com

Sincerely,

Chase Jelden
Natural Resources and Planning

Olsson
2111 South 67th Street, Suite 200
Omaha, NE 68106

Enclosure: Site Location MAP
Site Map
Site Plan



Madison Solar Array
Bluestem Energy Solutions, LLC
Madison County, Nebraska
Olsson Project # 023-03812
Project Location Map
Figure 1

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WGS 1984 ARC System Zone 11

Basemap: USA Topo Maps

N

0 87.5 175 350

ft

1 " = 350 '

Solar Array

Property

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Site Map

Figure 2

WGS 1984 ARC System Zone 11

Basemap: Google Satellite

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MADISON COUNTY SOLAR LAYOUT
SYSTEM SIZE DC: 2.88 MW
SYSTEM SIZE AC: 2.00 MW

MODULE: ET SOLAR 385 WATTS
TOTAL # OF MODULES: 7,488
TOTAL # OF STRINGS: 288
MODULES PER STRING: 26
STRINGS PER INVERTER: 18

SINGLE AXIS TRACKER SYSTEM

INVERTERS:
CHINT CPS-SCH125KTL-DO-US-600
TOTAL # OF INVERTERS: 16

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

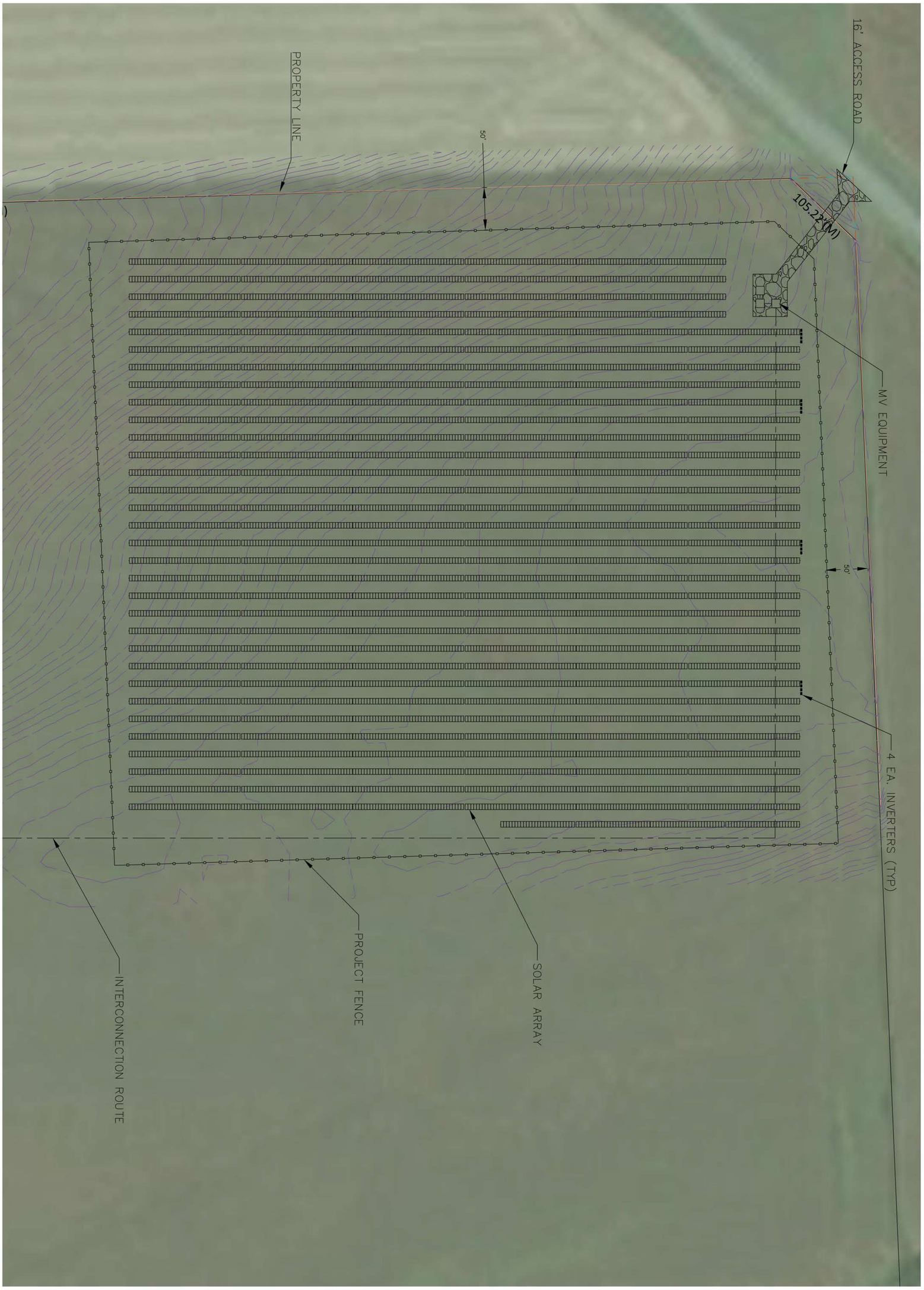
The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 200'

OVERALL SITE

G1.0



MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

SOLAR ARRAY

SCALE 1" = 50'

DATE: 1/27/2022

G1.1

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 30'

POI LOCATION

G1.2

N

0 16.25 32.5 65

Miles

1 " = 65 miles

Impaired Waters

Property

State Boundary

Madison Solar

Bluestem Energy Solutions, LLC

Madison County, Nebraska

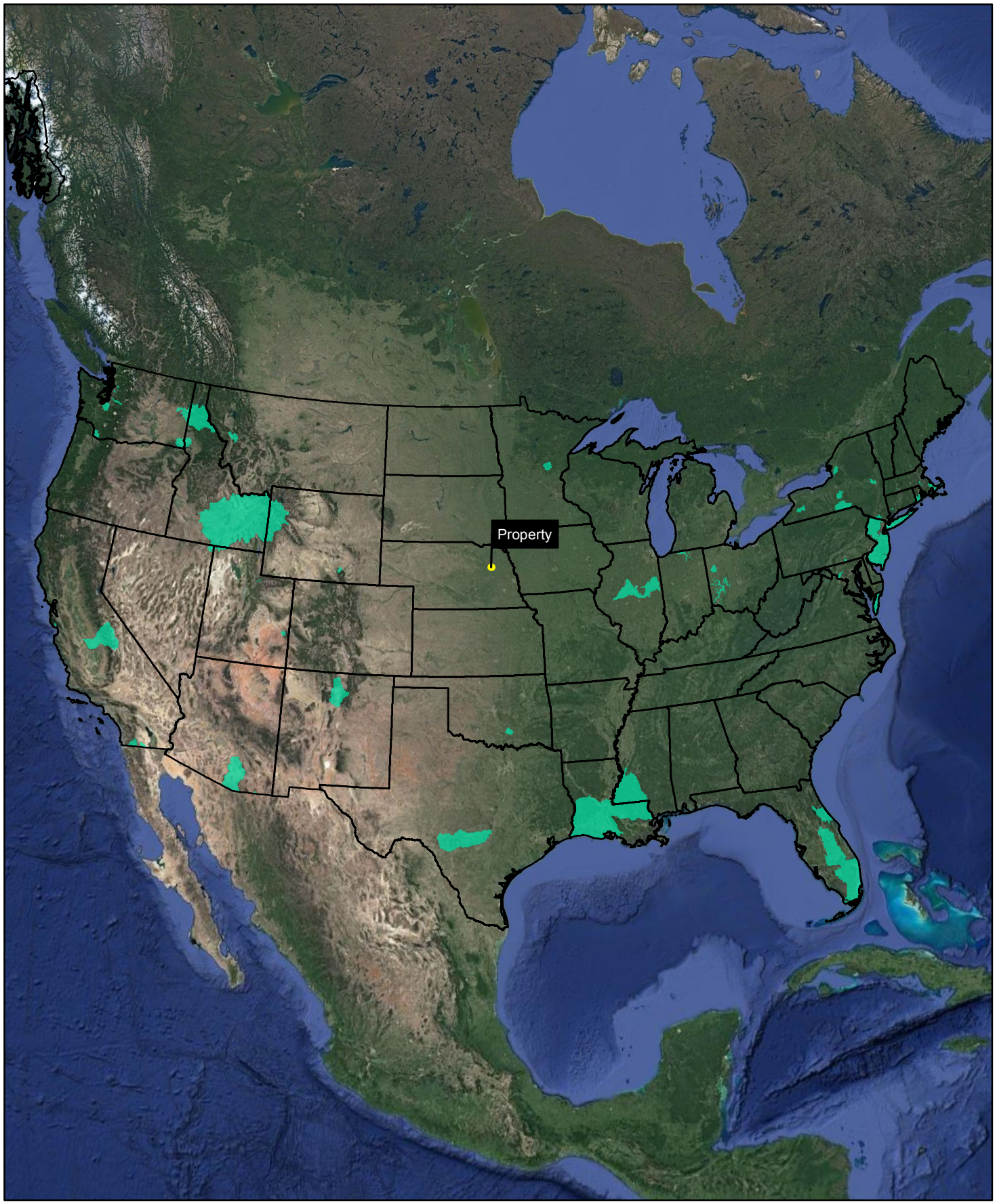
Olsson Project # 023-03812

Nebraska Impaired Waters Map

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: January 25, 2024

NAD 1983 StatePlane Nebraska FIPS 2600 Feet

Basemap: Google Satellite



N

0 100 200 400

Miles

1 " = 400 miles

Sole Source Aquifer

Property

State Boundary

Madison Solar

Bluestem Energy Solutions, LLC

Madison County, Nebraska

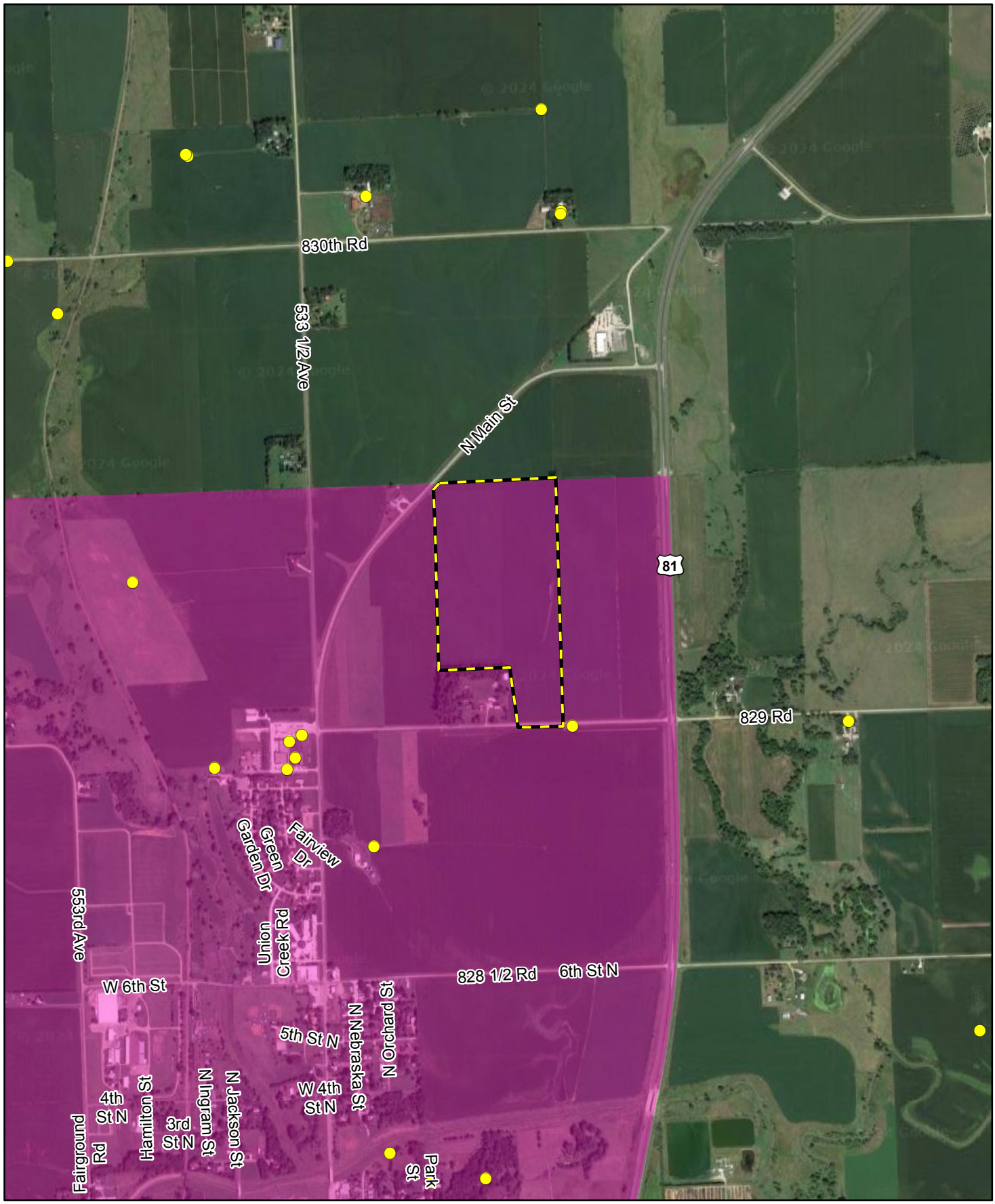
Olsson Project # 023-03812

Sole Source Aquifers Map

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: January 24, 2024

NAD 1983 StatePlane Nebraska FIPS 2600 Feet

Basemap: Google Satellite



N

0 350 700 1,400 ft

1 " = 1,400 '

Registered Well

Wellhead Protection Area

Property

Madison Solar

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Wellhead Protection Areas and Registered Wells Map

NAD 1983 StatePlane Nebraska FIPS 2600 Feet

Basemap: Google Satellite

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: January 25, 2024

APPENDIX H
THREATENED AND ENDANGERED SPECIES

June 12, 2023

Mr. Jeff Runge
U. S. Fish and Wildlife Service
9325 South Alda Road
Wood River, NE 68883

RE: United States Department of Agriculture - Rural Development
Bluestem Energy Solutions, LLC. Madison, Nebraska

Dear Mr. Runge:

Olsson, Inc (Olsson), on behalf of Bluestem Energy Solutions, LLC (Bluestem), is to provide information to the United States Department of Agriculture (USDA)-Rural Development in the process of completing a National Environmental Policy Act (NEPA) review to assess the environmental impacts of the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison, Madison County, Nebraska. After construction of the property, the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the solar array to the southwest corner of the property to connect to the existing overhead power lines along 829th Road. The purpose of the Project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources. Enclosed are a series of maps that depict the proposed Project's area of potential affect for all construction activities.

The proposed project does not represent a "major construction activity" as defined in 50 CFR 402.02. The USDA does not think the project will result in an undertaking of any Federally-listed or proposed threatened or endangered species. Please advise us of any concerns you may have related to possible effects of the Project listed above on such species or critical habitat. Nebraska Games and Parks Commission have also been notified.

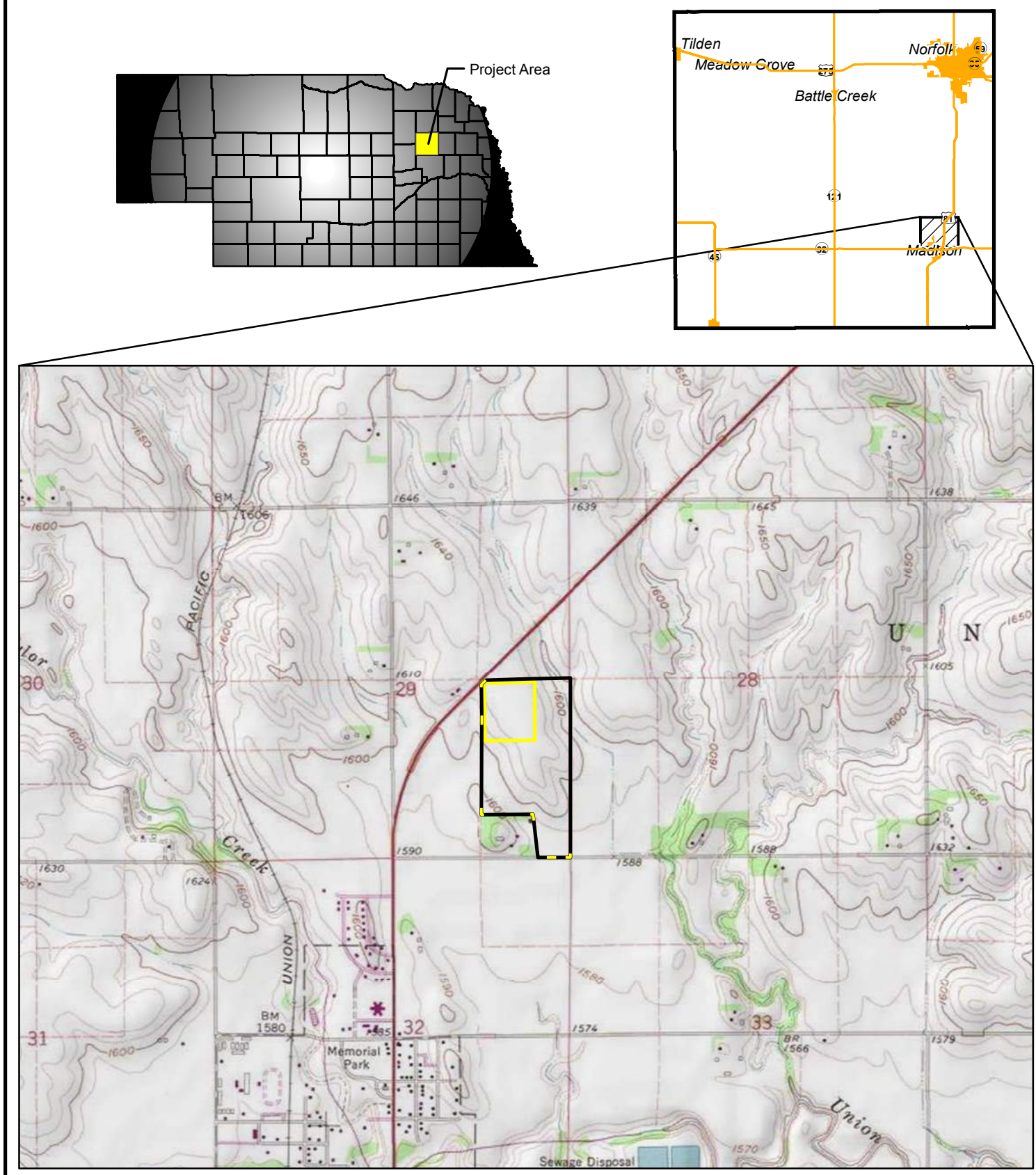
We would appreciate a response within 30 days. If you need any further information or wish to discuss the Project, please contact Chase Jelden at 308-708-7650 or cjelden@olsson.com

Sincerely,

Chase Jelden
Natural Resources and Planning

Olsson
2111 South 67th Street, Suite 200
Omaha, NE 68106

Enclosure: Site Location Map
Site Map
Site Plan
CERT
IPaC



Madison Solar Array
Bluestem Energy Solutions, LLC
Madison County, Nebraska
Olsson Project # 023-03812
Project Location Map
Figure 1

WGS 1984 ARC System Zone 11

Basemap: USA Topo Maps

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: June 07, 2023

N

0 87.5 175 350

ft

1 " = 350 '

Solar Array

Property

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Site Map

Figure 2

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: June 07, 2023

WGS 1984 ARC System Zone 11

Basemap: Google Satellite

MADISON COUNTY SOLAR LAYOUT
SYSTEM SIZE DC: 2.88 MW
SYSTEM SIZE AC: 2.00 MW

MODULE: ET SOLAR 385 WATTS
TOTAL # OF MODULES: 7,488
TOTAL # OF STRINGS: 288
MODULES PER STRING: 26
STRINGS PER INVERTER: 18

SINGLE AXIS TRACKER SYSTEM

INVERTERS:
CHINT CPS-SCH125KTL-DO-US-600
TOTAL # OF INVERTERS: 16

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

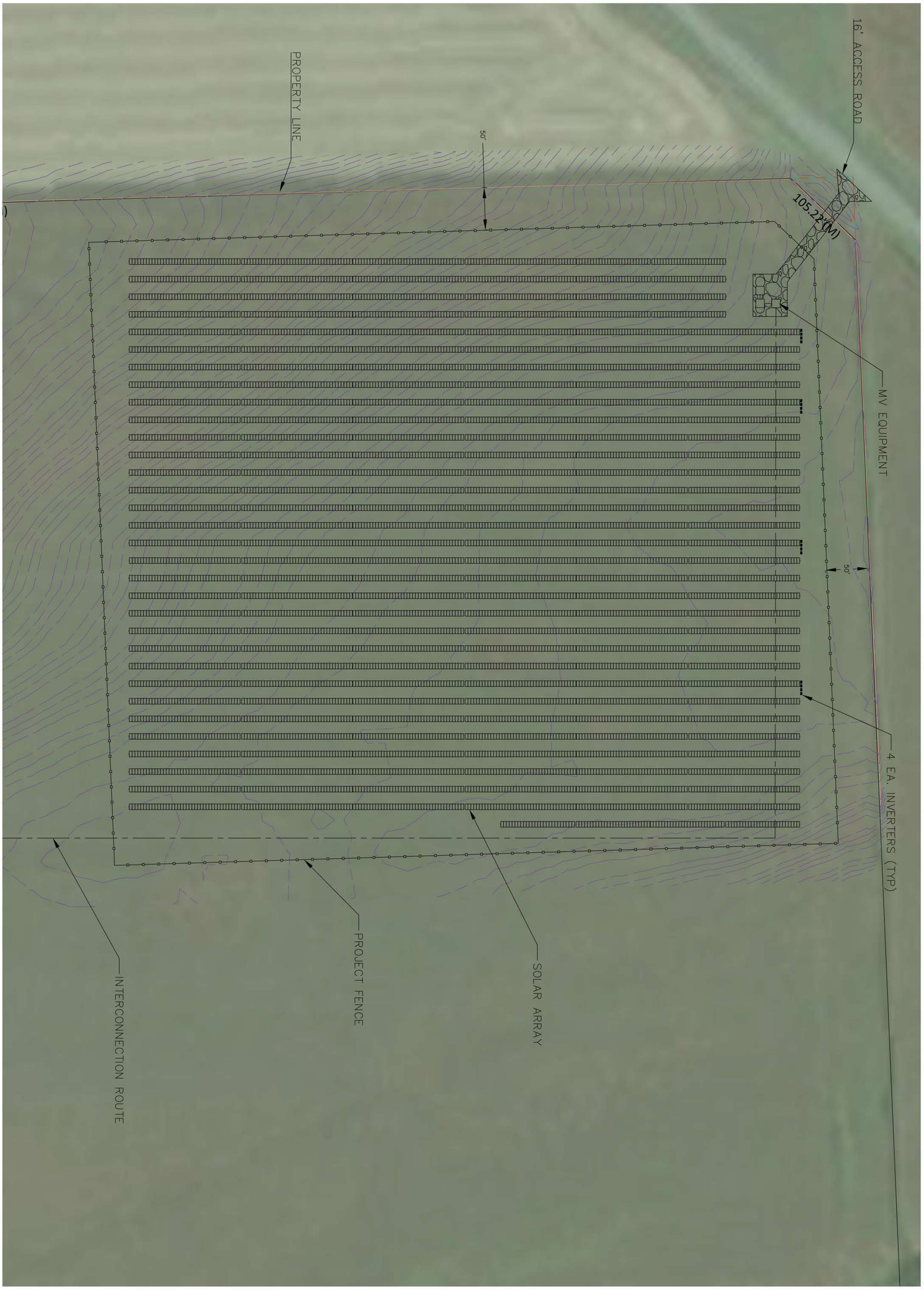
The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 200'

OVERALL SITE

G1.0



MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

SOLAR ARRAY

SCALE 1" = 50'

DATE: 1/27/2022

G1.1

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 30'

POI LOCATION

G1.2

Environmental Review Report

Project Information

Report Generation Date:	6/6/2023 04:43:02 PM
Project Title:	Bluestem Solar Array, Madison County, Nebraska
User Project Number(s):	023-03812
System Project ID:	NE-CERT-009896
Project Type:	Energy Production/Storage/Transfer, Solar
Project Activities:	None Selected
Project Size:	69.55 acres
County(s):	Madison
Watershed(s):	Elkhorn
Watershed(s) HUC 8:	Lower Elkhorn
Watershed(s) HUC 12:	Middle Union Creek
Biologically Unique Landscape(s):	None
Township/Range and/or Section(s):	T22R01WS29
Latitude/Longitude:	41.848419 / -97.447653

Contact Information

Organization:	Olsson
Contact Name:	Chase Jelden
Contact Phone:	4024746311
Contact Email:	cjelden@olsson.com
Contact Address:	601 P Street, Suite 200 Lincoln NE 68508
Prepared By:	
Submitted On Behalf Of:	USDA-RD

Project Description

Bluestem Energy Solutions, LLC (Bluestem) is a developer, owner, and operator of renewable energy resources and works to identify, develop, and implement local energy solutions for utilities. Bluestem has proposed the Madison County Solar Array, a Project would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed project is positioned on an existing parcel that is approximately 68-acres that is located in Madison, Madison County, Nebraska. More specifically, the Project is located on parcel number 590137032 and the legal property description of PT E1/2 SE1/4 LESS HWY 29-22-1. (Figure 1, Appendix A). The Project site is located south North Main Street and west of Untied States Highway 81 (US-81). The Project area encompasses the entire the northwest portion of the property with the solar array (approximately 15 acres) and underground conduit would extend south beyond the solar array to 829th Road. The project site is surrounded by row crop agriculture in all directions with a small area on the northwest portion directly abutting North Main Street and the ROW, the southwest corner abuts a rural residential property, and the south boundary abuts 829th Road and the ROW. An aerial view of the existing parcel and the Project area is depicted on the Site Map (Figure 2, Appendix A). The Madison County Solar Array will contain approximately 32 rows and containing up to 7,488 Photovoltaic (PV) cell panels or modules, that may be five (5) to seven (7) feet from the ground. The modules will be positioned on a single axis tracking system rotating east to west following the path of the sun throughout the day. Row spacing will be approximately 20 feet between rows. A total of 16 inverters would be used throughout the array to covert the DC electricity to AC electricity, which the electrical grid uses. A white rock or gravel access road will be located at the entrance to the array on the northwest corner of the property. The entire property would be enclosed with a six (6) feet tall chain link fence that would also contain three strands of barbed wire on top of the fence to provide additional security to the property. After construction of the property the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the property line from the southeast corner of the property to connect to the existing overhead power lines along 829th Road. The proposed Project is depicted in the Site Plan Map attached (Figure 3, Appendix A) Bluestem will own, operate, and maintain the system. The Project will provide locally generated energy, result in increased income for landowners, and enhance the economy and tax base for Madison County. The Project will be constructed in approximately six (6) months during Q1 and Q2 of 2025.Upon completion the Project will require routine maintenance that would be performed by offsite labor personnel. The Project will not require a septic or county sewer connection. If water use is required, the use would be minimal and would likely come from the municipal source or would be sourced from an onsite well. The purpose of the project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources.

Introduction

The Nebraska Game and Parks Commission (Commission) and the U.S. Fish and Wildlife Service (Service) have special concerns for endangered and threatened species, migratory birds, and other fish and wildlife and their habitats. Habitats frequently used by fish and wildlife species are wetlands, streams, riparian areas, woodlands, and grasslands. Special attention is given to proposed projects which modify wetlands, alter streams, result in loss of riparian habitat, convert/remove grasslands, or contaminate habitats. When this occurs, the Commission and Service recommend ways to avoid, minimize, or compensate for adverse effects to fish and wildlife and their habitats.

CONSULTATION PURSUANT TO THE NEBRASKA NONGAME AND ENDANGERED SPECIES CONSERVATION ACT (NESCA)

The Commission has responsibility for protecting state-listed endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). Pursuant to § 37-807 (3) of NESCA, all state agencies shall, in consultation with the Commission, ensure projects they authorize (i.e., issue a permit for), fund or carry out do not jeopardize the continued existence of state-listed endangered or threatened species or result in the destruction or modification of habitat of such species which is determined by the Commission to be critical. If a proposed project may affect state-listed species or designated critical habitat, further consultation with the Commission is required.

Informal consultation pursuant to NESCA can be completed by using the Conservation and Environmental Review Tool (CERT). The CERT analyzes the project type and location, and based on the analysis, provides information about

potential impacts to listed species, habitat questions and/or conservation conditions.

- If project proponents agree to implement conservation conditions, as outlined in the report and applicable to the project type, then this document serves as documentation of consultation and the following actions can be taken to move forward with the project:
    - Sign the report in the designated areas.
    - Upload the signed PDF as part of their "final" project submittal.
    - By agreeing to and implementing the conservation conditions as outlined (if applicable), then further consultation with the Commission is not required.
- If the report indicates the project may have impacts on state-listed species, then the following actions must be taken:
    - Project proponent is required to contact and consult with the Commission. Contact information can be found within this document.

TECHNICAL ASSISTANCE AND CONSULTATION PURSUANT TO THE ENDANGERED SPECIES ACT (ESA)

The Service has responsibility for conservation and management of fish and wildlife resources for the benefit of the American public under the following authorities: 1) Endangered Species Act of 1973 (ESA); 2) Fish and Wildlife Coordination Act; 3) Bald and Golden Eagle Protection Act; and 4) Migratory Bird Treaty Act. The National Environmental Policy Act (NEPA) requires compliance with all of these statutes and regulations.

Pursuant to section 7(a)(2) of ESA, every federal agency, shall in consultation with the Service, ensure that an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

If a proposed project may affect federally listed species or designated critical habitat, Section 7 consultation is required with the Service. It is the responsibility of the lead federal action agency to fully evaluate all potential effects (direct and indirect) that may occur to federally listed species and critical habitat in the action area. The lead federal agency provides their effect determination to the Service for concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by implementation of the project, the lead federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of federal funds (section 7(d) of ESA), or issuing any federal permits or licenses.

The information generated in this report DOES NOT satisfy consultation obligations between the lead federal agency and the Service pursuant to ESA. For the purposes of ESA, the information in this report should be considered as TECHNICAL ASSISTANCE, and does not serve as the Service's concurrence letter, even if the user signs and agrees to implement conservation conditions in order to satisfy the consultation requirements of NESCA.

Overall Results

The following result is based on a detailed analysis of your project.

- Potential impacts on listed species may occur as a result of this project. Please proceed with the following: Sign and date the certification section. Upload the document as "final." Email a copy of the report with a request for review to the Nebraska Game and Parks Commission (ngpc.envreview@nebraska.gov) and copy the U.S. Fish and Wildlife Service (nebraskaes@fws.gov) for further consultation.

Additional Information

Potential impacts on listed species may occur as a result of this project. Further consultation with the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service is required.

Certification

I certify that ALL of the project information in this report (including project location, project size/configuration, project type, project activities, answers to questions) is true, accurate, and complete. If the project type, activities, location, size, or configuration of the project change, or if any of the answers to any questions asked in this report change, then this information is no longer valid and we recommend running the revised project through CERT to get an updated report.

_____ _____

Applicant/project proponent signature Date

Additional Considerations

Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668c) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Under the Eagle Act, “take” of eagles, their parts, nests or eggs is prohibited. Disturbance resulting in injury to an eagle or a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior is a form of “take.”

Bald eagles use mature, forested riparian areas near rivers, streams, lakes, and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and the wintering period extends from December-March. The golden eagle is found in arid open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Golden eagles are often a permanent resident in the Pine Ridge area of Nebraska. Additionally, many bald and golden eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5-miles of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching, and roosting habitats, respectively. The frequency and duration of eagle use of these habitats in the winter depends upon ice and weather conditions. Human disturbances and loss of wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These affects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species.

To comply with the Eagle Act, it is recommended that the project proponent determine if the proposed project would impact bald or golden eagles or their habitats. This can be done by conducting a habitat assessment, surveying nesting habitat for active and inactive nests, and surveying potential winter roosting habitat to determine if it is being used by eagles. The area to be surveyed is dependent on the type of project; however for most projects we recommend surveying the project area and a ½ mile buffer around the project area. If it is determined that either species could be affected by the proposed project, the Commission recommends that the project proponent notify the Nebraska Game and Parks Commission as well as the Nebraska Field Office, U.S. Fish and Wildlife Service for recommendations to avoid “take” of bald and golden eagles.

Migratory Bird Treaty Act and Nebraska Revised Statute §37-540

We recommend the project proponent comply with the Migratory Bird Treaty Act (16 U.S.C. 703-712: Ch. 128 *as amended*) (MBTA). The project proponent should also comply with Nebraska Revised Statute §37-540, which prohibits take and destruction of nests or eggs of protected birds (as defined in Nebraska Revised Statute §37-237.01). Construction activities in grassland, wetland, stream, woodland, and river bank habitats that would result in impacts on birds, their nests or eggs protected under these laws should be avoided. Although the provisions of these laws are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period of May 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For

example, raptors can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10. If development in this area is planned to occur during the primary nesting season or at any other time which may result in impacts to birds, their nests or eggs protected under these laws, we request that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. If a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities, the Nebraska Game and Parks Commission and the Nebraska Field Office, U.S. Fish and Wildlife Service should be contacted immediately. For more information on avoiding impacts to migratory birds, their nests and eggs, or to report active bird nests that cannot be avoided by planned construction activities, please contact the U.S. Fish and Wildlife Service and/or the Nebraska Game and Parks Commission (contact information within report). Adherence to these guidelines will help avoid unnecessary impacts on migratory birds.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires consultation with the U.S. Fish and Wildlife Service (Service) and the State fish and wildlife agency (i.e., Nebraska Game and Parks Commission) for the purpose of preventing loss of and damage to fish and wildlife resources in the planning, implementation, and operation of federal and federaly funded, permitted, or licensed water resource development projects. This statute requires that federal agencies take into consideration the effect that the water related project would have on fish and wildlife resources, to take action to prevent loss or damage to these resources, and to provide for the development and improvement of these resources. The comments in this letter are provided as technical assistance only and are not the document required of the Secretary of the Interior pursuant to Section 2(b) of FWCA on any required federal environmental review or permit. This technical assistance is valid only for the described conditions and will have to be revised if significant environmental changes or changes in the proposed project take place. In order to determine whether the effects to fish and wildlife resources from the proposed project are being considered under FWCA, the lead federal agency must notify the Service in writing of how the comments and recommendations in this technical assistance letter are being considered into the proposed project.

Section 404 of the Clean Water Act

In general, the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service have concerns for impacts to wetlands, streams and riparian habitats. We recommend that impacts to wetlands, streams, and associated riparian corridors be avoided and minimized, and that any unavoidable impacts to these habitats be mitigated. If any fill materials will be placed into waterways or wetlands, the U.S. Army Corps of Engineers Regulatory Office in Omaha should be contacted to determine if a 404 permit is needed.

Agency Contact Information

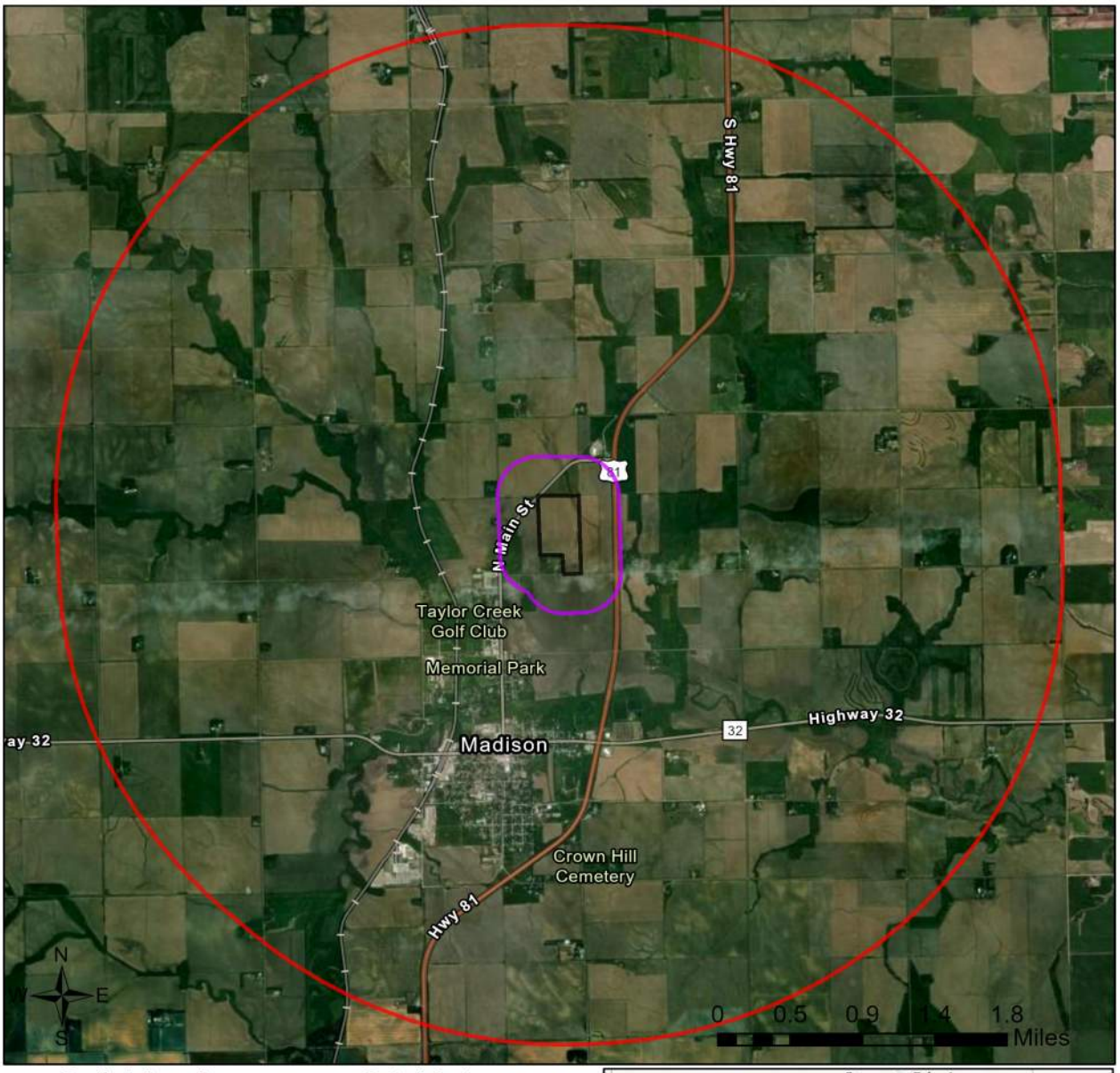
Nebraska Game and Parks Commission
Environmental Review Team
2200 North 33rd Street
Lincoln, NE 68503
phone: (402) 471-5423
email: ngpc.envreview@nebraska.gov

U.S. Fish and Wildlife Service

Nebraska Ecological Services
9325 South Alda Road
Wood River, NE 68883
phone: (308) 382-6468
email: nebraskaes@fws.gov

Bluestem Solar Array, Madison County, Nebraska

Aerial Image Basemap With Locator Map



3-mile Information Buffer Boundary

Project Review Boundary

Project Boundary

Project Size (acres): 69.55

Lat/Long (DD): 41.8484 / -97.4477

County(s): Madison

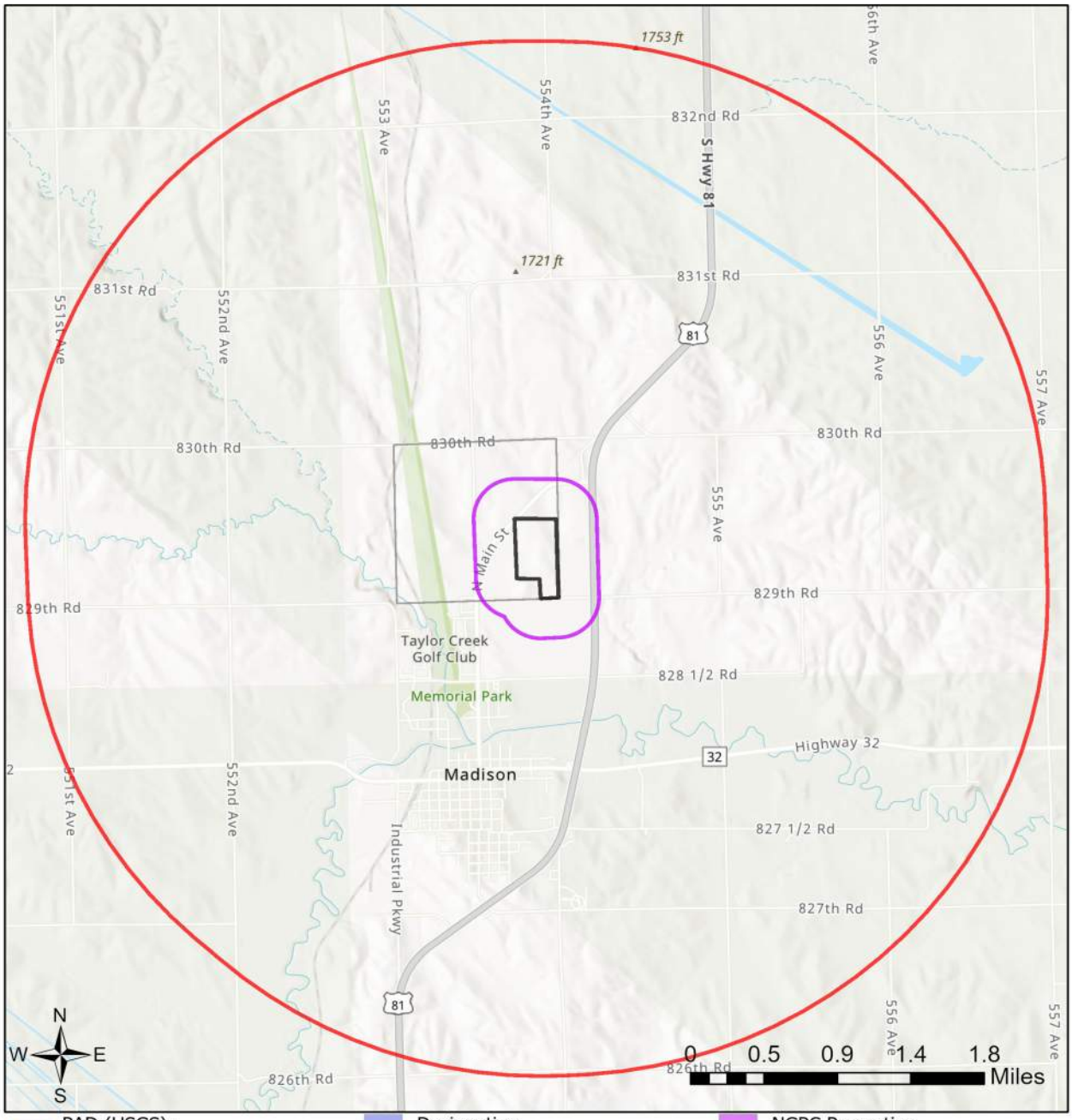
BUL(s):

Township/Range/Section(s): T22R01WS29

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Bluestem Solar Array, Madison County, Nebraska

Topographic Basemap With Sections and Protected Areas

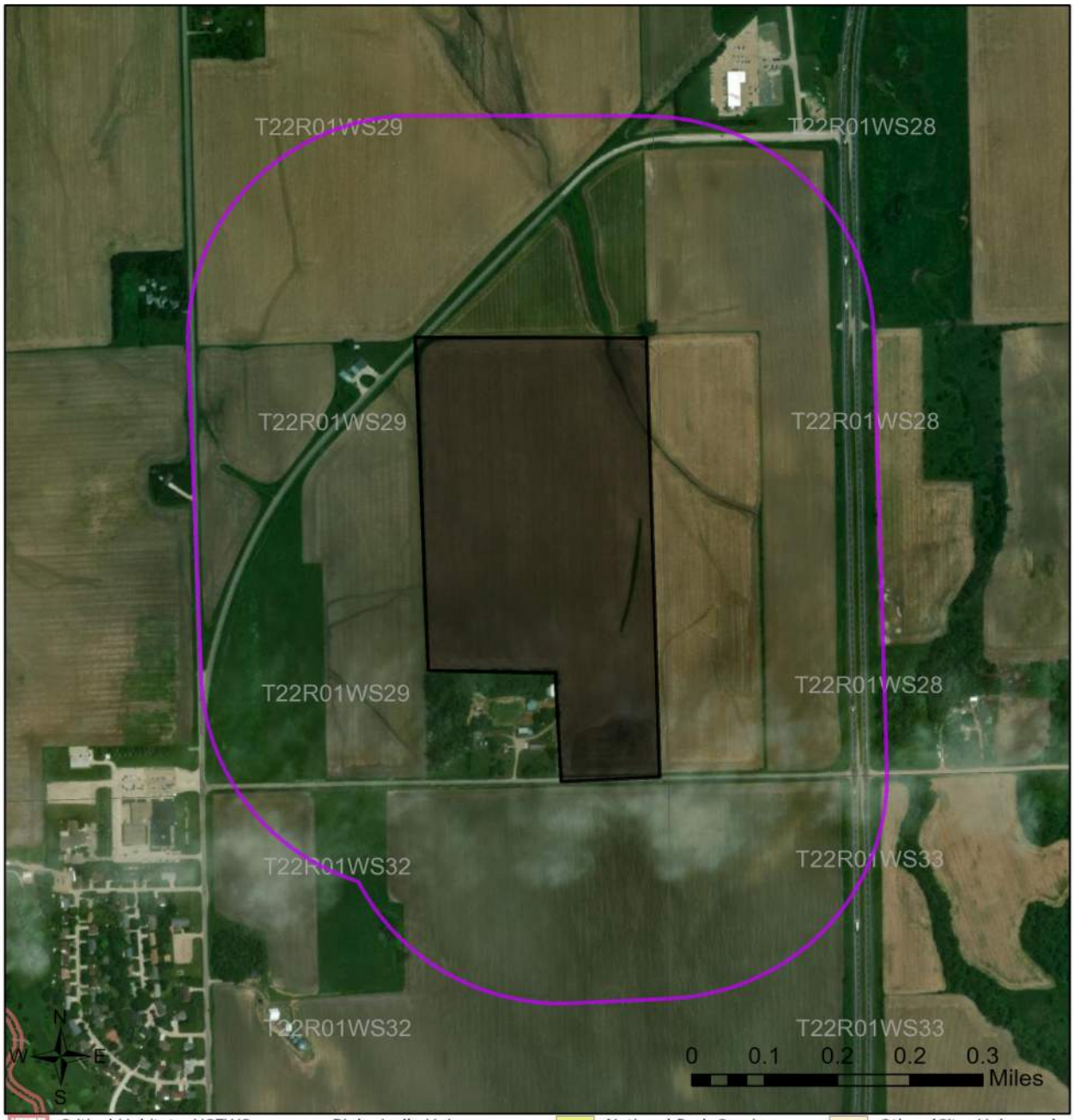


- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- NGPC Properties
- Sections
- 3-mile Information Buffer Boundary
- Project Review Boundary
- Project Boundary

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Bluestem Solar Array, Madison County, Nebraska

Web Map As Submitted By User



- Critical Habitat - USFWS
- Missouri National Recreation River
- Niobrara National Scenic River
- 1
- 2
- Biologically Unique Landscapes
- NGPC Properties
- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- Sections
- Townships
- Counties
- Project Review Boundary
- Project Boundary

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Table 1
Protected Areas in Immediate Vicinity of Project (project review area)

This table has no results.

Table 2
Documented Occurrences in Immediate Vicinity of Project (project review area):
Natural communities and selected special areas

This table has no results.

Table 3
Regional Documented Occurrences of Species within 1 Mile of Project Review Area:
Tier 1 and 2 at-risk species and additional S1-S3 plants

Scientific Name	Common Name	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Haliaeetus leucocephalus	Bald Eagle			Tier 2	S3	G5	Vertebrate Animal - Birds
Notropis topeka	Topeka Shiner	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Platanthera praeclara	Western Prairie Fringed Orchid	T	T	Tier 1	S2	G3	Vascular Plant - Monocots

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name		Data Type	USFWS	State	SGCN		GRank	Taxonomic Group
Ammodramus henslowii	Henslow's Sparrow	Range			Tier 1	S1	G4	Vertebrate Animal - Birds
Asio flammeus	Short-eared Owl	Range			Tier 1	S2	G5	Vertebrate Animal - Birds
Atrytone arogos iowa	Iowa Skipper	Range			Tier 1	S1	G2G3T2T3	Invertebrate Animal - Butterflies and Skippers
Boloria selene nebraskensis	Nebraska Fritillary	Range			Tier 1	SNR	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Calidris subruficollis	Buff-breasted Sandpiper	Range			Tier 1	S2N	G4	Vertebrate Animal - Birds
Catocala nuptialis	Married Underwing	Range			Tier 1	SNR	G3	Invertebrate Animal - Underwing Moths
Catocala whitneyi	Whitney Underwing	Range			Tier 1	S1	G2G3	Invertebrate Animal - Underwing Moths
Cicindela limbata limbata	Sandy Tiger Beetle	Range			Tier 1	S4	G5T3T4	Invertebrate Animal - Beetles
Coccyzus erythropthalmus	Black-billed Cuckoo	Range			Tier 1	S3	G5	Vertebrate Animal - Birds
Danaus plexippus	Monarch	Range			Tier 1	S2	G4	Invertebrate Animal - Butterflies

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
								and Skippers
Ellipsoptera lepida	Ghost Tiger Beetle	Range			Tier 1	S2	G3G4	Invertebrate Animal - Beetles
Emydoidea blandingii	Blanding's Turtle	Range		NC	Tier 1	S4	G4	Vertebrate Animal - Turtles
Euphyes bimacula illinois	Two-spotted Skipper	Range			Tier 1	S3	G4T1T2	Invertebrate Animal - Butterflies and Skippers
Euphyes conspicua buchholzi	Bucholz Black Dash	Range			Tier 1	S1	G4G5T1	Invertebrate Animal - Butterflies and Skippers
Fundulus sciadicus	Plains Topminnow	Range			Tier 1	S3	G4	Vertebrate Animal - Fishes
Haliaeetus leucocephalus	Bald Eagle	Range			Tier 2	S3	G5	Vertebrate Animal - Birds
Hesperia ottoe	Ottoe Skipper	Range			Tier 1	S2	G3	Invertebrate Animal - Butterflies and Skippers
Lanius ludovicianus	Loggerhead Shrike	Range			Tier 1	S3	G4	Vertebrate Animal - Birds
Lasiurus borealis	Eastern Red Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lasiurus cinereus	Hoary Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lethe eurydice fumosus	Smoky-eyed Brown	Range			Tier 1	S3	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Myotis septentrionalis	Northern Long-eared Myotis	Range	T	T	Tier 1	S1S2	G1G2	Vertebrate Animal - Mammals
Notropis topeka	Topeka Shiner	Model	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Perimyotis subflavus	Tricolored Bat	Range			Tier 1	S3	G2G3	Vertebrate Animal - Mammals
Perognathus flavescens perniger	Plains Pocket Mouse	Range			Tier 1	SNR	G5TNR	Vertebrate Animal - Mammals
Platanthera praeclara	Western Prairie Fringed Orchid	Range	T	T	Tier 1	S2	G3	Vascular Plant - Flowering Plants
Speyeria idalia	Regal Fritillary	Range			Tier 1	S3	G3?	Invertebrate Animal - Butterflies and Skippers

MADISON COUNTY SOLAR ARRAY

BIOLOGICAL ANALYSIS

Prepared using IPaC

Generated by Chase Jelden (cjelden@olsson.com)

June 12, 2023

The purpose of this document is to assess the effects of the proposed project and determine whether the project may affect any federally threatened, endangered, proposed, or candidate species. If appropriate for the project, this document may be used as a biological assessment (BA), as it is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)).

In this document, any data provided by U.S. Fish and Wildlife Service is based on data as of June 7, 2023.

Prepared using IPaC version 6.93.0-rc4

MADISON COUNTY SOLAR ARRAY BIOLOGICAL ASSESSMENT

TABLE OF CONTENTS

1 DESCRIPTION OF THE ACTION

1.1 PROJECT NAME

Madison County Solar Array

1.2 EXECUTIVE SUMMARY

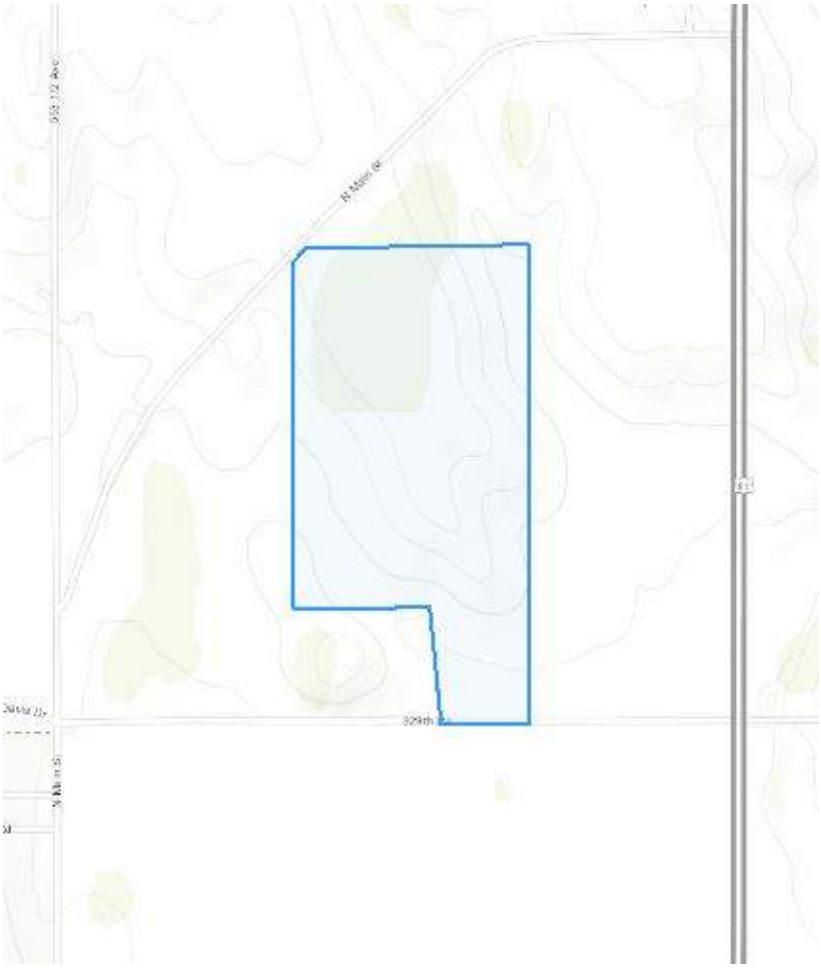
Four federally threatened, endangered, proposed, or candidate species were identified that may be affected by construction of the Madison County Solar Array. Of these four species, three (pallid sturgeon, piping plover, and topeka shiner) are not present in the action area and will not be affected by construction. The monarch butterfly is the only species identified that may utilize the action area and be affected by the project. However, vegetation in the project area will be changed from soy and corn crops to native Nebraska vegetation; thus, the impact on monarch butterflies in the project area should be beneficial.

1.3 EFFECT DETERMINATION SUMMARY

SPECIES (COMMON NAME)	SCIENTIFIC NAME	LISTING STATUS	PRESENT IN ACTION AREA	EFFECT DETERMINATION
Monarch Butterfly	Danaus plexippus	Candidate	Yes	NLAA
Pallid Sturgeon	Scaphirhynchus albus	Endangered	No	NE
Piping Plover	Charadrius melodus	Threatened	No	NE
Topeka Shiner	Notropis topeka (=tristis)	Endangered	No	NE

1.4 PROJECT DESCRIPTION

1.4.1 LOCATION



LOCATION
Madison County, Nebraska

1.4.2 DESCRIPTION OF PROJECT HABITAT

The project site is currently a row-crop agricultural field. The 15 acres where the solar array will be built appears to be upland.

1.4.3 PROJECT PROPONENT INFORMATION

Provide information regarding who is proposing to conduct the project, and their contact information. Please provide details on whether there is a Federal nexus.

REQUESTING AGENCY
Private Entity

FULL NAME
Rogan Maxwell

STREET ADDRESS
601 P Street

Suite 200

CITY
Lincoln

STATE
NE

ZIP
68508

PHONE NUMBER
5312057792

E-MAIL ADDRESS
rmaxwell@olsson.com

LEAD AGENCY
Department of Agriculture

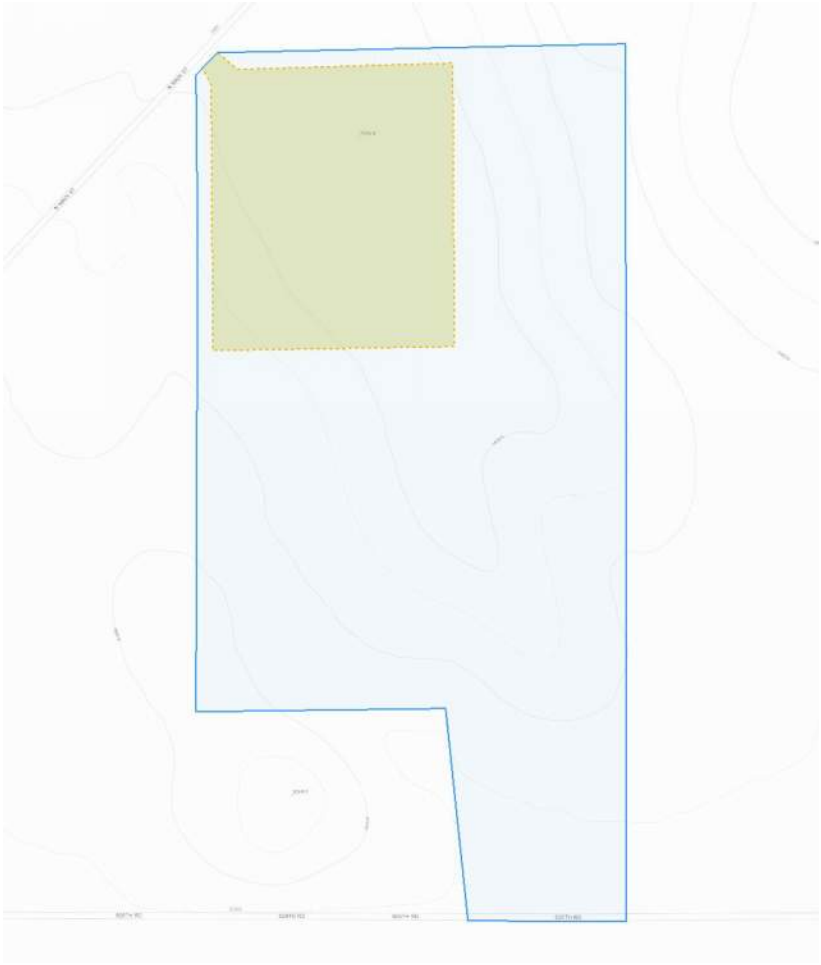
1.4.4 PROJECT PURPOSE

The purpose of this project is to provide the rate payers of Madison, Nebraska with an alternative energy source at a competitive price and to meet the expanding market for renewable and environmentally friendly energy production.

1.4.5 PROJECT TYPE AND DECONSTRUCTION

This project is a solar power plant construction project.

1.4.5.1 PROJECT MAP



LEGEND

Project footprint

Layer 1: Photovoltaic solar power plant (structure)

Layer 2: Access road construction, biological surveys (aerial), biological surveys (terrestrial), create on-site well, cultural resource surveys, erect supports, finish grading, geotechnical investigation, improve stormwater runoff quality, in-ground utilities construction, install in-ground pipe & cable, install inverters, install molten salt conveyance pipes, install permanent fence, install photovoltaic panels, install portable / temporary fence, install water storage tank, minimize erosion from disturbed areas, prepare the project site (terrestrial), rough grading, staging area construction, topographic surveys

1.4.5.2 PHOTOVOLTAIC SOLAR POWER PLANT

STRUCTURE COMPLETION DATE
Unspecified

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Increase in air temperature
- Increase in impervious surfaces

DESCRIPTION
The photovoltaic solar array will cover approximately 15 acres of the 68 acres parcel, containing 7,488 cell panels in approximately 32 rows spaced 20 feet apart. Soil will be stabilized post-construction with the Nebraska Department of Transportation native Nebraska pollinator seed mix.

1.4.5.3 ACCESS ROAD CONSTRUCTION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in vegetation structure
- Increase in dust
- Increase in soil compaction
- Increase in erosion
- Increase in noise

DESCRIPTION
The access road will connect to the northwest corner of the project site from North Main Street and will be approximately 200 feet long.

1.4.5.4 BIOLOGICAL SURVEYS (AERIAL)

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Aerial surveys would be completed utilizing a desktop survey. No physical presence would be required.

1.4.5.5 BIOLOGICAL SURVEYS (TERRESTRIAL)

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Biological surveys in the area may include wetland delineations and any threatened and endangered species surveys. Due to a lack of habitat, biological surveys will likely be minimal.

1.4.5.6 CREATE ON-SITE WELL

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Construction of an on-site well will only be necessary if water-use is required and a municipal source is not utilized.

1.4.5.7 CULTURAL RESOURCE SURVEYS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Cultural surveys will likely occur remotely.

1.4.5.8 ERECT SUPPORTS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Increase in soil compaction
- Increase in erosion
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
After construction of the solar array (including supports of panels), soil will be stabilized using a native Nebraska pollinator seed mix. Constructions will be temporary and, following construction, impacts regarding support maintenance will be minimal.

1.4.5.9 FINISH GRADING

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Increase in soil compaction
- Increase in soil disturbance

DESCRIPTION
Impacts from grading will be temporary. Any decrease in vegetation will be a decrease in row-crop vegetation and will be replaced by native vegetation following construction.

1.4.5.10 GEOTECHNICAL INVESTIGATION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Any geotechnical fieldwork will likely be minimal groundwork conducted by individuals.

1.4.5.11 IMPROVE STORMWATER RUNOFF QUALITY

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Change in vegetation structure

DESCRIPTION
Following stabilization of soils with the native Nebraska pollinator seed mix, as recommended by the Nebraska Department of Transportation, the vegetation in the area should improve stormwater runoff quality at the project site. During construction, temporary increases in soil stressors may occur but long-term impacts are not likely. Additionally, due to a lack of connection to any water features, stormwater runoff during construction is not likely to impact any water features.

1.4.5.12 IN-GROUND UTILITIES CONSTRUCTION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in vegetation structure
- Change in topography
- Increase in soil compaction
- Change in hydrology
- Increase in erosion
- Increase in human presence
- Increase in soil disturbance

DESCRIPTION
Approximately 2,000 feet of underground interconnection line will be constructed extending south from the property to 829th Road, where the interconnection line will connect to existing overhead power lines. Permanent impacts are not likely.

1.4.5.13 INSTALL IN-GROUND PIPE & CABLE

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
The transmission line from the solar array to the overhead powerlines would be trenched below the soil surface and the soil would be replaced and reseeded upon completion of the project. Ultimately the area where the transmission line is trenched will return to row crop agricultural conditions and have no change from the existing conditions.

1.4.5.14 INSTALL INVERTERS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Increase in human presence

DESCRIPTION
Inverters would be placed throughout the solar array to convert DC to AC electrical current. The technician would visit the transformers on a routine basis and would increase human presence; however, is unlikely to be greater than the human presence under the existing conditions.

1.4.5.15 INSTALL MOLTEN SALT CONVEYANCE PIPES

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Buried below Solar Panels.

1.4.5.16 INSTALL PERMANENT FENCE

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in vegetation structure
- Increase in soil disturbance

DESCRIPTION
Permanent fencing will only be constructed around the portion of the parcel occupied by the solar array. Fencing may cause a limited impact on soil structure during construction and a limited change in stormwater runoff. However, the area will be planted with native Nebraska upland vegetation and will likely increase present vegetation. The increase in vegetation will likely improve stormwater quality and reduce the amount of runoff.

1.4.5.17 INSTALL PHOTOVOLTAIC PANELS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Any ground disturbance would be temporary as construction is proposed to be completed within 6 months. Native pollinator seed mix is proposed which would provide a herbaceous ground cover better than the existing agricultural conditions.

1.4.5.18 INSTALL PORTABLE / TEMPORARY FENCE

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Temporary fencing around construction materials may be used and would be less than the duration of the total project.

1.4.5.19 INSTALL WATER STORAGE TANK

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Water storage tanks may be utilized onsite and would be less than 500 gallons. The footprint of the water storage tank would have no impact to the surrounding environment.

1.4.5.20 MINIMIZE EROSION FROM DISTURBED AREAS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
BMP's from the SWPPP would be utilized to minimize sedimentation and erosion into downstream waters. Installation of BMPs would be approved by NDEE and would adhere to the monitoring schedule as defined by NDEE during construction to prevent erosion until the vegetation has established.

1.4.5.21 PREPARE THE PROJECT SITE (TERRESTRIAL)

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Decrease in vegetation
- Change in topography
- Increase in dust
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
All stressors that result in a may occur would be temporary in nature and would be completed in less than than the duration of the project. Overall site preparation and impacts would be less than the existing conditions as a row crop agricultural field.

1.4.5.22 ROUGH GRADING

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in topography
- Increase in dust
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
All stressors that result in a may occur would be temporary in nature and would be completed in less than than the duration of the project. Overall site preparation and impacts would be less than the existing conditions as a row crop agricultural field.

1.4.5.23 STAGING AREA CONSTRUCTION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Decrease in vegetation
- Increase in soil compaction
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
All stressors that result in a may occur would be temporary in nature and would be completed in less time than than the duration of the project. Overall site preparation and impacts would be less than the existing conditions as a row crop agricultural field. The Staging area would be utilized for the solar array or would be restored to pre-existing conditions.

1.4.5.24 TOPOGRAPHIC SURVEYS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Increase in human presence

DESCRIPTION
Human presence during the topographic survey would be very minimal compared to the 6 month construction timeframe and overall less than the existing conditions as a row crop agricultural field.

1.4.6 ANTICIPATED ENVIRONMENTAL STRESSORS

Describe the anticipated effects of your proposed project on the aspects of the land, air and water that will occur due to the activities above. These should be based on the activity deconstructions done in the previous section and will be used to inform the action area.

1.4.6.1 PLANT FEATURES

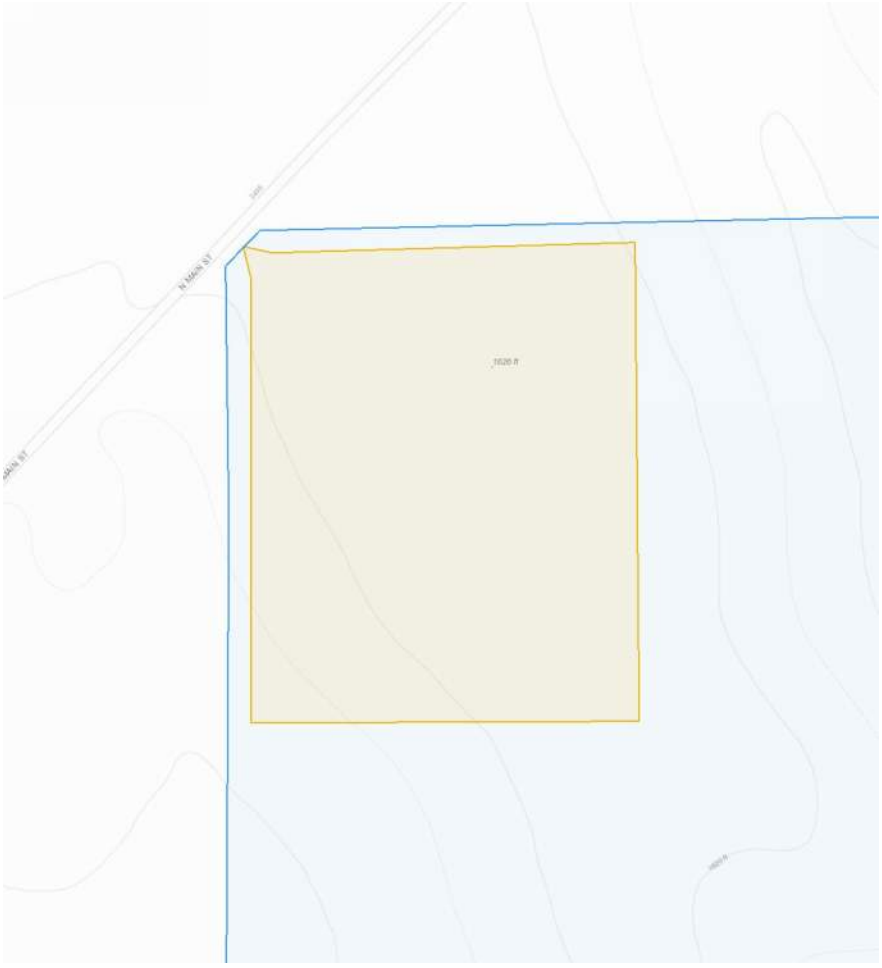
Individuals from the Plantae kingdom, such as trees, shrubs, herbs, grasses, ferns, and mosses. This feature also includes products of plants (e.g., nectar, flowers, seeds, etc.).

1.4.6.1.1 CHANGE IN VEGETATION STRUCTURE

ANTICIPATED MAGNITUDE

Existing vegetation on-site is primarily row-crop agriculture. Project site vegetation will be replaced with native Nebraska vegetation.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

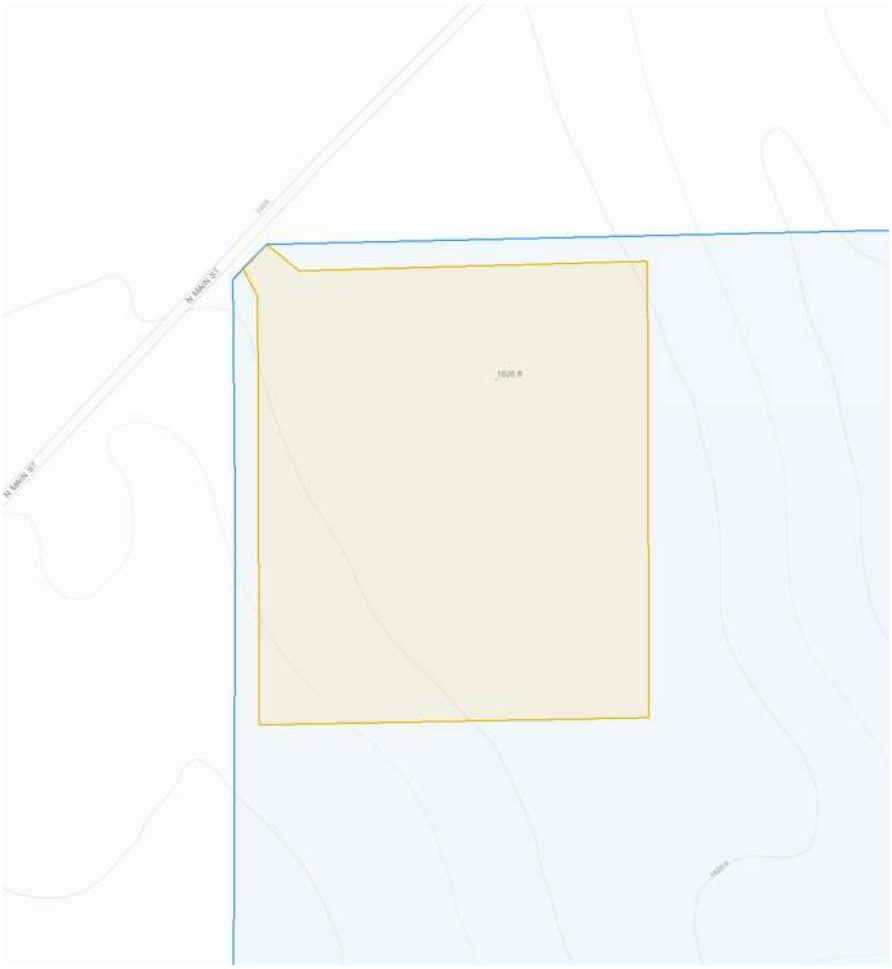
- Improve stormwater runoff quality
- Install permanent fence
- In-ground utilities construction
- Access road construction

1.4.6.1.2 DECREASE IN VEGETATION

ANTICIPATED MAGNITUDE

The site would be reseeded with a native pollinator seed mix. Vegetation cover upon the completion of construction would be greater than the existing conditions as a row crop agricultural field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- Prepare the project site (terrestrial)

1.4.6.2 ENVIRONMENTAL QUALITY FEATURES

Abiotic attributes of the landscape (e.g., temperature, moisture, slope, aspect, etc.).

1.4.6.2.1 INCREASE IN AIR TEMPERATURE

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

Adding perennial vegetation cover below the panels will reduce the air temperature by lowering the ground temperature.

CONSERVATION MEASURES

- Perennial vegetation cover

STRUCTURES AND ACTIVITIES

- Photovoltaic solar power plant

1.4.6.3 LANDFORM (TOPOGRAPHIC) FEATURES

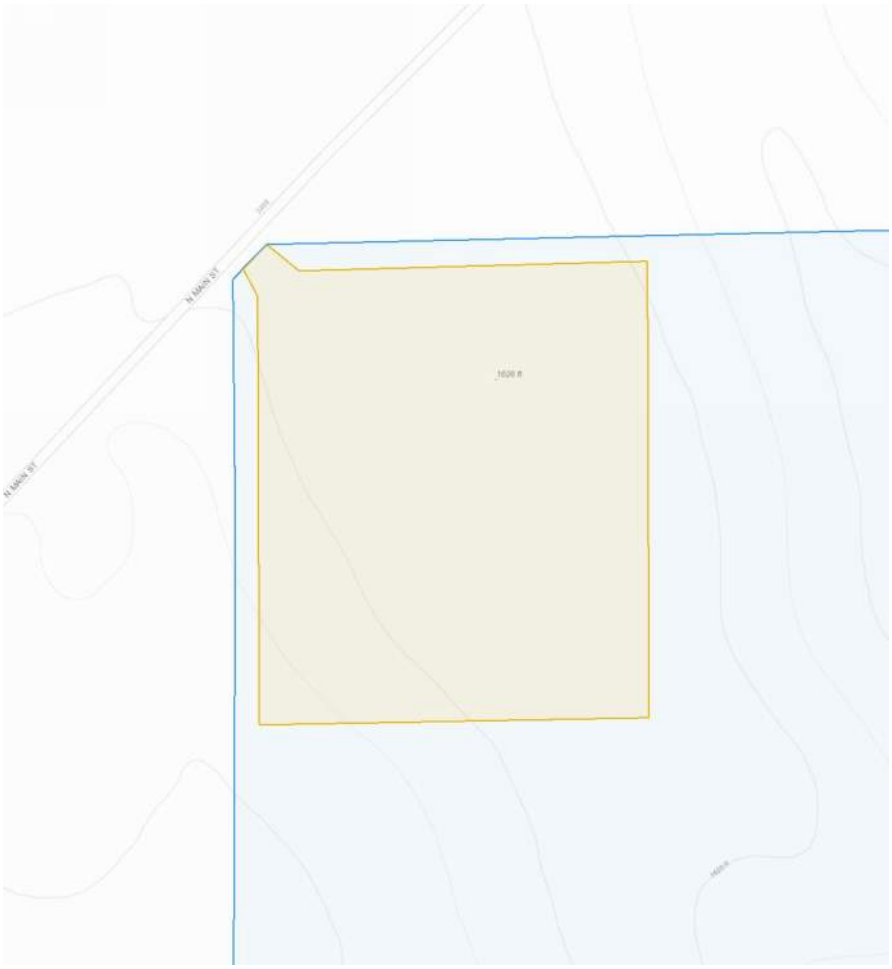
Topographic (landform) features that typically occur naturally on the landscape (e.g., cliffs, terraces, ridges, etc.). This feature does not include aquatic landscape features or man-made structures.

1.4.6.3.1 CHANGE IN TOPOGRAPHY

ANTICIPATED MAGNITUDE

The site will be graded to be level as part of the site preparation. There are no wetlands or stream channels that would be impacted and the change of the topography would be minimal compared to the surrounding conditions.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

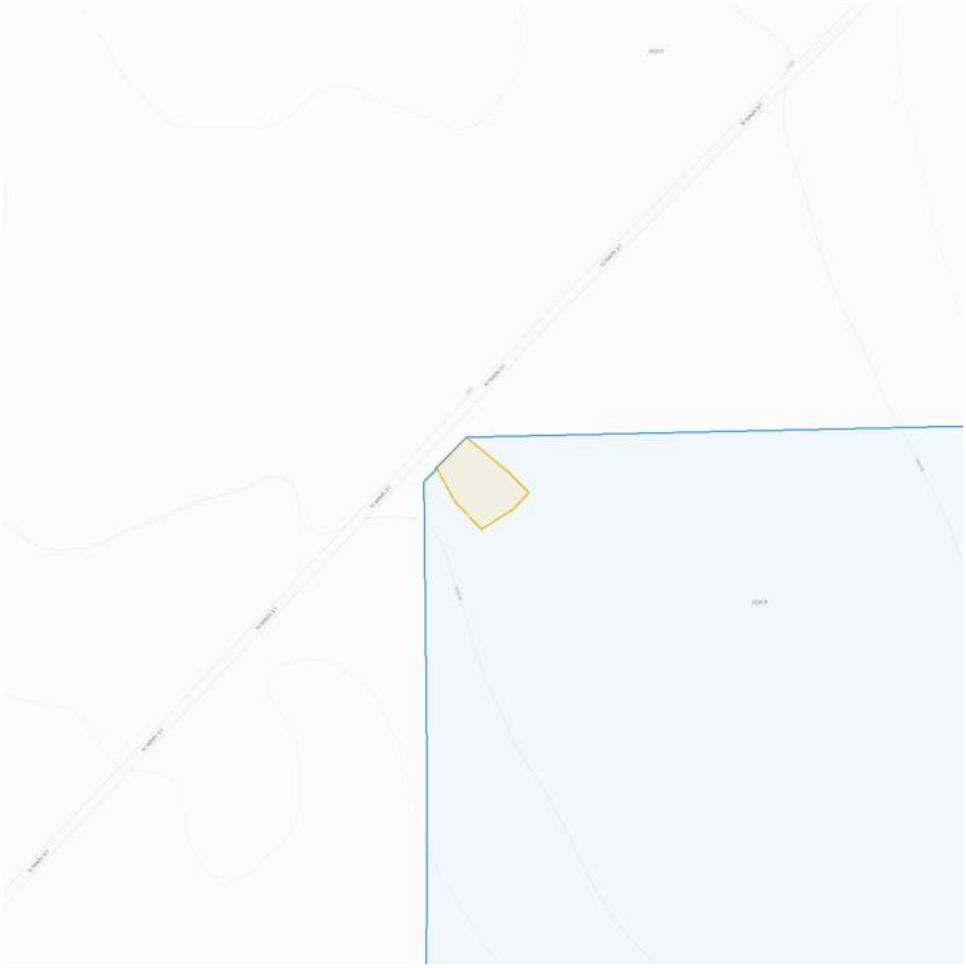
- Prepare the project site (terrestrial)
- In-ground utilities construction
- Rough grading

1.4.6.3.2 INCREASE IN IMPERVIOUS SURFACES

ANTICIPATED MAGNITUDE

The solar panels would be placed 5-10 feet above the soil surface with herbaceous cover below the panels. There would be no change in the impervious surface compared to the existing conditions for the solar array. The access drive would be constructed from crushed rock or gravel and would still allow for water to penetrate the surface.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Photovoltaic solar power plant

1.4.6.4 SOIL AND SEDIMENT

The topmost layer of earth on the landscape and its components (e.g., rock, sand, gravel, silt, etc.). This feature includes the physical characteristics of soil, such as depth, compaction, etc. Soil quality attributes (e.g, temperature, pH, etc.) should be placed in the Environmental Quality Features.

1.4.6.4.1 INCREASE IN DUST

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

The increase in dust would be temporary compared to the entire project duration of 6 months and would be less than the existing conditions as a row crop agricultural field.

CONSERVATION MEASURES

- Perennial vegetation cover
- NDEE SWPPP

STRUCTURES AND ACTIVITIES

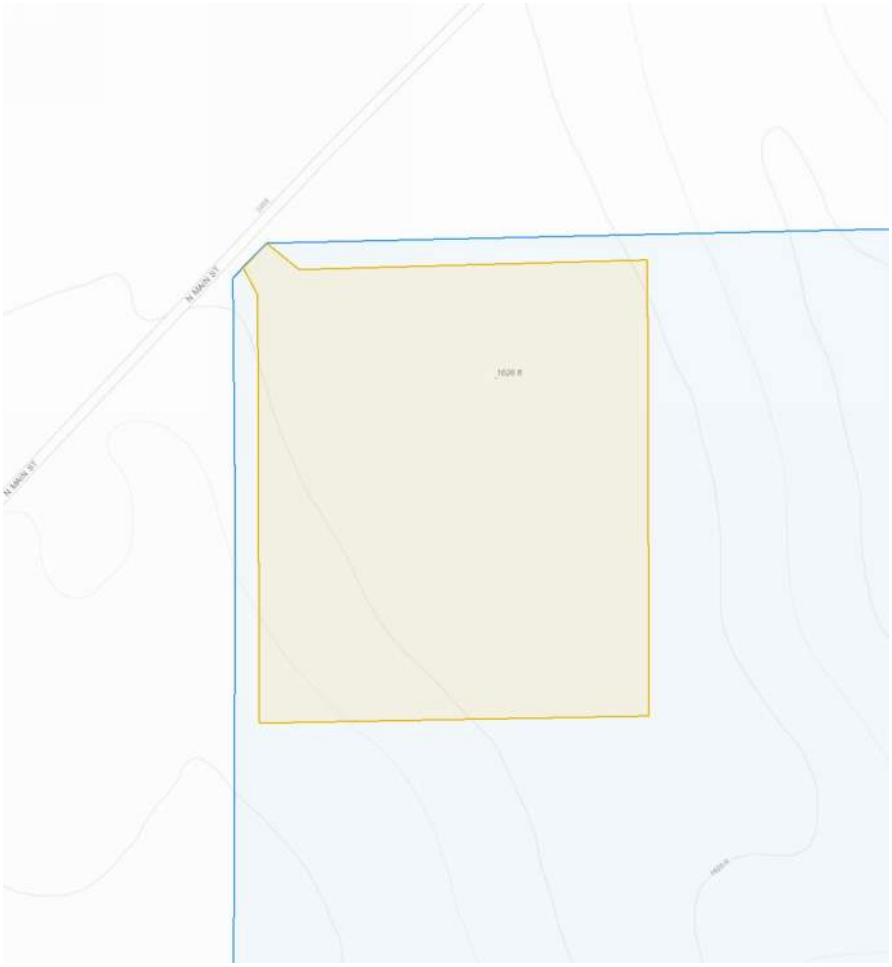
- Prepare the project site (terrestrial)
- Rough grading
- Access road construction

1.4.6.4.2 INCREASE IN SOIL COMPACTION

ANTICIPATED MAGNITUDE

Soil compaction would be limited to the access drive, the footprint of the transformers, and the supports of the solar panels. Overall, the compaction upon the soil would be minimal compared to the surrounding landscape and would be less than the existing conditions of heavy agricultural equipment on the field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- In-ground utilities construction
- Access road construction
- Erect supports
- Finish grading

1.4.6.5 ENVIRONMENTAL PROCESSES

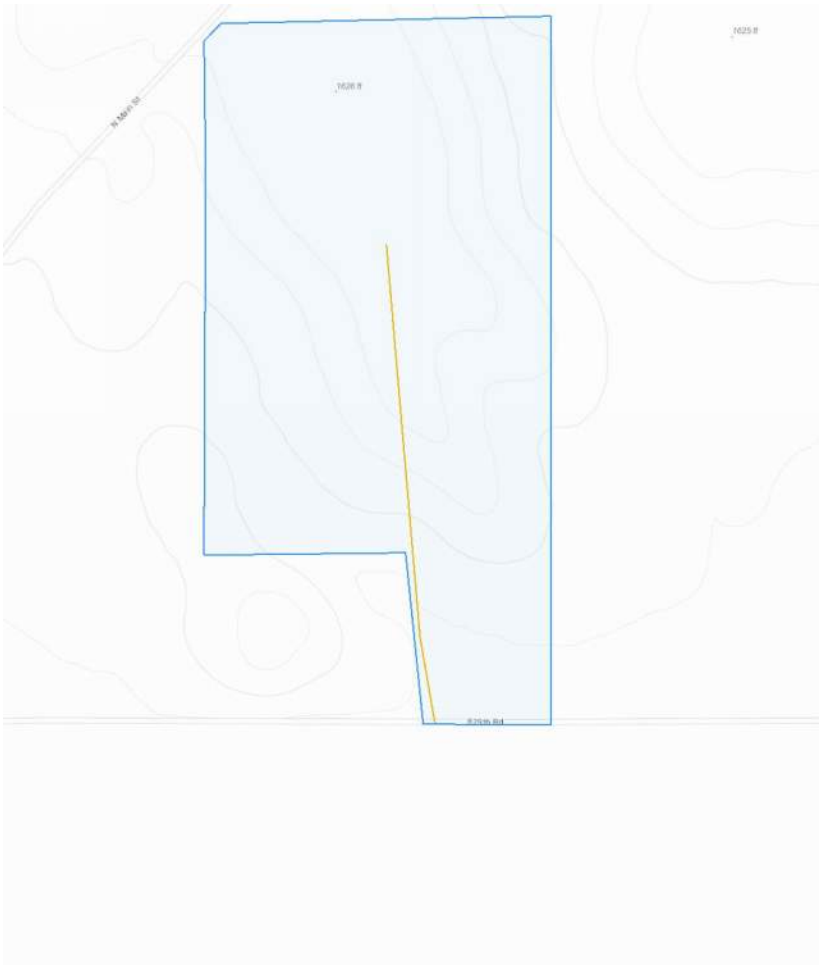
Abiotic processes that occur in the natural environment (e.g., erosion, precipitation, flood frequency, photoperiod, etc.).

1.4.6.5.1 CHANGE IN HYDROLOGY

ANTICIPATED MAGNITUDE

In ground utilities would be placed at a depth below the soil surface and would be restored to the existing condition. There would be no change to the hydrology of the site.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- In-ground utilities construction

1.4.6.5.2 INCREASE IN EROSION

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

BMPs identified in the SWPPP would limit erosion during construction. After construction a native pollinator seed mix would be used to provide permanent vegetation cover to stabilize the soil.

CONSERVATION MEASURES

- Perennial vegetation cover
- NDEE SWPPP

STRUCTURES AND ACTIVITIES

- In-ground utilities construction
- Access road construction
- Erect supports

1.4.6.6 HUMAN ACTIVITIES

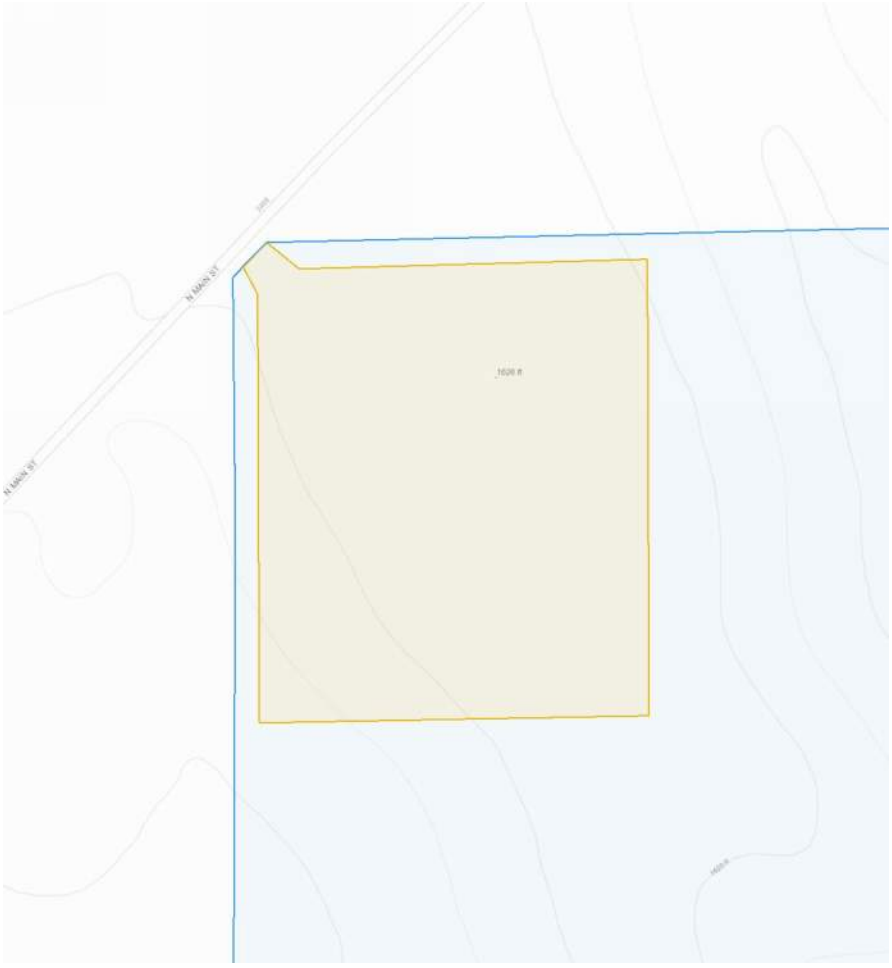
Human actions in the environment (e.g., fishing, hunting, farming, walking, etc.).

1.4.6.6.1 INCREASE IN HUMAN PRESENCE

ANTICIPATED MAGNITUDE

Human presence would be less than the existing conditions as a row crop agricultural field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

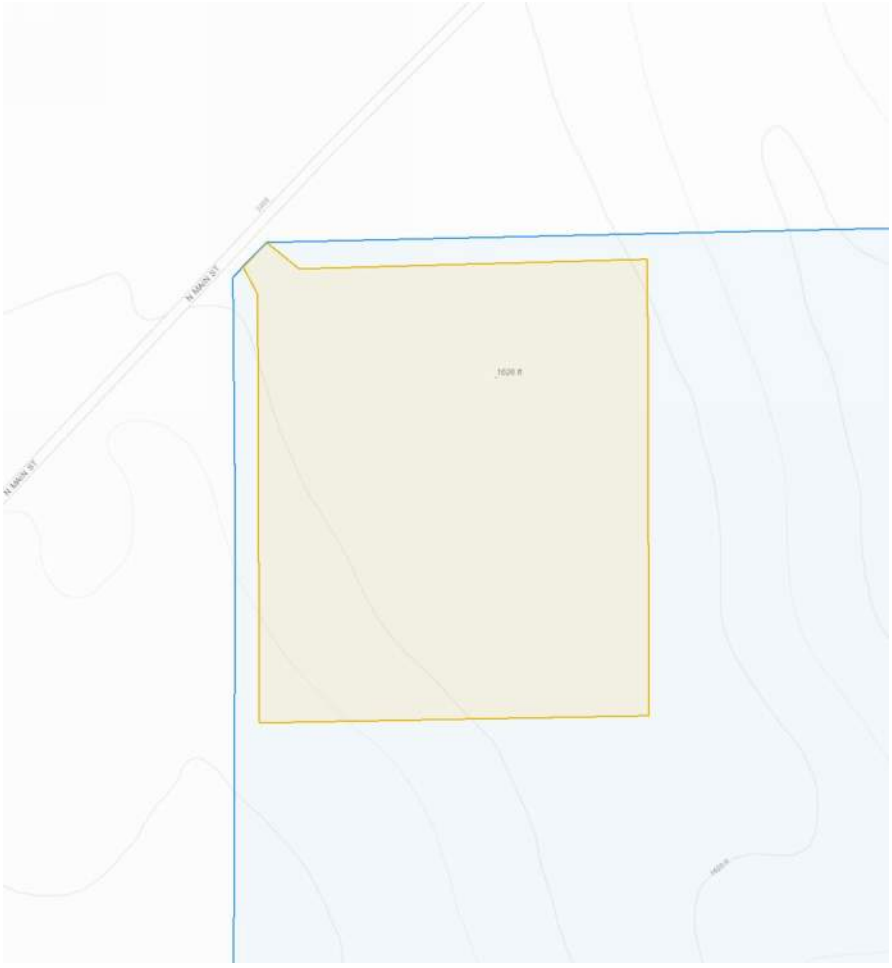
- Topographic surveys
- Staging area construction
- Prepare the project site (terrestrial)
- In-ground utilities construction
- Rough grading
- Erect supports
- Install inverters

1.4.6.6.2 INCREASE IN NOISE

ANTICIPATED MAGNITUDE

The increase in noise would be less than the duration of the project and overall would be less than the existing conditions as row crop agricultural field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- Prepare the project site (terrestrial)
- Rough grading
- Access road construction
- Erect supports

1.4.6.6.3 INCREASE IN SOIL DISTURBANCE

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

Soil disturbance would be less than the overall duration of the project and would be less than the existing conditions as a row crop agricultural field.

CONSERVATION MEASURES

- Perennial vegetation cover
- NDEE SWPPP

STRUCTURES AND ACTIVITIES

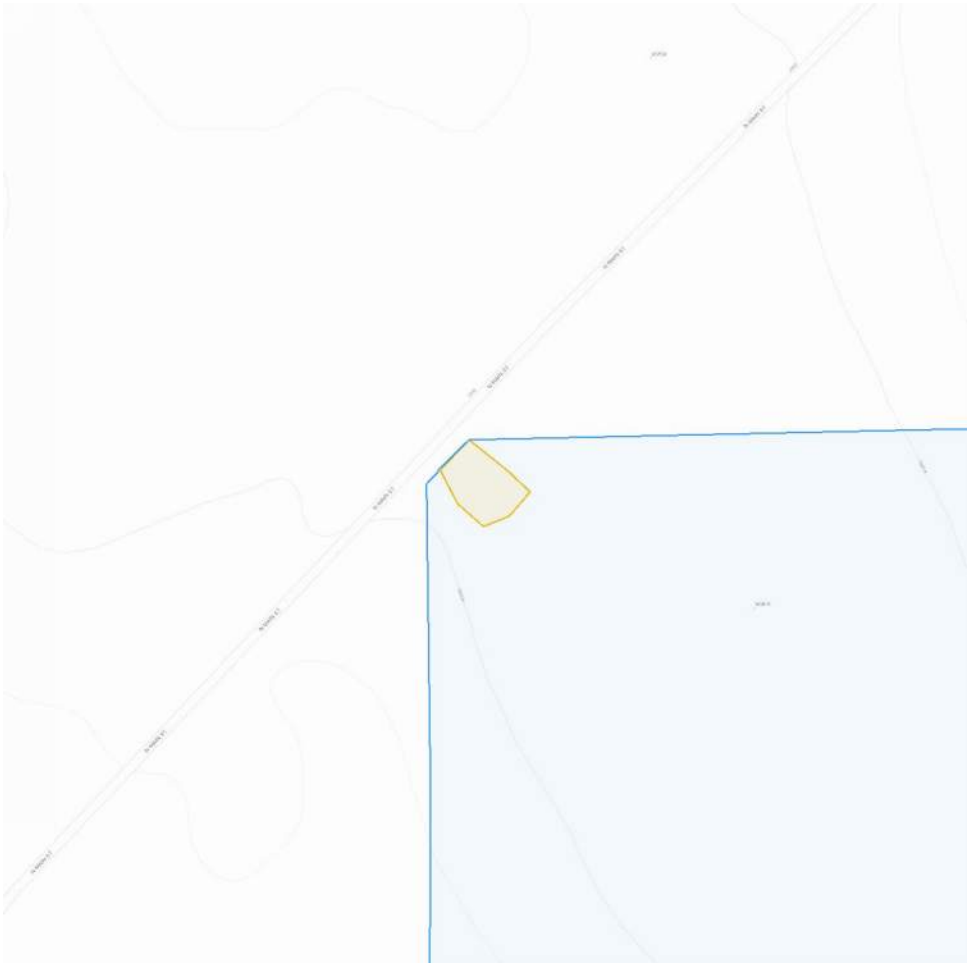
- Install permanent fence
- In-ground utilities construction
- Finish grading

1.4.6.6.4 INCREASE IN VEHICLE TRAFFIC

ANTICIPATED MAGNITUDE

Vehicular traffic would increase during the 6 month timeframe of construction. Upon completion of the project a single vehicle may be present at the site 1 time a month and would be limited to the access drive on the NW corner of the property. The vehicle presence on the site would be less than the existing conditions.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

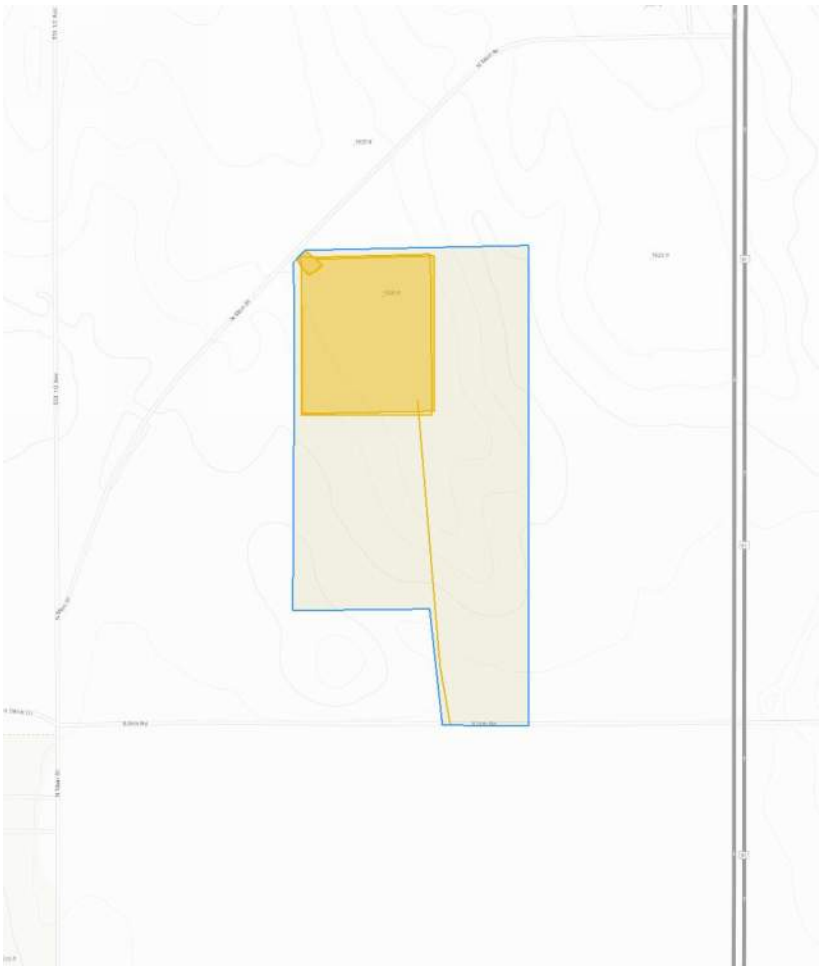
CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- Prepare the project site (terrestrial)
- Rough grading
- Erect supports

1.5 ACTION AREA



LEGEND

Project footprint

Stressor location

1.6 CONSERVATION MEASURES

1.6.1 NDEE SWPPP

DESCRIPTION

An NDEE SWPPP will be developed prior to construction and implemented. Native vegetation seeded beneath the solar array will stabilize soil, capture stormwater, and reduce sediment load in stormwater exiting the action area.

STRESSORS

- Increase in dust
- Increase in erosion
- Increase in soil disturbance

DIRECT INTERACTIONS

- disturbance
- facilitate movement
- vehicle / vessel strike

1.6.2 PERENNIAL VEGETATION COVER

DESCRIPTION

Following construction, native perennial vegetation will be seeded among the solar array. Butterfly milkweed and common milkweed are included in the seed mixture among other native grasses and forbs. Recommended site management from the Nebraska Department of Transportation is to completely mow the vegetation every four or five years and that mowing of sites should not occur from May 1st through October 1st, with selective cutting of weedy forbs greater than five feet tall.

STRESSORS

- Increase in air temperature
- Increase in dust
- Increase in erosion
- Increase in soil disturbance

DIRECT INTERACTIONS

- disturbance
- facilitate movement
- vehicle / vessel strike

1.7 PRIOR CONSULTATION HISTORY

Consultation with the agencies listed above is currently underway. Letters will be submitted on 6/12/2023 and will have 30-days to respond as part of the NEPA process.

1.8 OTHER AGENCY PARTNERS AND INTERESTED PARTIES

Agencies to be contacted as part of the NEPA Environmental Review:

- NeSHPO
- Apache Tribe of Oklahoma
- Cheyenne and Arapahoe Tribe of Oklahoma
- Omaha Tribe of Nebraska
- Pawnee Nation of Oklahoma
- Ponca Tribe of Nebraska
- NRCS
- NPS
- NeNRD
- Lower Elkhorn NRD
- NGPC
- USACE

1.9 OTHER REPORTS AND HELPFUL INFORMATION

Four articles are attached to this listing: the Species Status Assessment for monarch butterflies, an article on monarch butterfly use of different species of milkweed, an article on monarch butterfly ecology in the Great Plains, and an article and list on the NDOT native pollinator vegetation mix.

RELEVANT DOCUMENTATION

- Pocius_et_al_2018_Monarch_butterflies_do_not_place_all_of_their_eggs_in_one_basket
- NDOT_veg_m058-establishment-of-wildflower-islands
- Monarch-Butterfly-SSA-Report-September-2020
- Grant_et_al_2022_Monarch_Butterfly_Ecology_Behavior_and_Vulnerabilities_in_North_Central_United

2 SPECIES EFFECTS ANALYSIS

This section describes, species by species, the effects of the proposed action on listed, proposed, and candidate species, and the habitat on which they depend. In this document, effects are broken down as direct interactions (something happening directly to the species) or indirect interactions (something happening to the environment on which a species depends that could then result in effects to the species).

These interactions encompass effects that occur both during project construction and those which could be ongoing after the project is finished. All effects, however, should be considered, including effects from direct and indirect interactions and cumulative effects.

2.1 MONARCH BUTTERFLY

2.1.1 STATUS OF THE SPECIES

This section should provide information on the species' background, its biology and life history that is relevant to the proposed project within the action area that will inform the effects analysis.

2.1.1.1 LEGAL STATUS

The Monarch Butterfly is federally listed as 'Candidate' and additional information regarding its legal status can be found on the ECOS species profile.

2.1.1.2 RECOVERY PLANS

Available recovery plans for the Monarch Butterfly can be found on the ECOS species profile.

2.1.1.3 LIFE HISTORY INFORMATION

Note - the monarch is a candidate species and not yet listed or proposed for listing. Consultation with U.S. Fish and Wildlife Service under section 7 of the Endangered Species Act is not required for candidate species, like the monarch. We encourage agencies, however, to take advantage of any opportunity they may have to conserve the species.

For information on monarch conservation, visit https://www.fws.gov/savethemonarch/, http://www.mafwa.org/?page_id=2347, and, for the West, https://wafwa.org/committees-working-groups/monarch-working-group/.

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side of the wings. Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic.

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily Asclepias spp.), and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic chemicals (cardenolides) as a defense against predators. The larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months.

In many regions where monarchs are present, monarchs breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km and last for over two months. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again.

IDENTIFIED RESOURCE NEEDS

Native vegetation

Specific life stages of the monarch butterfly rely solely on plants in the milkweed genus.

2.1.1.4 CONSERVATION NEEDS

Critical resources for the monarch butterfly are larval food and habitat (milkweed), adult food (nectar resources), and overwintering habitat. Urban development and use of herbicides impacts the availability of food for both larvae and adult monarch butterflies. Conservation and restoration of native grasslands and restoration of milkweed in agricultural areas are key in increasing and maintaining the populations of larval and adult monarchs. Additionally, conservation of overwintering forest habitats is necessary to support the annual life cycle of the monarch butterflies and ensure the population is able to migrate and reproduce following winter.

2.1.2 ENVIRONMENTAL BASELINE

*The environmental baseline describes the species' health **within the action area only** at the time of the consultation, and does not include the effects of the action under review. Unlike the species information provided above, the environmental baseline is at the scale of the Action area.*

2.1.2.1 SPECIES PRESENCE AND USE

The monarch butterfly uses milkweeds as the exclusive host plants for its egg and larval stages. The chrysalis stage of monarch butterflies are typically formed on safe, solid places like a woody twig. Adult monarch butterflies feed on a wide variety of plant nectars. Since the project site is currently row-crop agriculture, it is likely that monarch butterflies do not utilize the habitat in great numbers, due to a lack of host plants.

2.1.2.2 SPECIES CONSERVATION NEEDS WITHIN THE ACTION AREA

Within the project site, milkweed and other flowering plants likely exist at a minimal amount since the project is currently a row-crop agricultural site. Prior to construction of the solar array, vegetation in the project site is mostly represented by soybean or corn, and any additional vegetation likely occurs in the right-of-way of the roads or any vegetation fragments not being farmed. Following construction of the solar array, the 15-acre construction area will be seeded with a native Nebraska pollinator vegetation seed mix. Common milkweed (*Asclepias syriaca*) and butterfly milkweed (*Asclepias tuberosa*) will be included in the seed mix applied to the project site, as well as many other native forbs and grasses. These present increased opportunities for monarch reproduction and greater availability of food resources for both larval and adult stages of the monarch butterfly.

2.1.2.3 HABITAT CONDITION (GENERAL)

The existing habitat condition for the monarch butterfly in the action area is poor in quality. Land-use in the action area appears to be cropland. Any existing forbs and other nectar sources would not be contiguous with any sections of habitat. Adjacent lands to the action area are also occupied by cropland and would present the same quality of habitat as the action area.

2.1.2.4 INFLUENCES

The action area is located with the tallgrass prairie ecoregion of Nebraska. Historically, the action area would have been occupied by native upland vegetation, and it is likely that milkweed plants were among the vegetation. At some point, the action area was converted into agricultural land. Due to the obligate reliance of monarch butterflies on milkweed plants, it is likely that monarch butterflies had a very low occupancy and use of the action area following conversion. Potential applications of herbicides would have further decreased any remaining milkweed plants, and any use of insecticides would have resulted in monarch larval and adult mortality. The use of the action area as cropland would also have greatly reduced the availability of other nectar-bearing vegetation. Adult monarchs are not obligate milkweed feeders, but with low availability of other native vegetation, it is still unlikely that adult monarchs would have utilized the action area regularly.

Monarch butterflies are also vulnerable to climatic change. The action area falls within the summer breeding range of the monarch butterfly. In the SSA, rising temperatures are identified as a potential negative impact to monarch fecundity and mating success. Consistent higher temperatures result in lower survival and temperatures beyond a certain threshold may already account for monarch absence in certain regions of the southern U.S. during the summer. Additionally, changes in weather patterns may result in alterations in suitable habitat and seasonal availabilities of nectar resources.

2.1.2.5 ADDITIONAL BASELINE INFORMATION

The current environmental baseline for the action area consists of low quality habitat, likely with little to no presence of milkweed, the obligate host plant for the monarch butterfly. Following construction, permanent impacts on monarch butterflies in the action area are expected to be positive. The use of native Nebraska vegetation (including milkweed plants) within the solar array provides a new opportunity for fecundity and increases habitat that does not currently exist within the action area.

2.1.3 EFFECTS OF THE ACTION

This section considers and discusses all effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

2.1.3.1 INDIRECT INTERACTIONS

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Native vegetation (specific life stages of the monarch butterfly rely solely on plants in the milkweed genus.)			***This resource is not present in the action area*** Due to the use of the project action area as cropland, it is likely that no milkweed is present, and if any milkweed is present, it is likely a negligible amount fragmented from other grassland habitat. Aerial visuals of the action area indicate little to no presence of native vegetation.	***There will be no impacts to this resource, so no individuals will be affected.***

2.1.3.2 DIRECT INTERACTIONS

DIRECT IMPACT	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
Disturbance	Perennial vegetation cover NDEE SWPPP	No	The project action area consists entirely of cropland so monarch butterflies and their habitats will not be disturbed during construction. Planting of native Nebraska vegetation following construction is likely to increase available pollinator habitat.
Facilitate movement	Perennial vegetation cover NDEE SWPPP	Yes	Once the project is in place, the establishment of native Nebraska vegetation beneath the solar array should provide an increase in local habitat availability for monarch butterflies. Estimating the exact impact of this is challenging to quantify, but any increase in pollinator habitat should be beneficial to adult butterflies. Additionally, the inclusion of butterfly milkweed and common

DIRECT IMPACT	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
			milkweed in the planned vegetation will provide increased habitat for egg-stage and larval-stage monarch butterflies.
Vehicle / vessel strike	Perennial vegetation cover NDEE SWPPP	No	It is unlikely that adult monarch butterflies will be traversing the action area during construction due to a lack of habitat.

2.1.4 CUMULATIVE EFFECTS

Maintenance of the solar array is likely to be minimal. Vegetation may have to be mowed once or twice a year depending on vegetation height. Any disturbance resulting from long-term maintenance of the solar array will be less than current disturbance in the action area from cropland management.

2.1.5 DISCUSSION AND CONCLUSION

DETERMINATION: NLAA

COMPENSATION MEASURES

Impacts to the monarch butterfly from this project should be beneficial. Construction of the solar array and the resulting change in vegetation creates an increase in nectar sources and reproductive habitat for monarch butterflies in the area. Any negative impacts to monarch butterflies would occur during construction of the solar array and are unlikely due to a lack of suitable habitat currently in the action area.

2.2 PALLID STURGEON

This species has been excluded from analysis in this environmental review document.

JUSTIFICATION FOR EXCLUSION

The project site does not include any waterways and the project will have a minimal use of water. Pallid sturgeon inhabit large channels with strong current. The nearest river to the project site, the Platte River, is located approximately 30 miles to the south.

2.3 PIPING PLOVER

This species has been excluded from analysis in this environmental review document.

JUSTIFICATION FOR EXCLUSION

The piping plover is a small shorebird that nests in sandy substrates along shorelines. In the Great Plains, piping plover nests are primarily located along river shorelines, including but not limited to, the Platte River, the Missouri River, and the Elkhorn River. Due to a lack of waterways within the project site, impacts to this species are not likely to occur. The nearest mapped critical habitat for the piping plover is along the Missouri River, approximately 70 miles to the north.

2.4 TOPEKA SHINER

This species has been excluded from analysis in this environmental review document.

JUSTIFICATION FOR EXCLUSION

Although critical habitat for the topeka shiner is located less than one mile west of the project site, impacts to this species are not expected due to a lack of waterways and wet features within the project site. Urban development and agricultural fields separate the project site from any critical habitat. The project will not use enough water to require a septic or county sewer connection.

3 CRITICAL HABITAT EFFECTS ANALYSIS

No critical habitats intersect with the project action area.

4 SUMMARY DISCUSSION AND CONCLUSION

4.1 SUMMARY DISCUSSION

Overall, effects from the construction of the Madison County Solar Array should be beneficial. Currently, as cropland, the action area does not benefit any threatened and endangered species. Corn and soybeans do not provide a nectar resource for adult monarch butterflies, and larval monarch butterflies only feed on milkweed. Milkweed plants in the action area are unlikely to be present due to agricultural disturbance; if any milkweed is present, it likely exists without a connection to other pollinator habitat. Following construction of the project and seeding of native vegetation, available pollinator habitat should be greatly increased. Additionally, with the inclusion of butterfly milkweed and common milkweed, construction of the project should have a long-term beneficial impact on monarch butterflies by increasing suitable reproductive habitat and food resources.

4.2 CONCLUSION

In conclusion, impacts to threatened and endangered species should either not occur or should be beneficial to species present in the area. The only species that may directly use the project action area is the monarch butterfly, a candidate species for listing. A lack of native vegetation in the action area at present suggest little to no use of the project action area by the monarch butterfly. Other threatened and endangered species listed within the IPaC do not have suitable habitat within or adjacent to the project action area. Resulting changes in vegetation from cropland to native vegetation in the project area following construction should be beneficial to multiple species, including the monarch butterfly and other pollinators.

U.S. Fish and Wildlife Service
Based on the information provided, you may consider this project to be in compliance with the Endangered Species Act of 1973, as ammended, 16 U.S.C. 1531 *et. seq.* The project should be reanalyzed by our office if any new information indicates there may be effects to protected species or their habitats.

MARK PORATH
Digitally signed by MARK PORATH
Date: 2023.07.28 13:57:34 -05'00'

Project Leader, Nebraska Field Office Supervisor

June 12, 2023

Mr. Jeff Runge
U. S. Fish and Wildlife Service
9325 South Alda Road
Wood River, NE 68883

RE: United States Department of Agriculture - Rural Development
Bluestem Energy Solutions, LLC. Madison, Nebraska

Dear Mr. Runge:

Olsson, Inc (Olsson), on behalf of Bluestem Energy Solutions, LLC (Bluestem), is to provide information to the United States Department of Agriculture (USDA)-Rural Development in the process of completing a National Environmental Policy Act (NEPA) review to assess the environmental impacts of the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison, Madison County, Nebraska. After construction of the property, the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the solar array to the southwest corner of the property to connect to the existing overhead power lines along 829th Road. The purpose of the Project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources. Enclosed are a series of maps that depict the proposed Project's area of potential affect for all construction activities.

The proposed project does not represent a "major construction activity" as defined in 50 CFR 402.02. The USDA does not think the project will result in an undertaking of any Federally-listed or proposed threatened or endangered species. Please advise us of any concerns you may have related to possible effects of the Project listed above on such species or critical habitat. Nebraska Games and Parks Commission have also been notified.

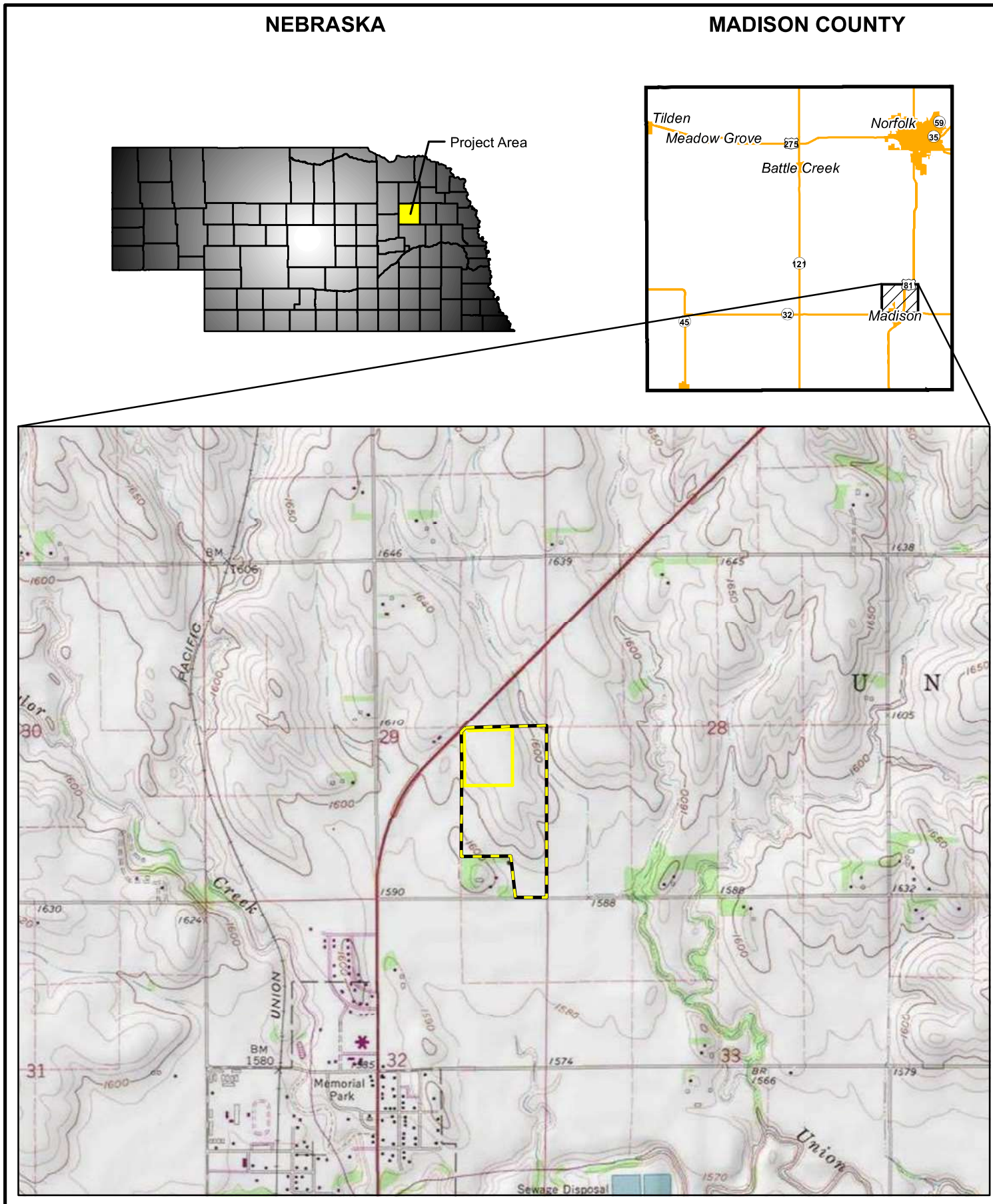
We would appreciate a response within 30 days. If you need any further information or wish to discuss the Project, please contact Chase Jelden at 308-708-7650 or cjelden@olsson.com

Sincerely,

Chase Jelden
Natural Resources and Planning

Olsson
2111 South 67th Street, Suite 200
Omaha, NE 68106

Enclosure: Site Location Map
Site Map
Site Plan
CERT
IPaC



N

0 500 1,000 2,000 ft

1 " = 2,000 '

Solar Array

Property

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Project Location Map

Figure 1

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WGS 1984 ARC System Zone 11

Basemap: USA Topo Maps

N

0 87.5 175 350

ft

1 " = 350 '

Solar Array

Property

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Site Map

Figure 2

WGS 1984 ARC System Zone 11

Basemap: Google Satellite

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MADISON COUNTY SOLAR LAYOUT
SYSTEM SIZE DC: 2.88 MW
SYSTEM SIZE AC: 2.00 MW

MODULE: ET SOLAR 385 WATTS
TOTAL # OF MODULES: 7,488
TOTAL # OF STRINGS: 288
MODULES PER STRING: 26
STRINGS PER INVERTER: 18

SINGLE AXIS TRACKER SYSTEM

INVERTERS:
CHINT CPS-SCH125KTL-DO-US-600
TOTAL # OF INVERTERS: 16

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

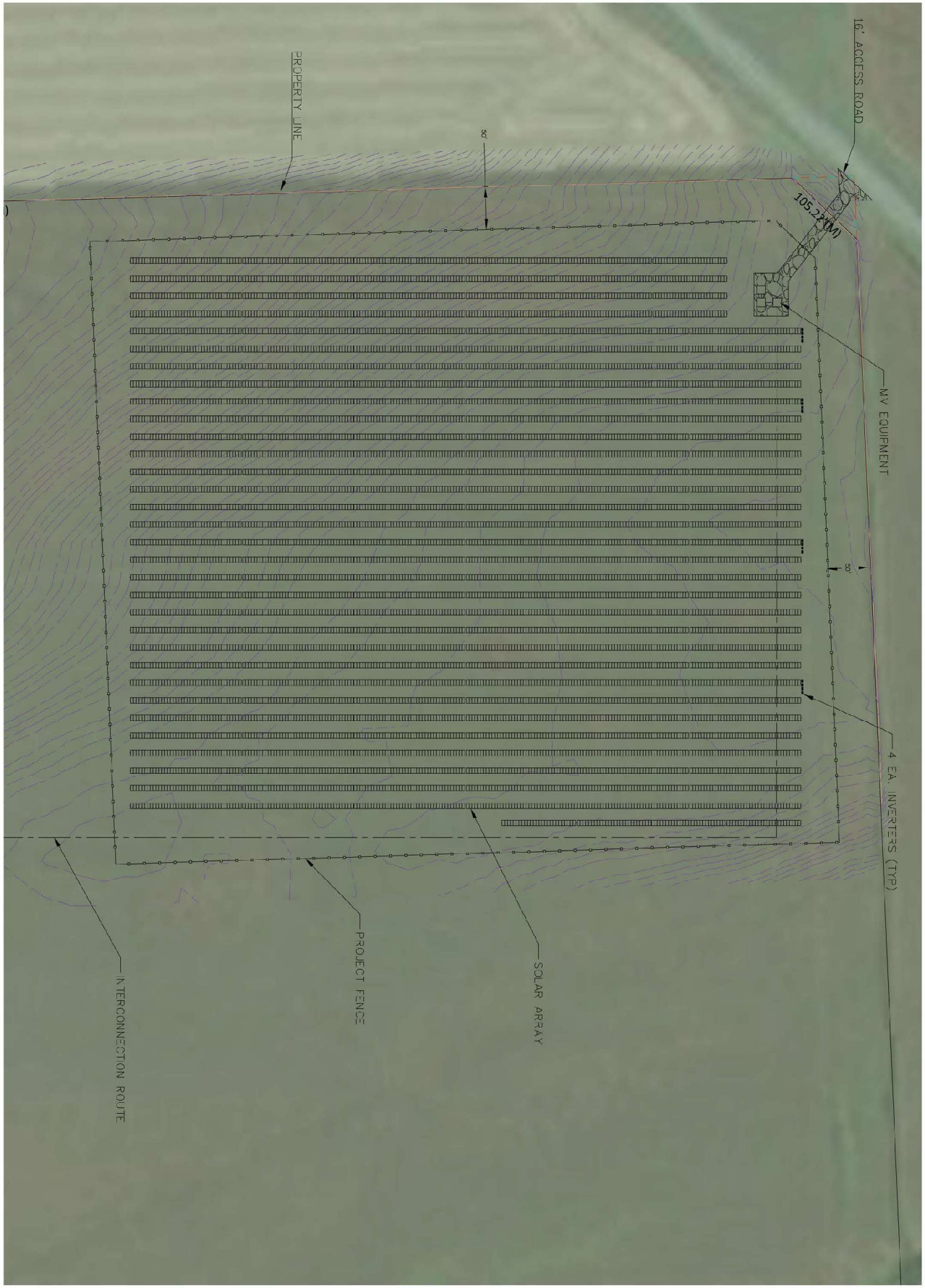
The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 200'

OVERALL SITE

G1.0



G1.1

SOLAR ARRAY

SCALE 1" = 50'

DATE: 1/27/2023

MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

Boyd Jones

950 S 10TH ST, STE 100
OMAHA, NE 68108

POI LOCATION

SCALE 1" = 30'

DATE: 12/7/2022

G1.2

Environmental Review Report

Project Information

Report Generation Date:	6/6/2023 04:43:02 PM
Project Title:	Bluestem Solar Array, Madison County, Nebraska
User Project Number(s):	023-03812
System Project ID:	NE-CERT-009896
Project Type:	Energy Production/Storage/Transfer, Solar
Project Activities:	None Selected
Project Size:	69.55 acres
County(s):	Madison
Watershed(s):	Elkhorn
Watershed(s) HUC 8:	Lower Elkhorn
Watershed(s) HUC 12:	Middle Union Creek
Biologically Unique Landscape(s):	None
Township/Range and/or Section(s):	T22R01WS29
Latitude/Longitude:	41.848419 / -97.447653

Contact Information

Organization:	Olsson
Contact Name:	Chase Jelden
Contact Phone:	4024746311
Contact Email:	cjelden@olsson.com
Contact Address:	601 P Street, Suite 200 Lincoln NE 68508
Prepared By:	
Submitted On Behalf Of:	USDA-RD

Project Description

Bluestem Energy Solutions, LLC (Bluestem) is a developer, owner, and operator of renewable energy resources and works to identify, develop, and implement local energy solutions for utilities. Bluestem has proposed the Madison County Solar Array, a Project would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed project is positioned on an existing parcel that is approximately 68-acres that is located in Madison, Madison County, Nebraska. More specifically, the Project is located on parcel number 590137032 and the legal property description of PT E1/2 SE1/4 LESS HWY 29-22-1. (Figure 1, Appendix A). The Project site is located south North Main Street and west of Untied States Highway 81 (US-81). The Project area encompasses the entire the northwest portion of the property with the solar array (approximately 15 acres) and underground conduit would extend south beyond the solar array to 829th Road. The project site is surrounded by row crop agriculture in all directions with a small area on the northwest portion directly abutting North Main Street and the ROW, the southwest corner abuts a rural residential property, and the south boundary abuts 829th Road and the ROW. An aerial view of the existing parcel and the Project area is depicted on the Site Map (Figure 2, Appendix A). The Madison County Solar Array will contain approximately 32 rows and containing up to 7,488 Photovoltaic (PV) cell panels or modules, that may be five (5) to seven (7) feet from the ground. The modules will be positioned on a single axis tracking system rotating east to west following the path of the sun throughout the day. Row spacing will be approximately 20 feet between rows. A total of 16 inverters would be used throughout the array to covert the DC electricity to AC electricity, which the electrical grid uses. A white rock or gravel access road will be located at the entrance to the array on the northwest corner of the property. The entire property would be enclosed with a six (6) feet tall chain link fence that would also contain three strands of barbed wire on top of the fence to provide additional security to the property. After construction of the property the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the property line from the southeast corner of the property to connect to the existing overhead power lines along 829th Road. The proposed Project is depicted in the Site Plan Map attached (Figure 3, Appendix A) Bluestem will own, operate, and maintain the system. The Project will provide locally generated energy, result in increased income for landowners, and enhance the economy and tax base for Madison County. The Project will be constructed in approximately six (6) months during Q1 and Q2 of 2025.Upon completion the Project will require routine maintenance that would be performed by offsite labor personnel. The Project will not require a septic or county sewer connection. If water use is required, the use would be minimal and would likely come from the municipal source or would be sourced from an onsite well. The purpose of the project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources.

Introduction

The Nebraska Game and Parks Commission (Commission) and the U.S. Fish and Wildlife Service (Service) have special concerns for endangered and threatened species, migratory birds, and other fish and wildlife and their habitats. Habitats frequently used by fish and wildlife species are wetlands, streams, riparian areas, woodlands, and grasslands. Special attention is given to proposed projects which modify wetlands, alter streams, result in loss of riparian habitat, convert/remove grasslands, or contaminate habitats. When this occurs, the Commission and Service recommend ways to avoid, minimize, or compensate for adverse effects to fish and wildlife and their habitats.

CONSULTATION PURSUANT TO THE NEBRASKA NONGAME AND ENDANGERED SPECIES CONSERVATION ACT (NESCA)

The Commission has responsibility for protecting state-listed endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). Pursuant to § 37-807 (3) of NESCA, all state agencies shall, in consultation with the Commission, ensure projects they authorize (i.e., issue a permit for), fund or carry out do not jeopardize the continued existence of state-listed endangered or threatened species or result in the destruction or modification of habitat of such species which is determined by the Commission to be critical. If a proposed project may affect state-listed species or designated critical habitat, further consultation with the Commission is required.

Informal consultation pursuant to NESCA can be completed by using the Conservation and Environmental Review Tool (CERT). The CERT analyzes the project type and location, and based on the analysis, provides information about

potential impacts to listed species, habitat questions and/or conservation conditions.

- If project proponents agree to implement conservation conditions, as outlined in the report and applicable to the project type, then this document serves as documentation of consultation and the following actions can be taken to move forward with the project:
    - Sign the report in the designated areas.
    - Upload the signed PDF as part of their "final" project submittal.
    - By agreeing to and implementing the conservation conditions as outlined (if applicable), then further consultation with the Commission is not required.
- If the report indicates the project may have impacts on state-listed species, then the following actions must be taken:
    - Project proponent is required to contact and consult with the Commission. Contact information can be found within this document.

TECHNICAL ASSISTANCE AND CONSULTATION PURSUANT TO THE ENDANGERED SPECIES ACT (ESA)

The Service has responsibility for conservation and management of fish and wildlife resources for the benefit of the American public under the following authorities: 1) Endangered Species Act of 1973 (ESA); 2) Fish and Wildlife Coordination Act; 3) Bald and Golden Eagle Protection Act; and 4) Migratory Bird Treaty Act. The National Environmental Policy Act (NEPA) requires compliance with all of these statutes and regulations.

Pursuant to section 7(a)(2) of ESA, every federal agency, shall in consultation with the Service, ensure that an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

If a proposed project may affect federally listed species or designated critical habitat, Section 7 consultation is required with the Service. It is the responsibility of the lead federal action agency to fully evaluate all potential effects (direct and indirect) that may occur to federally listed species and critical habitat in the action area. The lead federal agency provides their effect determination to the Service for concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by implementation of the project, the lead federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of federal funds (section 7(d) of ESA), or issuing any federal permits or licenses.

The information generated in this report DOES NOT satisfy consultation obligations between the lead federal agency and the Service pursuant to ESA. For the purposes of ESA, the information in this report should be considered as TECHNICAL ASSISTANCE, and does not serve as the Service's concurrence letter, even if the user signs and agrees to implement conservation conditions in order to satisfy the consultation requirements of NESCA.

Overall Results

The following result is based on a detailed analysis of your project.

- Potential impacts on listed species may occur as a result of this project. Please proceed with the following: Sign and date the certification section. Upload the document as "final." Email a copy of the report with a request for review to the Nebraska Game and Parks Commission (ngpc.envreview@nebraska.gov) and copy the U.S. Fish and Wildlife Service (nebraskaes@fws.gov) for further consultation.

Additional Information

Potential impacts on listed species may occur as a result of this project. Further consultation with the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service is required.

Certification

I certify that ALL of the project information in this report (including project location, project size/configuration, project type, project activities, answers to questions) is true, accurate, and complete. If the project type, activities, location, size, or configuration of the project change, or if any of the answers to any questions asked in this report change, then this information is no longer valid and we recommend running the revised project through CERT to get an updated report.

Applicant/project proponent signature Date

Additional Considerations

Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668c) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Under the Eagle Act, “take” of eagles, their parts, nests or eggs is prohibited. Disturbance resulting in injury to an eagle or a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior is a form of “take.”

Bald eagles use mature, forested riparian areas near rivers, streams, lakes, and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and the wintering period extends from December-March. The golden eagle is found in arid open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Golden eagles are often a permanent resident in the Pine Ridge area of Nebraska. Additionally, many bald and golden eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5-miles of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching, and roosting habitats, respectively. The frequency and duration of eagle use of these habitats in the winter depends upon ice and weather conditions. Human disturbances and loss of wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These affects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species.

To comply with the Eagle Act, it is recommended that the project proponent determine if the proposed project would impact bald or golden eagles or their habitats. This can be done by conducting a habitat assessment, surveying nesting habitat for active and inactive nests, and surveying potential winter roosting habitat to determine if it is being used by eagles. The area to be surveyed is dependent on the type of project; however for most projects we recommend surveying the project area and a ½ mile buffer around the project area. If it is determined that either species could be affected by the proposed project, the Commission recommends that the project proponent notify the Nebraska Game and Parks Commission as well as the Nebraska Field Office, U.S. Fish and Wildlife Service for recommendations to avoid “take” of bald and golden eagles.

Migratory Bird Treaty Act and Nebraska Revised Statute §37-540

We recommend the project proponent comply with the Migratory Bird Treaty Act (16 U.S.C. 703-712: Ch. 128 *as amended*) (MBTA). The project proponent should also comply with Nebraska Revised Statute §37-540, which prohibits take and destruction of nests or eggs of protected birds (as defined in Nebraska Revised Statute §37-237.01). Construction activities in grassland, wetland, stream, woodland, and river bank habitats that would result in impacts on birds, their nests or eggs protected under these laws should be avoided. Although the provisions of these laws are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period of May 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For

example, raptors can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10. If development in this area is planned to occur during the primary nesting season or at any other time which may result in impacts to birds, their nests or eggs protected under these laws, we request that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. If a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities, the Nebraska Game and Parks Commission and the Nebraska Field Office, U.S. Fish and Wildlife Service should be contacted immediately. For more information on avoiding impacts to migratory birds, their nests and eggs, or to report active bird nests that cannot be avoided by planned construction activities, please contact the U.S. Fish and Wildlife Service and/or the Nebraska Game and Parks Commission (contact information within report). Adherence to these guidelines will help avoid unnecessary impacts on migratory birds.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires consultation with the U.S. Fish and Wildlife Service (Service) and the State fish and wildlife agency (i.e., Nebraska Game and Parks Commission) for the purpose of preventing loss of and damage to fish and wildlife resources in the planning, implementation, and operation of federal and federaly funded, permitted, or licensed water resource development projects. This statute requires that federal agencies take into consideration the effect that the water related project would have on fish and wildlife resources, to take action to prevent loss or damage to these resources, and to provide for the development and improvement of these resources. The comments in this letter are provided as technical assistance only and are not the document required of the Secretary of the Interior pursuant to Section 2(b) of FWCA on any required federal environmental review or permit. This technical assistance is valid only for the described conditions and will have to be revised if significant environmental changes or changes in the proposed project take place. In order to determine whether the effects to fish and wildlife resources from the proposed project are being considered under FWCA, the lead federal agency must notify the Service in writing of how the comments and recommendations in this technical assistance letter are being considered into the proposed project.

Section 404 of the Clean Water Act

In general, the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service have concerns for impacts to wetlands, streams and riparian habitats. We recommend that impacts to wetlands, streams, and associated riparian corridors be avoided and minimized, and that any unavoidable impacts to these habitats be mitigated. If any fill materials will be placed into waterways or wetlands, the U.S. Army Corps of Engineers Regulatory Office in Omaha should be contacted to determine if a 404 permit is needed.

Agency Contact Information

Nebraska Game and Parks Commission
Environmental Review Team
2200 North 33rd Street
Lincoln, NE 68503
phone: (402) 471-5423
email: ngpc.envreview@nebraska.gov

U.S. Fish and Wildlife Service

Nebraska Ecological Services
9325 South Alda Road
Wood River, NE 68883
phone: (308) 382-6468
email: nebraskaes@fws.gov

Bluestem Solar Array, Madison County, Nebraska

Aerial Image Basemap With Locator Map

3-mile Information Buffer Boundary

Project Review Boundary

Project Boundary

Project Size (acres): 69.55

Lat/Long (DD): 41.8484 / -97.4477

County(s): Madison

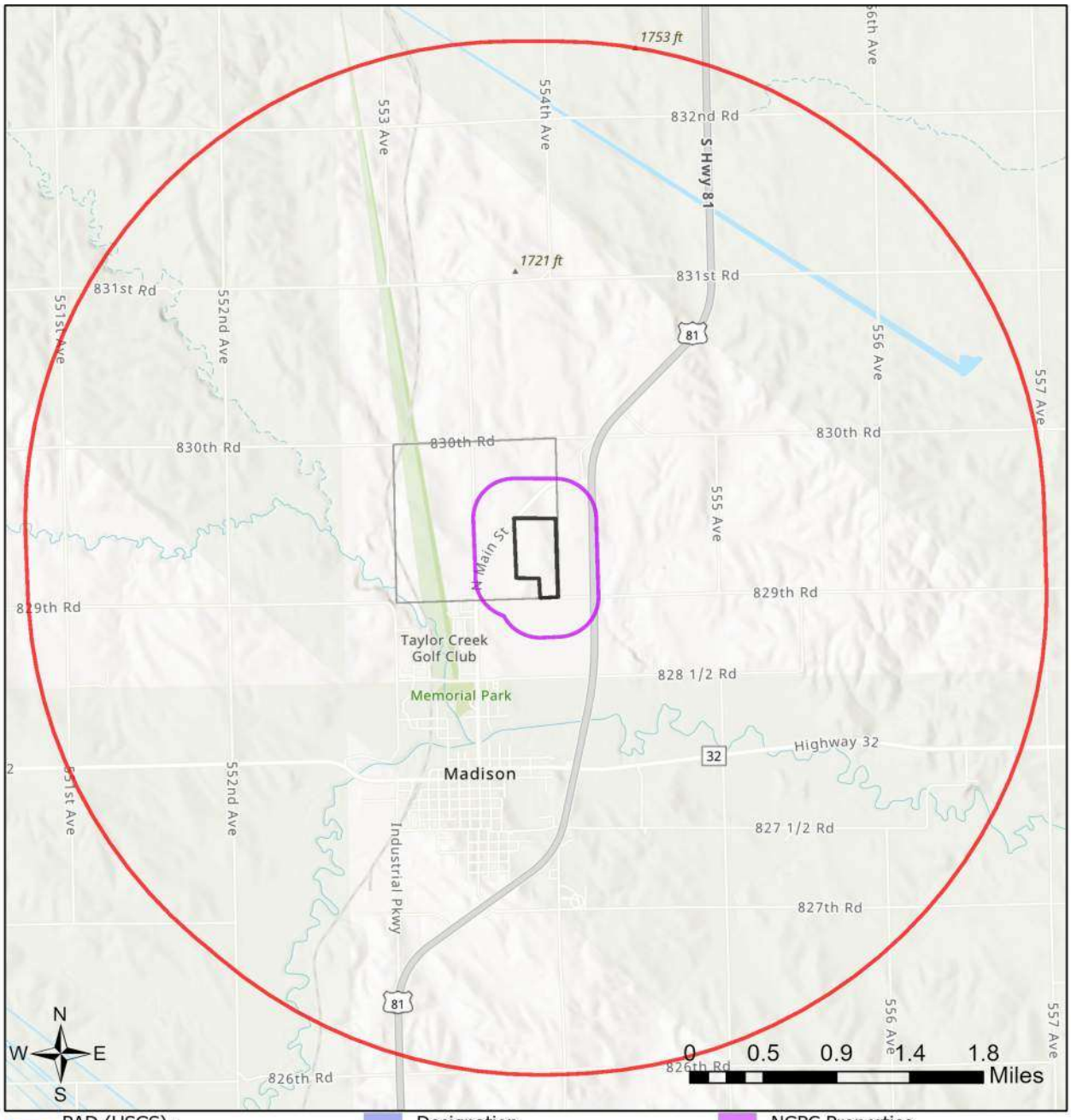
BUL(s):

Township/Range/Section(s): T22R01WS29

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Bluestem Solar Array, Madison County, Nebraska

Topographic Basemap With Sections and Protected Areas

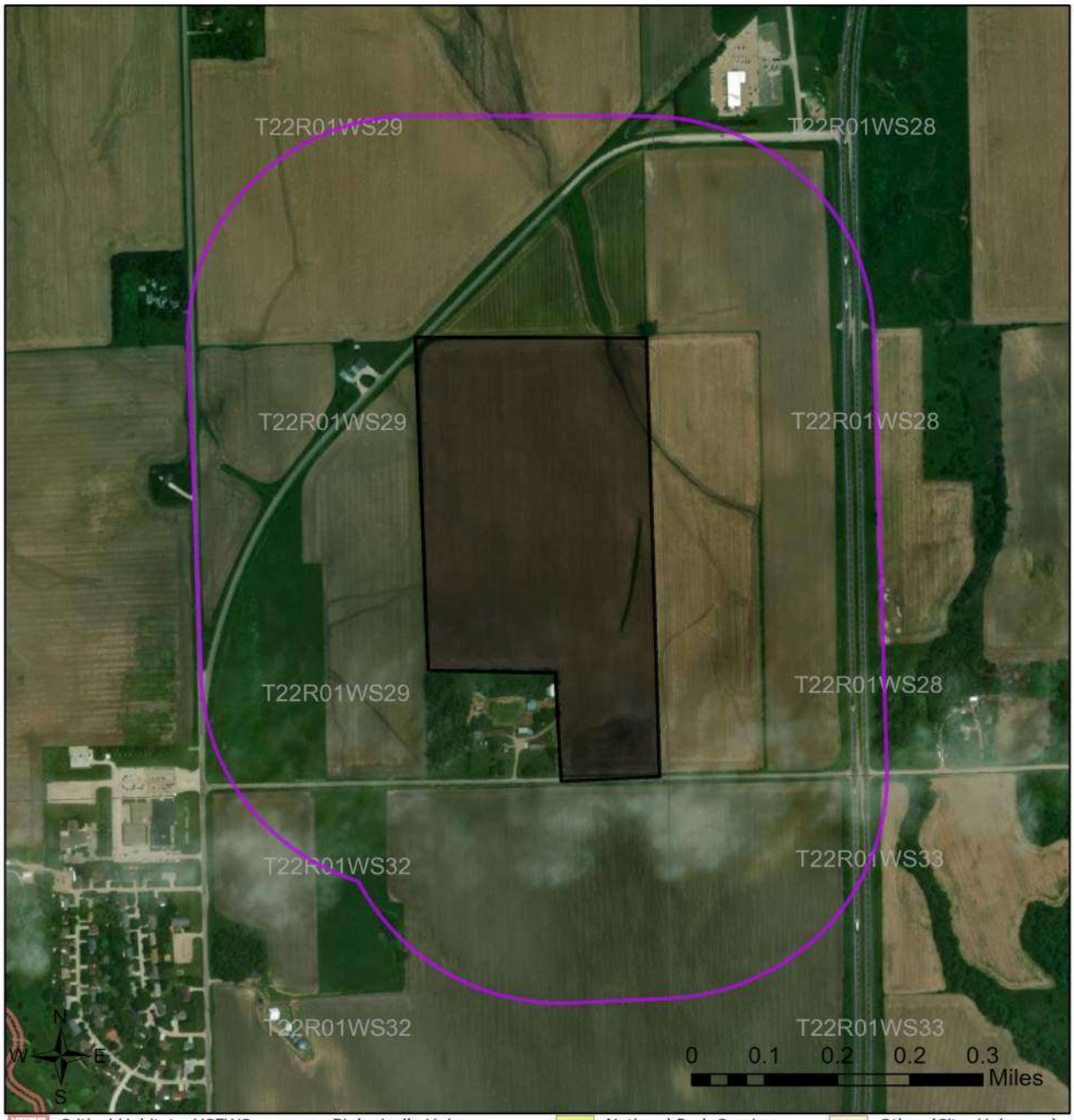


- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- NGPC Properties
- Sections
- 3-mile Information Buffer Boundary
- Project Review Boundary
- Project Boundary

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Bluestem Solar Array, Madison County, Nebraska

Web Map As Submitted By User



- Critical Habitat - USFWS
- Missouri National Recreation River
- Niobrara National Scenic River
- 1
- 2
- Biologically Unique Landscapes
- NGPC Properties
- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- Sections
- Townships
- Counties
- Project Review Boundary
- Project Boundary

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Table 1
Protected Areas in Immediate Vicinity of Project (project review area)

This table has no results.

Table 2
Documented Occurrences in Immediate Vicinity of Project (project review area):
Natural communities and selected special areas

This table has no results.

Table 3
Regional Documented Occurrences of Species within 1 Mile of Project Review Area:
Tier 1 and 2 at-risk species and additional S1-S3 plants

Scientific Name	Common Name	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Haliaeetus leucocephalus	Bald Eagle			Tier 2	S3	G5	Vertebrate Animal - Birds
Notropis topeka	Topeka Shiner	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Platanthera praeclara	Western Prairie Fringed Orchid	T	T	Tier 1	S2	G3	Vascular Plant - Monocots

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Ammodramus henslowii	Henslow's Sparrow	Range			Tier 1	S1	G4	Vertebrate Animal - Birds
Asio flammeus	Short-eared Owl	Range			Tier 1	S2	G5	Vertebrate Animal - Birds
Atrytone arogos iowa	Iowa Skipper	Range			Tier 1	S1	G2G3T2T3	Invertebrate Animal - Butterflies and Skippers
Boloria selene nebraskensis	Nebraska Fritillary	Range			Tier 1	SNR	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Calidris subruficollis	Buff-breasted Sandpiper	Range			Tier 1	S2N	G4	Vertebrate Animal - Birds
Catocala nuptialis	Married Underwing	Range			Tier 1	SNR	G3	Invertebrate Animal - Underwing Moths
Catocala whitneyi	Whitney Underwing	Range			Tier 1	S1	G2G3	Invertebrate Animal - Underwing Moths
Cicindela limbata limbata	Sandy Tiger Beetle	Range			Tier 1	S4	G5T3T4	Invertebrate Animal - Beetles
Coccyzus erythropthalmus	Black-billed Cuckoo	Range			Tier 1	S3	G5	Vertebrate Animal - Birds
Danaus plexippus	Monarch	Range			Tier 1	S2	G4	Invertebrate Animal - Butterflies

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
								and Skippers
Ellipsoptera lepida	Ghost Tiger Beetle	Range			Tier 1	S2	G3G4	Invertebrate Animal - Beetles
Emydoidea blandingii	Blanding's Turtle	Range		NC	Tier 1	S4	G4	Vertebrate Animal - Turtles
Euphyes bimacula illinois	Two-spotted Skipper	Range			Tier 1	S3	G4T1T2	Invertebrate Animal - Butterflies and Skippers
Euphyes conspicua buchholzi	Bucholz Black Dash	Range			Tier 1	S1	G4G5T1	Invertebrate Animal - Butterflies and Skippers
Fundulus sciadicus	Plains Topminnow	Range			Tier 1	S3	G4	Vertebrate Animal - Fishes
Haliaeetus leucocephalus	Bald Eagle	Range			Tier 2	S3	G5	Vertebrate Animal - Birds
Hesperia ottoe	Ottoe Skipper	Range			Tier 1	S2	G3	Invertebrate Animal - Butterflies and Skippers
Lanius ludovicianus	Loggerhead Shrike	Range			Tier 1	S3	G4	Vertebrate Animal - Birds
Lasiurus borealis	Eastern Red Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lasiurus cinereus	Hoary Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lethe eurydice fumosus	Smoky-eyed Brown	Range			Tier 1	S3	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Myotis septentrionalis	Northern Long-eared Myotis	Range	T	T	Tier 1	S1S2	G1G2	Vertebrate Animal - Mammals
Notropis topeka	Topeka Shiner	Model	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Perimyotis subflavus	Tricolored Bat	Range			Tier 1	S3	G2G3	Vertebrate Animal - Mammals
Perognathus flavescens perniger	Plains Pocket Mouse	Range			Tier 1	SNR	G5TNR	Vertebrate Animal - Mammals
Platanthera praeclara	Western Prairie Fringed Orchid	Range	T	T	Tier 1	S2	G3	Vascular Plant - Flowering Plants
Speyeria idalia	Regal Fritillary	Range			Tier 1	S3	G3?	Invertebrate Animal - Butterflies and Skippers

MADISON COUNTY SOLAR ARRAY

BIOLOGICAL ANALYSIS

Prepared using IPaC

Generated by Chase Jelden (cjelden@olsson.com)

November 3, 2023

The purpose of this document is to assess the effects of the proposed project and determine whether the project may affect any federally threatened, endangered, proposed, or candidate species. If appropriate for the project, this document may be used as a biological assessment (BA), as it is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)).

In this document, any data provided by U.S. Fish and Wildlife Service is based on data as of June 7, 2023.

Prepared using IPaC version 6.100.0-rc4

MADISON COUNTY SOLAR ARRAY BIOLOGICAL ASSESSMENT

TABLE OF CONTENTS

1 DESCRIPTION OF THE ACTION

1.1 PROJECT NAME

Madison County Solar Array

1.2 EXECUTIVE SUMMARY

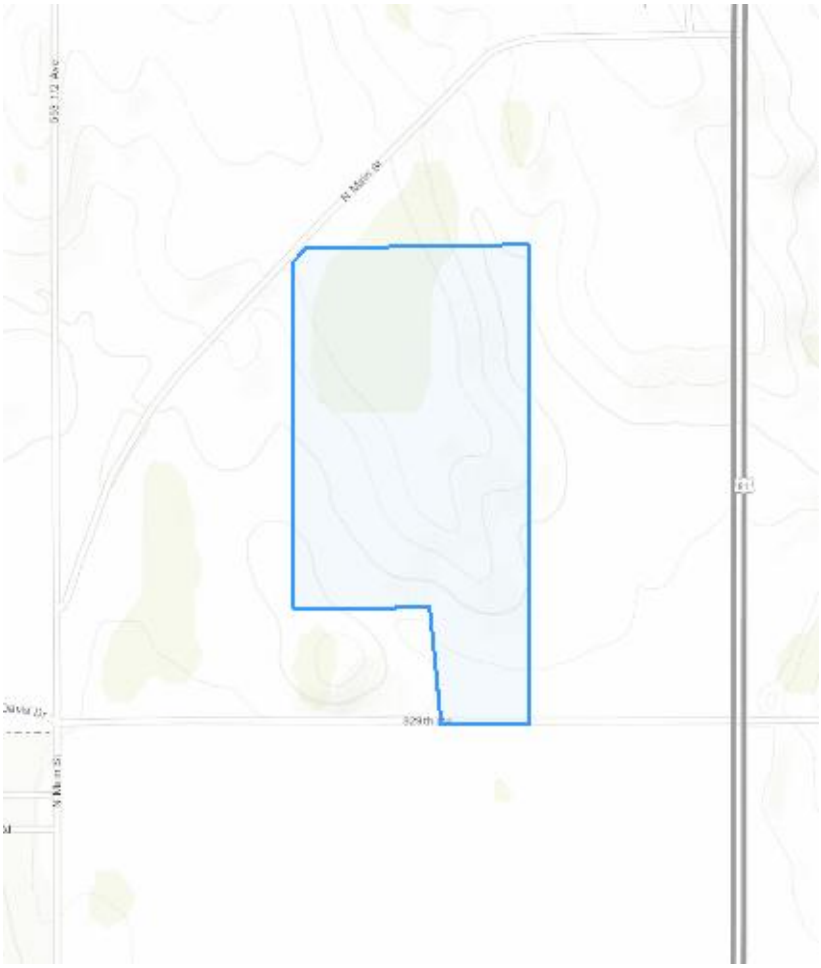
Four federally threatened, endangered, proposed, or candidate species were identified that may be affected by construction of the Madison County Solar Array. Of these four species, three (pallid sturgeon, piping plover, and topeka shiner) are not present in the action area and will not be affected by construction. The monarch butterfly is the only species identified that may utilize the action area and be affected by the project. However, vegetation in the project area will be changed from soy and corn crops to native Nebraska vegetation; thus, the impact on monarch butterflies in the project area should be beneficial.

1.3 EFFECT DETERMINATION SUMMARY

SPECIES (COMMON NAME)	SCIENTIFIC NAME	LISTING STATUS	PRESENT IN ACTION AREA	EFFECT DETERMINATION
Monarch Butterfly	Danaus plexippus	Candidate	Yes	NLAA
Pallid Sturgeon	Scaphirhynchus albus	Endangered	No	NE
Piping Plover	Charadrius melodus	Threatened	No	NE
Topeka Shiner	Notropis topeka (=tristis)	Endangered	No	NE
Tricolored Bat	Perimyotis subflavus	Proposed Endangered	Yes	NE

1.4 PROJECT DESCRIPTION

1.4.1 LOCATION



LOCATION
Madison County, Nebraska

1.4.2 DESCRIPTION OF PROJECT HABITAT

The project site is currently a row-crop agricultural field. The 15 acres where the solar array will be built appears to be upland.

1.4.3 PROJECT PROPONENT INFORMATION

Provide information regarding who is proposing to conduct the project, and their contact information. Please provide details on whether there is a Federal nexus.

REQUESTING AGENCY
Private Entity

FULL NAME
Rogan Maxwell

STREET ADDRESS
601 P Street

Suite 200

CITY
Lincoln

STATE
NE

ZIP
68508

PHONE NUMBER
5312057792

E-MAIL ADDRESS
rmaxwell@olsson.com

LEAD AGENCY
Department of Agriculture

Rural Development

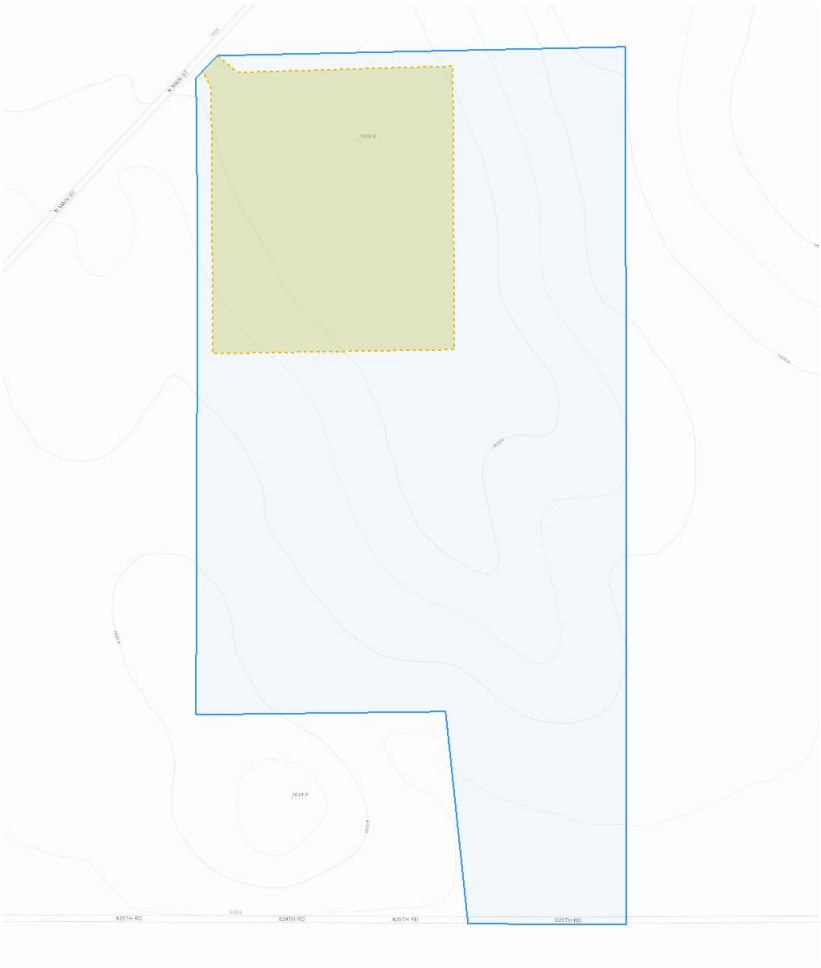
1.4.4 PROJECT PURPOSE

The purpose of this project is to provide the rate payers of Madison, Nebraska with an alternative energy source at a competitive price and to meet the expanding market for renewable and environmentally friendly energy production.

1.4.5 PROJECT TYPE AND DECONSTRUCTION

This project is a solar power plant construction project.

1.4.5.1 PROJECT MAP



LEGEND

Project footprint

Layer 1: Photovoltaic solar power plant (structure)

Layer 2: Access road construction, biological surveys (aerial), biological surveys (terrestrial), create on-site well, cultural resource surveys, erect supports, finish grading, geotechnical investigation, improve stormwater runoff quality, in-ground utilities construction, install in-ground pipe & cable, install inverters, install molten salt conveyance pipes, install permanent fence, install photovoltaic panels, install portable / temporary fence, install water storage tank, minimize erosion from disturbed areas, prepare the project site (terrestrial), rough grading, staging area construction, topographic surveys

1.4.5.2 PHOTOVOLTAIC SOLAR POWER PLANT

STRUCTURE COMPLETION DATE
Unspecified

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS
- Increase in air temperature
- Increase in impervious surfaces

DESCRIPTION
The photovoltaic solar array will cover approximately 15 acres of the 68 acres parcel, containing 7,488 cell panels in approximately 32 rows spaced 20 feet apart. Soil will be stabilized post-construction with the Nebraska Department of Transportation native Nebraska pollinator seed mix.

1.4.5.3 ACCESS ROAD CONSTRUCTION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Change in vegetation structure
- Increase in dust
- Increase in soil compaction
- Increase in erosion
- Increase in noise

DESCRIPTION
The access road will connect to the northwest corner of the project site from North Main Street and will be approximately 200 feet long.

1.4.5.4 BIOLOGICAL SURVEYS (AERIAL)

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Aerial surveys would be completed utilizing a desktop survey. No physical presence would be required.

1.4.5.5 BIOLOGICAL SURVEYS (TERRESTRIAL)

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Biological surveys in the area may include wetland delineations and any threatened and endangered species surveys. Due to a lack of habitat, biological surveys will likely be minimal.

1.4.5.6 CREATE ON-SITE WELL

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Construction of an on-site well will only be necessary if water-use is required and a municipal source is not utilized.

1.4.5.7 CULTURAL RESOURCE SURVEYS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Cultural surveys will likely occur remotely.

1.4.5.8 ERECT SUPPORTS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Increase in soil compaction
- Increase in erosion
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
After construction of the solar array (including supports of panels), soil will be stabilized using a native Nebraska pollinator seed mix. Constructions will be temporary and, following construction, impacts regarding support maintenance will be minimal.

1.4.5.9 FINISH GRADING

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Increase in soil compaction
- Increase in soil disturbance

DESCRIPTION
Impacts from grading will be temporary. Any decrease in vegetation will be a decrease in row-crop vegetation and will be replaced by native vegetation following construction.

1.4.5.10 GEOTECHNICAL INVESTIGATION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Any geotechnical fieldwork will likely be minimal groundwork conducted by individuals.

1.4.5.11 IMPROVE STORMWATER RUNOFF QUALITY

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Change in vegetation structure

DESCRIPTION
Following stabilization of soils with the native Nebraska pollinator seed mix, as recommended by the Nebraska Department of Transportation, the vegetation in the area should improve stormwater runoff quality at the project site. During construction, temporary increases in soil stressors may occur but long-term impacts are not likely. Additionally, due to a lack of connection to any water features, stormwater runoff during construction is not likely to impact any water features.

1.4.5.12 IN-GROUND UTILITIES CONSTRUCTION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in vegetation structure
- Change in topography
- Increase in soil compaction
- Change in hydrology
- Increase in erosion
- Increase in human presence
- Increase in soil disturbance

DESCRIPTION
Approximately 2,000 feet of underground interconnection line will be constructed extending south from the property to 829th Road, where the interconnection line will connect to existing overhead power lines. Permanent impacts are not likely.

1.4.5.13 INSTALL IN-GROUND PIPE & CABLE

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
The transmission line from the solar array to the overhead powerlines would be trenched below the soil surface and the soil would be replaced and reseeded upon completion of the project. Ultimately the area where the transmission line is trenched will return to row crop agricultural conditions and have no change from the existing conditions.

1.4.5.14 INSTALL INVERTERS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Increase in human presence

DESCRIPTION
Inverters would be placed throughout the solar array to convert DC to AC electrical current. The technician would visit the transformers on a routine basis and would increase human presence; however, is unlikely to be greater than the human presence under the existing conditions.

1.4.5.15 INSTALL MOLTEN SALT CONVEYANCE PIPES

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Buried below Solar Panels.

1.4.5.16 INSTALL PERMANENT FENCE

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in vegetation structure
- Increase in soil disturbance

DESCRIPTION
Permanent fencing will only be constructed around the portion of the parcel occupied by the solar array. Fencing may cause a limited impact on soil structure during construction and a limited change in stormwater runoff. However, the area will be planted with native Nebraska upland vegetation and will likely increase present vegetation. The increase in vegetation will likely improve stormwater quality and reduce the amount of runoff.

1.4.5.17 INSTALL PHOTOVOLTAIC PANELS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Any ground disturbance would be temporary as construction is proposed to be completed within 6 months. Native pollinator seed mix is proposed which would provide a herbaceous ground cover better than the existing agricultural conditions.

1.4.5.18 INSTALL PORTABLE / TEMPORARY FENCE

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Temporary fencing around construction materials may be used and would be less than the duration of the total project.

1.4.5.19 INSTALL WATER STORAGE TANK

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
Water storage tanks may be utilized onsite and would be less than 500 gallons. The footprint of the water storage tank would have no impact to the surrounding environment.

1.4.5.20 MINIMIZE EROSION FROM DISTURBED AREAS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
This activity is not expected to have any impact on the environment.

DESCRIPTION
BMP's from the SWPPP would be utilized to minimize sedimentation and erosion into downstream waters. Installation of BMPs would be approved by NDEE and would adhere to the monitoring schedule as defined by NDEE during construction to prevent erosion until the vegetation has established.

1.4.5.21 PREPARE THE PROJECT SITE (TERRESTRIAL)

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS
- Decrease in vegetation
- Change in topography
- Increase in dust
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
All stressors that result in a may occur would be temporary in nature and would be completed in less than than the duration of the project. Overall site preparation and impacts would be less than the existing conditions as a row crop agricultural field.

1.4.5.22 ROUGH GRADING

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Change in topography
- Increase in dust
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
All stressors that result in a may occur would be temporary in nature and would be completed in less than than the duration of the project. Overall site preparation and impacts would be less than the existing conditions as a row crop agricultural field.

1.4.5.23 STAGING AREA CONSTRUCTION

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Decrease in vegetation
- Increase in soil compaction
- Increase in human presence
- Increase in noise
- Increase in vehicle traffic

DESCRIPTION
All stressors that result in a may occur would be temporary in nature and would be completed in less time than than the duration of the project. Overall site preparation and impacts would be less than the existing conditions as a row crop agricultural field. The Staging area would be utilized for the solar array or would be restored to pre-existing conditions.

1.4.5.24 TOPOGRAPHIC SURVEYS

ACTIVITY START DATE
Unspecified

ACTIVITY END DATE
Unspecified

STRESSORS

- Increase in human presence

DESCRIPTION
Human presence during the topographic survey would be very minimal compared to the 6 month construction timeframe and overall less than the existing conditions as a row crop agricultural field.

1.4.6 ANTICIPATED ENVIRONMENTAL STRESSORS

Describe the anticipated effects of your proposed project on the aspects of the land, air and water that will occur due to the activities above. These should be based on the activity deconstructions done in the previous section and will be used to inform the action area.

1.4.6.1 PLANT FEATURES

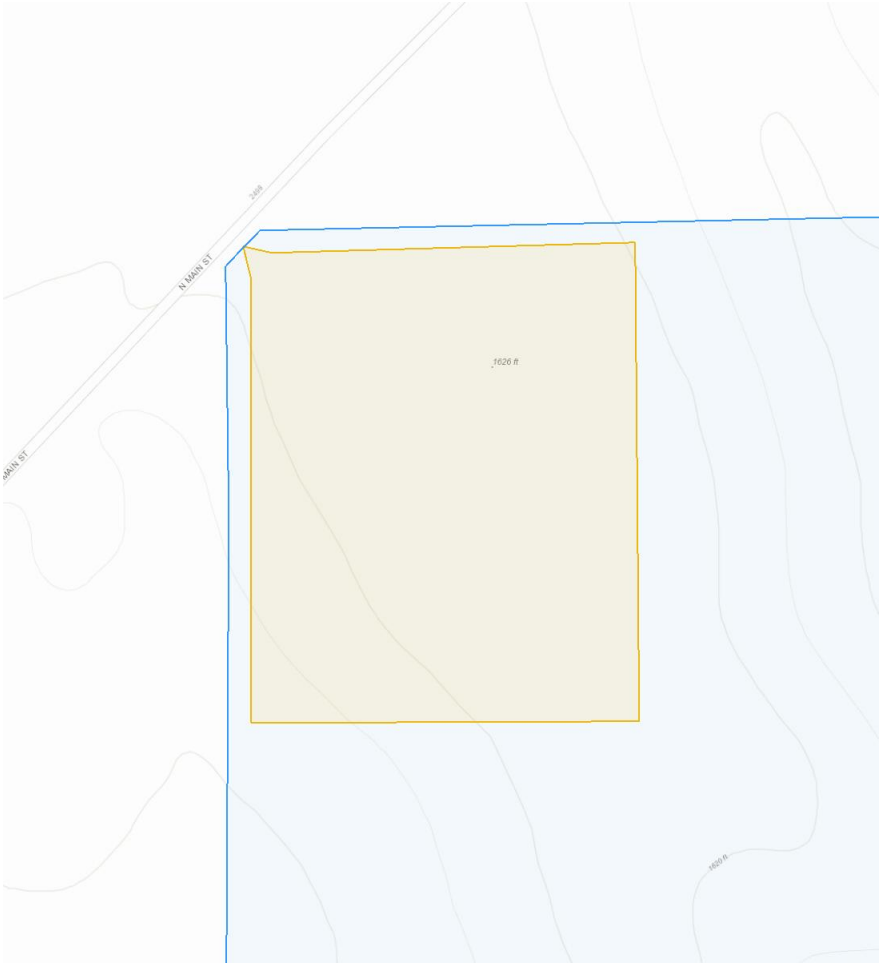
Individuals from the Plantae kingdom, such as trees, shrubs, herbs, grasses, ferns, and mosses. This feature also includes products of plants (e.g., nectar, flowers, seeds, etc.).

1.4.6.1.1 CHANGE IN VEGETATION STRUCTURE

ANTICIPATED MAGNITUDE

Existing vegetation on-site is primarily row-crop agriculture. Project site vegetation will be replaced with native Nebraska vegetation.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

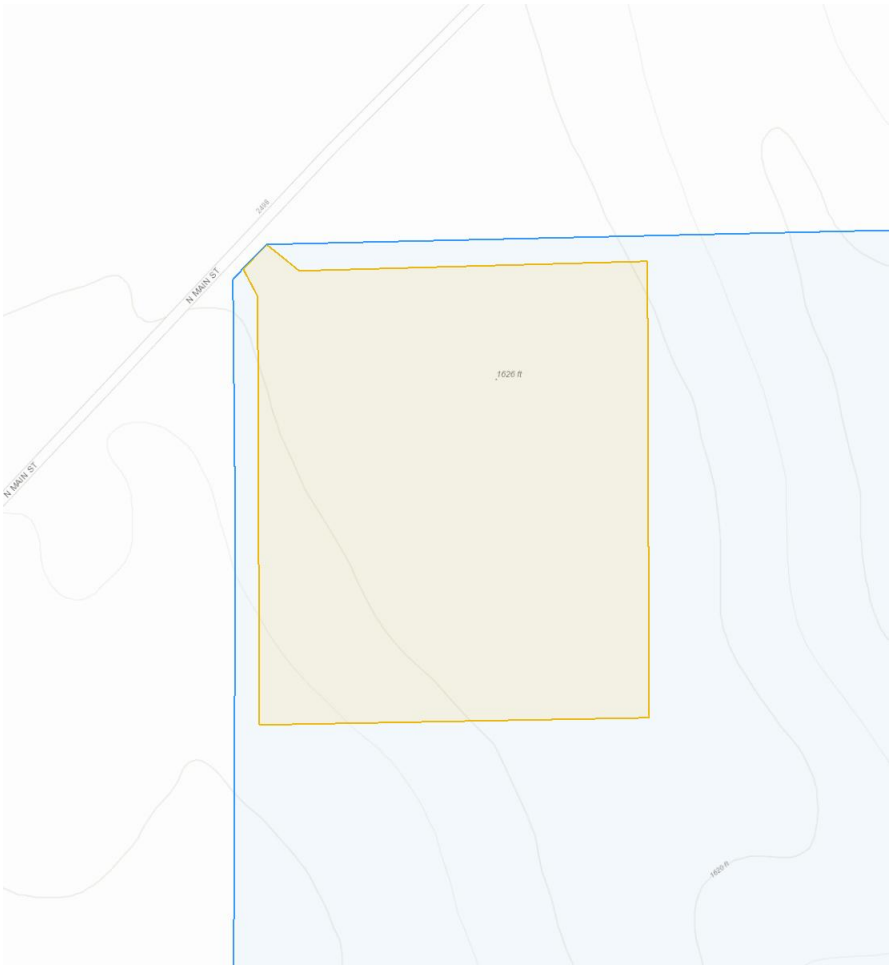
- Improve stormwater runoff quality
- Install permanent fence
- In-ground utilities construction
- Access road construction

1.4.6.1.2 DECREASE IN VEGETATION

ANTICIPATED MAGNITUDE

The site would be reseeded with a native pollinator seed mix. Vegetation cover upon the completion of construction would be greater than the existing conditions as a row crop agricultural field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- Prepare the project site (terrestrial)

1.4.6.2 ENVIRONMENTAL QUALITY FEATURES

Abiotic attributes of the landscape (e.g., temperature, moisture, slope, aspect, etc.).

1.4.6.2.1 INCREASE IN AIR TEMPERATURE

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

Adding perennial vegetation cover below the panels will reduce the air temperature by lowering the ground temperature.

CONSERVATION MEASURES

- Perennial vegetation cover

STRUCTURES AND ACTIVITIES

- Photovoltaic solar power plant

1.4.6.3 LANDFORM (TOPOGRAPHIC) FEATURES

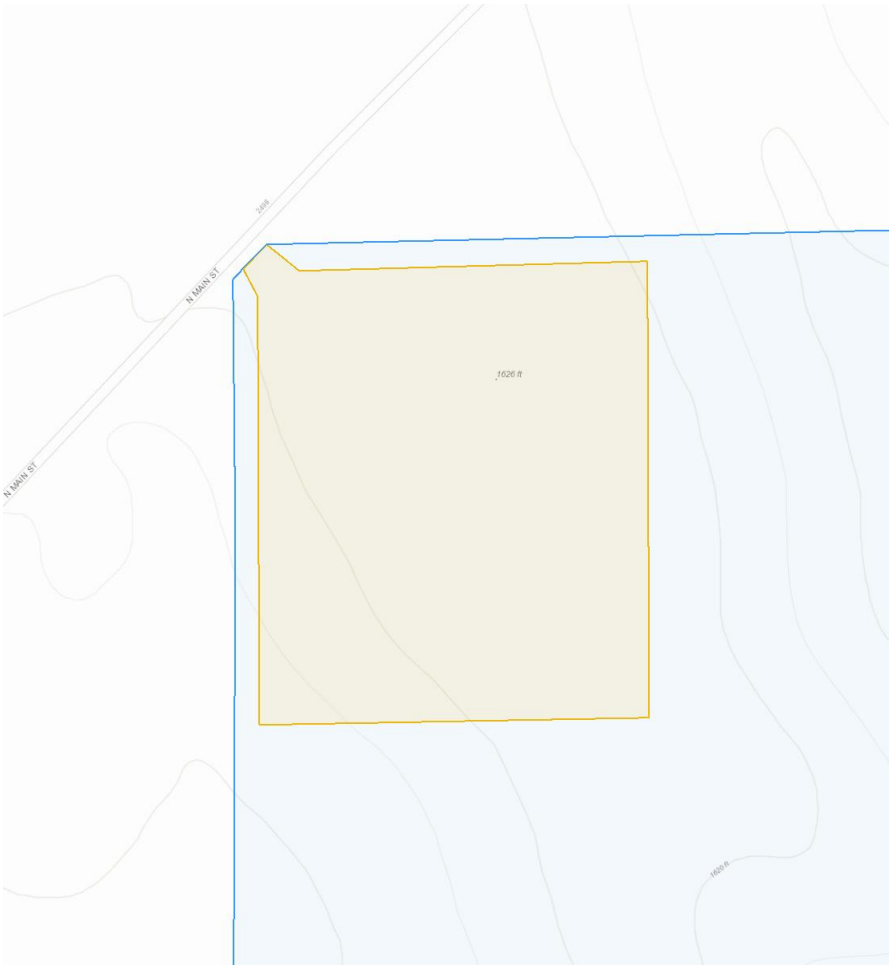
Topographic (landform) features that typically occur naturally on the landscape (e.g., cliffs, terraces, ridges, etc.). This feature does not include aquatic landscape features or man-made structures.

1.4.6.3.1 CHANGE IN TOPOGRAPHY

ANTICIPATED MAGNITUDE

The site will be graded to be level as part of the site preparation. There are no wetlands or stream channels that would be impacted and the change of the topography would be minimal compared to the surrounding conditions.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

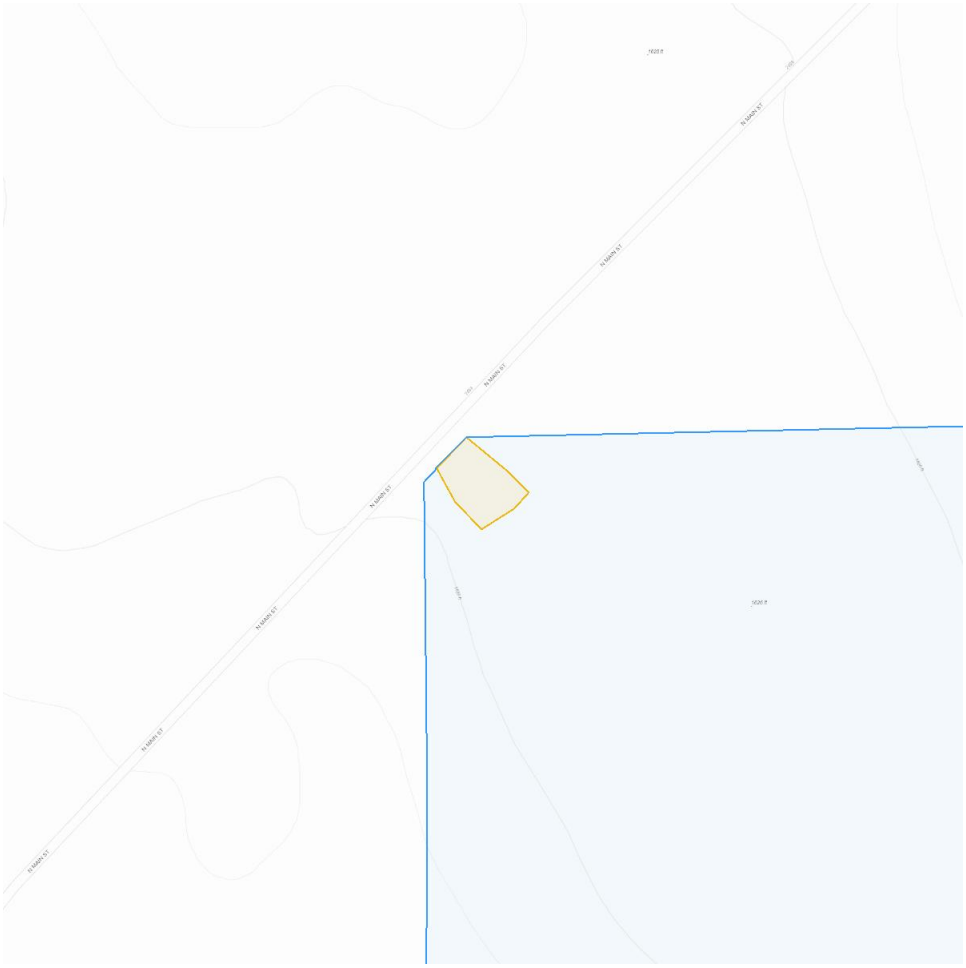
- Prepare the project site (terrestrial)
- In-ground utilities construction
- Rough grading

1.4.6.3.2 INCREASE IN IMPERVIOUS SURFACES

ANTICIPATED MAGNITUDE

The solar panels would be placed 5-10 feet above the soil surface with herbaceous cover below the panels. There would be no change in the impervious surface compared to the existing conditions for the solar array. The access drive would be constructed from crushed rock or gravel and would still allow for water to penetrate the surface.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Photovoltaic solar power plant

1.4.6.4 SOIL AND SEDIMENT

The topmost layer of earth on the landscape and its components (e.g., rock, sand, gravel, silt, etc.). This feature includes the physical characteristics of soil, such as depth, compaction, etc. Soil quality attributes (e.g, temperature, pH, etc.) should be placed in the Environmental Quality Features.

1.4.6.4.1 INCREASE IN DUST

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

The increase in dust would be temporary compared to the entire project duration of 6 months and would be less than the existing conditions as a row crop agricultural field.

CONSERVATION MEASURES

- Perennial vegetation cover
- NDEE SWPPP

STRUCTURES AND ACTIVITIES

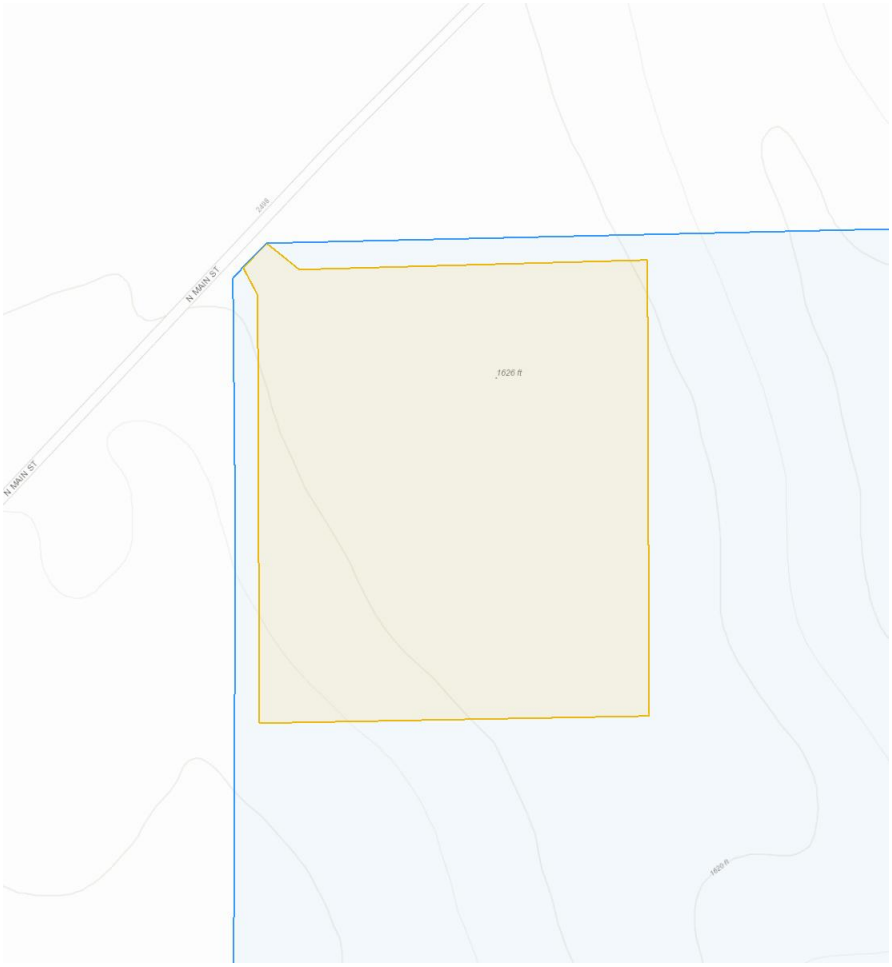
- Prepare the project site (terrestrial)
- Rough grading
- Access road construction

1.4.6.4.2 INCREASE IN SOIL COMPACTION

ANTICIPATED MAGNITUDE

Soil compaction would be limited to the access drive, the footprint of the transformers, and the supports of the solar panels. Overall, the compaction upon the soil would be minimal compared to the surrounding landscape and would be less than the existing conditions of heavy agricultural equipment on the field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- In-ground utilities construction
- Access road construction
- Erect supports
- Finish grading

1.4.6.5 ENVIRONMENTAL PROCESSES

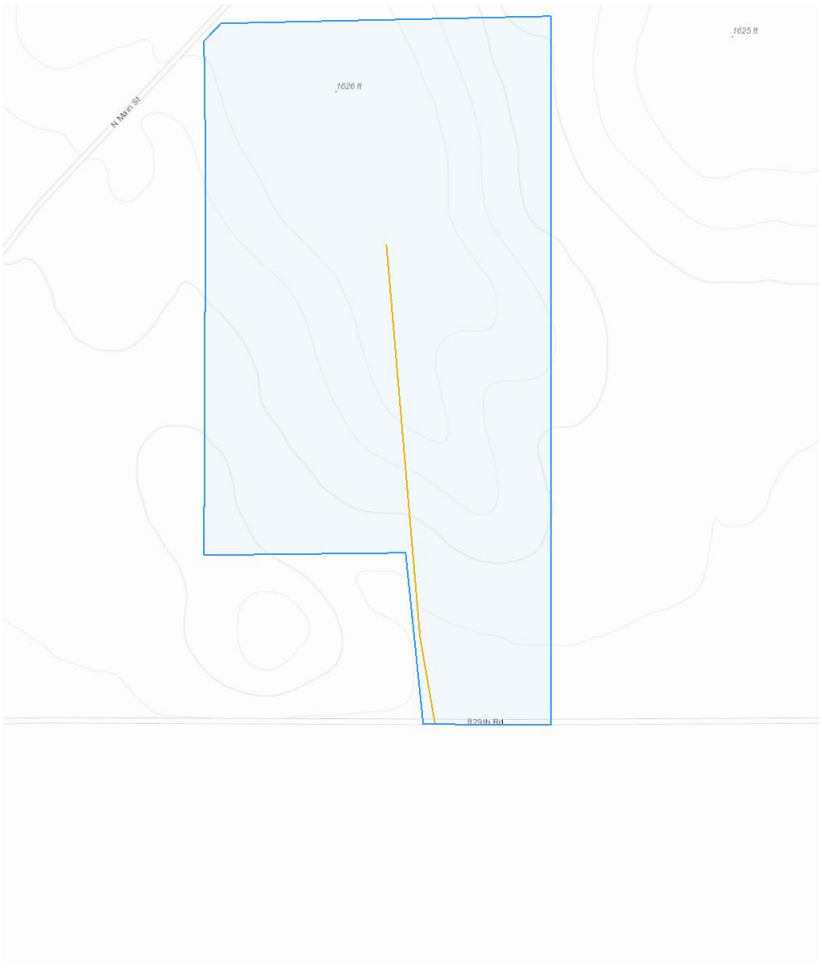
Abiotic processes that occur in the natural environment (e.g., erosion, precipitation, flood frequency, photoperiod, etc.).

1.4.6.5.1 CHANGE IN HYDROLOGY

ANTICIPATED MAGNITUDE

In ground utilities would be placed at a depth below the soil surface and would be restored to the existing condition. There would be no change to the hydrology of the site.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- In-ground utilities construction

1.4.6.5.2 INCREASE IN EROSION

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

BMPs identified in the SWPPP would limit erosion during construction. After construction a native pollinator seed mix would be used to provide permanent vegetation cover to stabilize the soil.

CONSERVATION MEASURES

- Perennial vegetation cover
- NDEE SWPPP

STRUCTURES AND ACTIVITIES

- In-ground utilities construction
- Access road construction
- Erect supports

1.4.6.6 HUMAN ACTIVITIES

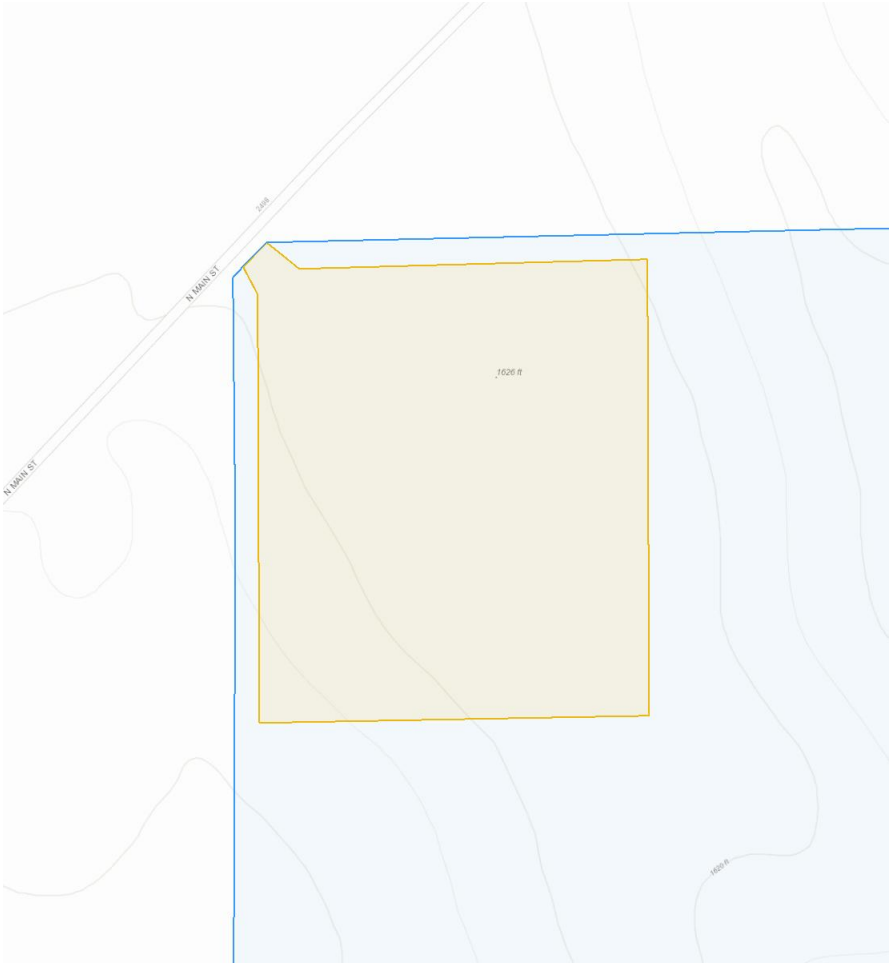
Human actions in the environment (e.g., fishing, hunting, farming, walking, etc.).

1.4.6.6.1 INCREASE IN HUMAN PRESENCE

ANTICIPATED MAGNITUDE

Human presence would be less than the existing conditions as a row crop agricultural field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

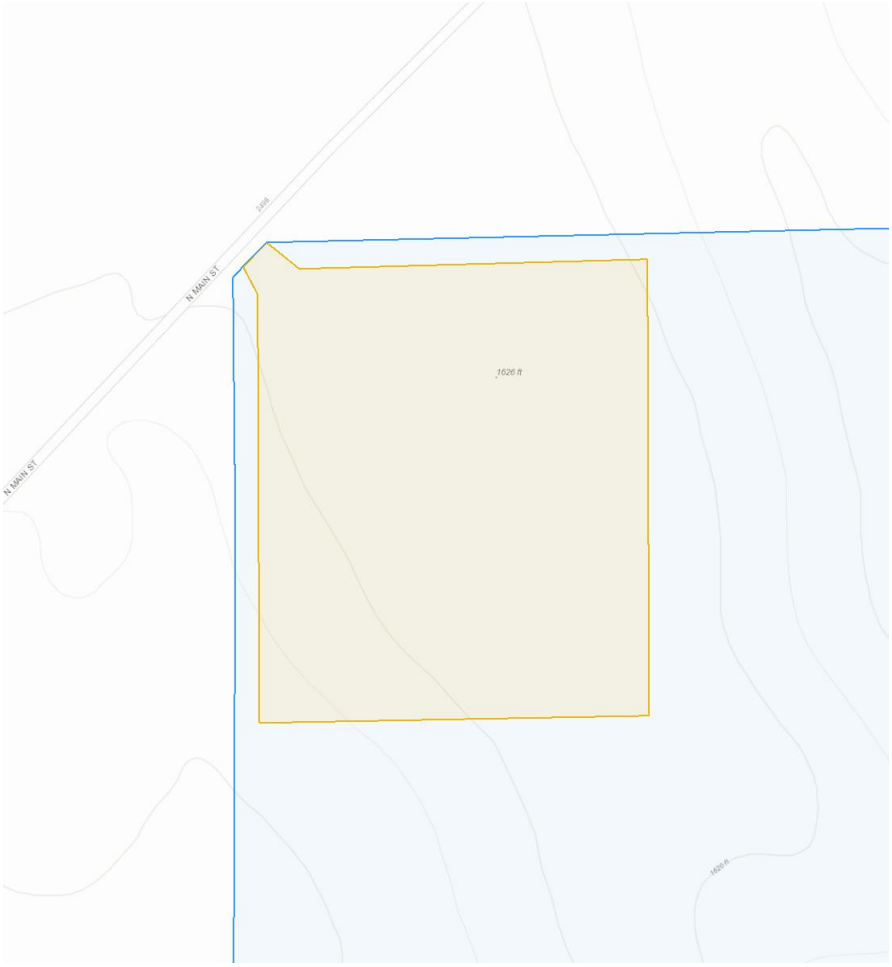
- Topographic surveys
- Staging area construction
- Prepare the project site (terrestrial)
- In-ground utilities construction
- Rough grading
- Erect supports
- Install inverters

1.4.6.6.2 INCREASE IN NOISE

ANTICIPATED MAGNITUDE

The increase in noise would be less than the duration of the project and overall would be less than the existing conditions as row crop agricultural field.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- Prepare the project site (terrestrial)
- Rough grading
- Access road construction
- Erect supports

1.4.6.6.3 INCREASE IN SOIL DISTURBANCE

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

Soil disturbance would be less than the overall duration of the project and would be less than the existing conditions as a row crop agricultural field.

CONSERVATION MEASURES

- Perennial vegetation cover
- NDEE SWPPP

STRUCTURES AND ACTIVITIES

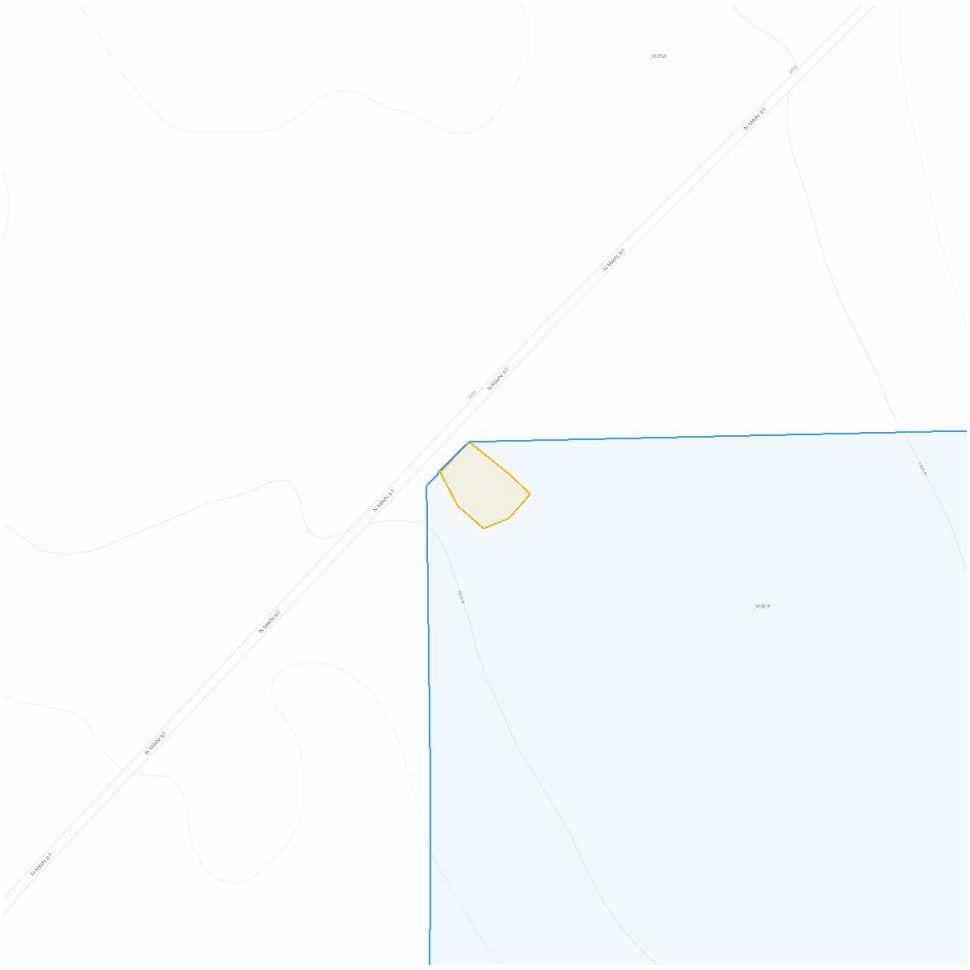
- Install permanent fence
- In-ground utilities construction
- Finish grading

1.4.6.6.4 INCREASE IN VEHICLE TRAFFIC

ANTICIPATED MAGNITUDE

Vehicular traffic would increase during the 6 month timeframe of construction. Upon completion of the project a single vehicle may be present at the site 1 time a month and would be limited to the access drive on the NW corner of the property. The vehicle presence on the site would be less than the existing conditions.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

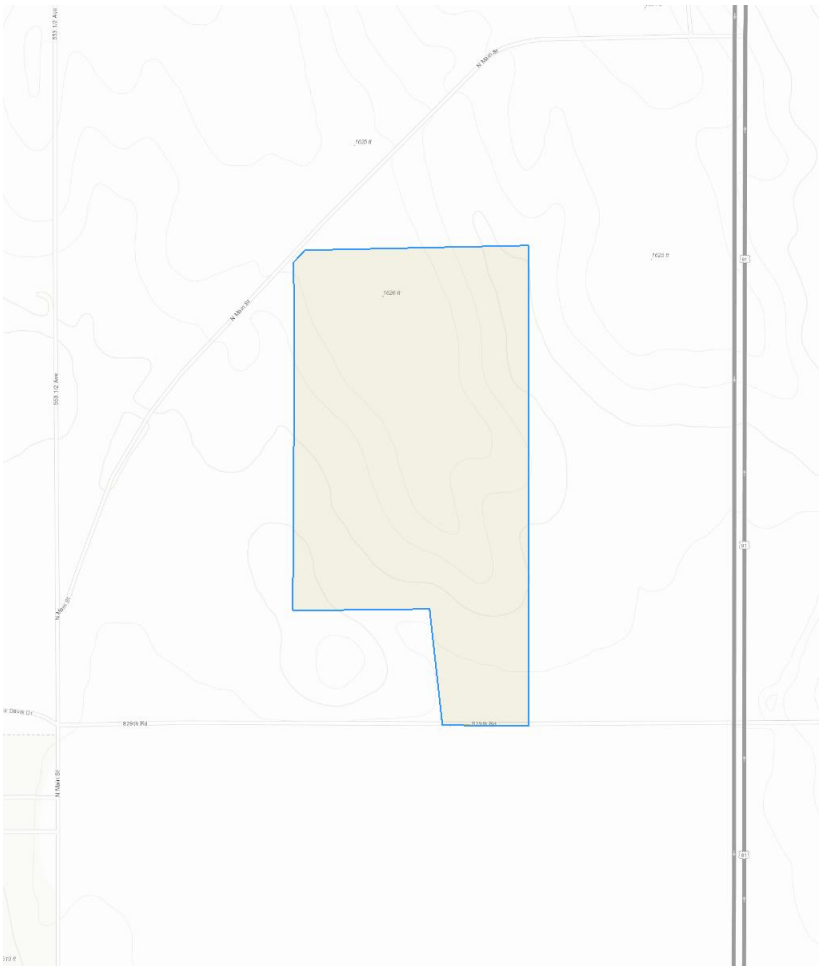
CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Staging area construction
- Prepare the project site (terrestrial)
- Rough grading
- Erect supports

1.5 ACTION AREA



LEGEND

Project footprint

Stressor location

1.6 CONSERVATION MEASURES

1.6.1 NDEE SWPPP

DESCRIPTION

An NDEE SWPPP will be developed prior to construction and implemented. Native vegetation seeded beneath the solar array will stabilize soil, capture stormwater, and reduce sediment load in stormwater exiting the action area.

STRESSORS

- Increase in dust
- Increase in erosion
- Increase in soil disturbance

DIRECT INTERACTIONS

- disturbance
- facilitate movement
- vehicle / vessel strike

1.6.2 PERENNIAL VEGETATION COVER

DESCRIPTION

Following construction, native perennial vegetation will be seeded among the solar array. Butterfly milkweed and common milkweed are included in the seed mixture among other native grasses and forbs. Recommended site management from the Nebraska Department of Transportation is to completely mow the vegetation every four or five years and that mowing of sites should not occur from May 1st through October 1st, with selective cutting of weedy forbs greater than five feet tall.

STRESSORS

- Increase in air temperature
- Increase in dust
- Increase in erosion
- Increase in soil disturbance

DIRECT INTERACTIONS

- disturbance
- facilitate movement
- vehicle / vessel strike

1.7 PRIOR CONSULTATION HISTORY

Consultation with the agencies listed above is currently underway. Letters will be submitted on 6/12/2023 and will have 30-days to respond as part of the NEPA process.

1.8 OTHER AGENCY PARTNERS AND INTERESTED PARTIES

Agencies to be contacted as part of the NEPA Environmental Review:

- NeSHPO
- Apache Tribe of Oklahoma
- Cheyenne and Arapahoe Tribe of Oklahoma
- Omaha Tribe of Nebraska
- Pawnee Nation of Oklahoma
- Ponca Tribe of Nebraska
- NRCS
- NPS
- NeNRD
- Lower Elkhorn NRD
- NGPC
- USACE

1.9 OTHER REPORTS AND HELPFUL INFORMATION

Four articles are attached to this listing: the Species Status Assessment for monarch butterflies, an article on monarch butterfly use of different species of milkweed, an article on monarch butterfly ecology in the Great Plains, and an article and list on the NDOT native pollinator vegetation mix.

RELEVANT DOCUMENTATION

- Pocius_et_al_2018_Monarch_butterflies_do_not_place_all_of_their_eggs_in_one_basket
- NDOT_veg_m058-establishment-of-wildflower-islands
- Monarch-Butterfly-SSA-Report-September-2020
- Grant_et_al_2022_Monarch_Butterfly_Ecology_Behavior_and_Vulnerabilities_in_North_Central_United

2 SPECIES EFFECTS ANALYSIS

This section describes, species by species, the effects of the proposed action on listed, proposed, and candidate species, and the habitat on which they depend. In this document, effects are broken down as direct interactions (something happening directly to the species) or indirect interactions (something happening to the environment on which a species depends that could then result in effects to the species).

These interactions encompass effects that occur both during project construction and those which could be ongoing after the project is finished. All effects, however, should be considered, including effects from direct and indirect interactions and cumulative effects.

2.1 MONARCH BUTTERFLY

2.1.1 STATUS OF THE SPECIES

This section should provide information on the species' background, its biology and life history that is relevant to the proposed project within the action area that will inform the effects analysis.

2.1.1.1 LEGAL STATUS

The Monarch Butterfly is federally listed as 'Candidate' and additional information regarding its legal status can be found on the ECOS species profile.

2.1.1.2 RECOVERY PLANS

Available recovery plans for the Monarch Butterfly can be found on the ECOS species profile.

2.1.1.3 LIFE HISTORY INFORMATION

Note - the monarch is a candidate species and not yet listed or proposed for listing. Consultation with U.S. Fish and Wildlife Service under section 7 of the Endangered Species Act is not required for candidate species, like the monarch. We encourage agencies, however, to take advantage of any opportunity they may have to conserve the species.

For information on monarch conservation, visit https://www.fws.gov/savethemonarch/, http://www.mafwa.org/?page_id=2347, and, for the West, https://wafwa.org/committees-working-groups/monarch-working-group/.

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side of the wings. Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic.

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily Asclepias spp.), and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic chemicals (cardenolides) as a defense against predators. The larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months.

In many regions where monarchs are present, monarchs breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km and last for over two months. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again.

IDENTIFIED RESOURCE NEEDS

Native vegetation

Specific life stages of the monarch butterfly rely solely on plants in the milkweed genus.

2.1.1.4 CONSERVATION NEEDS

Critical resources for the monarch butterfly are larval food and habitat (milkweed), adult food (nectar resources), and overwintering habitat. Urban development and use of herbicides impacts the availability of food for both larvae and adult monarch butterflies. Conservation and restoration of native grasslands and restoration of milkweed in agricultural areas are key in increasing and maintaining the populations of larval and adult monarchs. Additionally, conservation of overwintering forest habitats is necessary to support the annual life cycle of the monarch butterflies and ensure the population is able to migrate and reproduce following winter.

2.1.2 ENVIRONMENTAL BASELINE

*The environmental baseline describes the species' health **within the action area only** at the time of the consultation, and does not include the effects of the action under review. Unlike the species information provided above, the environmental baseline is at the scale of the Action area.*

2.1.2.1 SPECIES PRESENCE AND USE

The monarch butterfly uses milkweeds as the exclusive host plants for its egg and larval stages. The chrysalis stage of monarch butterflies are typically formed on safe, solid places like a woody twig. Adult monarch butterflies feed on a wide variety of plant nectars. Since the project site is currently row-crop agriculture, it is likely that monarch butterflies do not utilize the habitat in great numbers, due to a lack of host plants.

2.1.2.2 SPECIES CONSERVATION NEEDS WITHIN THE ACTION AREA

Within the project site, milkweed and other flowering plants likely exist at a minimal amount since the project is currently a row-crop agricultural site. Prior to construction of the solar array, vegetation in the project site is mostly represented by soybean or corn, and any additional vegetation likely occurs in the right-of-way of the roads or any vegetation fragments not being farmed. Following construction of the solar array, the 15-acre construction area will be seeded with a native Nebraska pollinator vegetation seed mix. Common milkweed (*Asclepias syriaca*) and butterfly milkweed (*Asclepias tuberosa*) will be included in the seed mix applied to the project site, as well as many other native forbs and grasses. These present increased opportunities for monarch reproduction and greater availability of food resources for both larval and adult stages of the monarch butterfly.

2.1.2.3 HABITAT CONDITION (GENERAL)

The existing habitat condition for the monarch butterfly in the action area is poor in quality. Land-use in the action area appears to be cropland. Any existing forbs and other nectar sources would not be contiguous with any sections of habitat. Adjacent lands to the action area are also occupied by cropland and would present the same quality of habitat as the action area.

2.1.2.4 INFLUENCES

The action area is located with the tallgrass prairie ecoregion of Nebraska. Historically, the action area would have been occupied by native upland vegetation, and it is likely that milkweed plants were among the vegetation. At some point, the action area was converted into agricultural land. Due to the obligate reliance of monarch butterflies on milkweed plants, it is likely that monarch butterflies had a very low occupancy and use of the action area following conversion. Potential applications of herbicides would have further decreased any remaining milkweed plants, and any use of insecticides would have resulted in monarch larval and adult mortality. The use of the action area as cropland would also have greatly reduced the availability of other nectar-bearing vegetation. Adult monarchs are not obligate milkweed feeders, but with low availability of other native vegetation, it is still unlikely that adult monarchs would have utilized the action area regularly.

Monarch butterflies are also vulnerable to climatic change. The action area falls within the summer breeding range of the monarch butterfly. In the SSA, rising temperatures are identified as a potential negative impact to monarch fecundity and mating success. Consistent higher temperatures result in lower survival and temperatures beyond a certain threshold may already account for monarch absence in certain regions of the southern U.S. during the summer. Additionally, changes in weather patterns may result in alterations in suitable habitat and seasonal availabilities of nectar resources.

2.1.2.5 ADDITIONAL BASELINE INFORMATION

The current environmental baseline for the action area consists of low quality habitat, likely with little to no presence of milkweed, the obligate host plant for the monarch butterfly. Following construction, permanent impacts on monarch butterflies in the action area are expected to be positive. The use of native Nebraska vegetation (including milkweed plants) within the solar array provides a new opportunity for fecundity and increases habitat that does not currently exist within the action area.

2.1.3 EFFECTS OF THE ACTION

This section considers and discusses all effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

2.1.3.1 INDIRECT INTERACTIONS

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Native vegetation (specific life stages of the monarch butterfly rely solely on plants in the milkweed genus.)			***This resource is not present in the action area*** Due to the use of the project action area as cropland, it is likely that no milkweed is present, and if any milkweed is present, it is likely a negligible amount fragmented from other grassland habitat. Aerial visuals of the action area indicate little to no presence of native vegetation.	***There will be no impacts to this resource, so no individuals will be affected.***

2.1.3.2 DIRECT INTERACTIONS

DIRECT INTERACTION	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
Disturbance	Perennial vegetation cover NDEE SWPPP	No	The project action area consists entirely of cropland so monarch butterflies and their habitats will not be disturbed during construction. Planting of native Nebraska vegetation following construction is likely to increase available pollinator habitat.
Facilitate movement	Perennial vegetation cover NDEE SWPPP	Yes	Once the project is in place, the establishment of native Nebraska vegetation beneath the solar array should provide an increase in local habitat availability for monarch butterflies. Estimating the exact impact of this is challenging to quantify, but any increase in pollinator habitat should be beneficial to adult butterflies. Additionally, the inclusion of butterfly milkweed and common

DIRECT INTERACTION	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
			milkweed in the planned vegetation will provide increased habitat for egg-stage and larval-stage monarch butterflies.
Vehicle / vessel strike	Perennial vegetation cover NDEE SWPPP	No	It is unlikely that adult monarch butterflies will be traversing the action area during construction due to a lack of habitat.

2.1.4 CUMULATIVE EFFECTS

Maintenance of the solar array is likely to be minimal. Vegetation may have to be mowed once or twice a year depending on vegetation height. Any disturbance resulting from long-term maintenance of the solar array will be less than current disturbance in the action area from cropland management.

2.1.5 DISCUSSION AND CONCLUSION

DETERMINATION: NLAA

COMPENSATION MEASURES

Impacts to the monarch butterfly from this project should be beneficial. Construction of the solar array and the resulting change in vegetation creates an increase in nectar sources and reproductive habitat for monarch butterflies in the area. Any negative impacts to monarch butterflies would occur during construction of the solar array and are unlikely due to a lack of suitable habitat currently in the action area.

2.2 PALLID STURGEON

This species has been excluded from analysis in this environmental review document.

JUSTIFICATION FOR EXCLUSION

The project site does not include any waterways and the project will have a minimal use of water. Pallid sturgeon inhabit large channels with strong current. The nearest river to the project site, the Platte River, is located approximately 30 miles to the south.

2.3 PIPING PLOVER

This species has been excluded from analysis in this environmental review document.

JUSTIFICATION FOR EXCLUSION

The piping plover is a small shorebird that nests in sandy substrates along shorelines. In the Great Plains, piping plover nests are primarily located along river shorelines, including but not limited to, the Platte River, the Missouri River, and the Elkhorn River. Due to a lack of waterways within the project site, impacts to this species are not likely to occur. The nearest mapped critical habitat for the piping plover is along the Missouri River, approximately 70 miles to the north.

2.4 TOPEKA SHINER

This species has been excluded from analysis in this environmental review document.

JUSTIFICATION FOR EXCLUSION

Although critical habitat for the topeka shiner is located less than one mile west of the project site, impacts to this species are not expected due to a lack of waterways and wet features within the project site. Urban development and agricultural fields separate the project site from any critical habitat. The project will not use enough water to require a septic or county sewer connection.

2.5 TRICOLORED BAT

2.5.1 STATUS OF THE SPECIES

This section should provide information on the species' background, its biology and life history that is relevant to the proposed project within the action area that will inform the effects analysis.

2.5.1.1 LEGAL STATUS

The Tricolored Bat is federally listed as 'Proposed Endangered' and additional information regarding its legal status can be found on the ECOS species profile.

2.5.1.2 RECOVERY PLANS

Available recovery plans for the Tricolored Bat can be found on the ECOS species profile.

2.5.1.3 LIFE HISTORY INFORMATION

The tricolored bat is a small insectivorous bat that is distinguished by its unique tricolored fur and often appears yellowish to nearly orange. The once common species is wide ranging across the eastern and central United States and portions of southern Canada, Mexico and Central America. During the winter, tricolored bats are often found in caves and abandoned mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts where they exhibit shorter torpor bouts and forage during warm nights. During the spring, summer, and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures. Tricolored bats face extinction due primarily to the rangewide impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent. White-nose syndrome has caused estimated declines of more than 90 percent in affected tricolored bat colonies across the majority of the species range. To address the growing threat of white-nose syndrome to the tricolored bat and other bats across North America, the U.S. Fish and Wildlife Service is leading the White-nose Syndrome National Response Team, a coordinated effort of more than 150 non-governmental organizations, institutions, Tribes, and state and federal agencies. Together we are conducting critical white-nose syndrome research and developing management strategies to minimize impacts of the disease and recover affected bat populations. For more information on white-nose syndrome, please see: https://www.whitenosesyndrome.org/ For more information on tricolored bats, please see: https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus

IDENTIFIED RESOURCE NEEDS

Trees

Leaf clusters of dead deciduous hardwood trees

2.5.1.4 CONSERVATION NEEDS

avoid tree clearing during the bat roosting season. June 1 - October 31

2.5.2 ENVIRONMENTAL BASELINE

*The environmental baseline describes the species' health **within the action area only** at the time of the consultation, and does not include the effects of the action under review. Unlike the species information provided above, the environmental baseline is at the scale of the Action area.*

2.5.2.1 SPECIES PRESENCE AND USE

This is an agricultural field with no habitat for the tri-color bat. The tri-color bat is not likely to utilize this area as it lack hardwood forest or suitable roosting site.

2.5.2.2 SPECIES CONSERVATION NEEDS WITHIN THE ACTION AREA

Habitat is not present within the action area. No special conservation conditions apply.

2.5.2.3 HABITAT CONDITION (GENERAL)
The area is currently in row crop production. There are no trees or other suitable habitat present in the area.

2.5.2.4 INFLUENCES
No habitat within the area. N/A

2.5.2.5 ADDITIONAL BASELINE INFORMATION
N/A

2.5.3 EFFECTS OF THE ACTION
This section considers and discusses all effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

2.5.3.1 INDIRECT INTERACTIONS

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Trees (leaf clusters of dead deciduous hardwood trees)			***This resource is not present in the action area*** The area is currently in row crop production. There are no trees or other suitable habitat present in the action area.	***There will be no impacts to this resource, so no individuals will be affected.***

2.5.3.2 DIRECT INTERACTIONS
No direct interactions leading to effects on species are expected to occur from the proposed project.

2.5.4 CUMULATIVE EFFECTS
No cumulative effects are anticipated.

2.5.5 DISCUSSION AND CONCLUSION

DETERMINATION: NE

3 CRITICAL HABITAT EFFECTS ANALYSIS

No critical habitats intersect with the project action area.

4 SUMMARY DISCUSSION AND CONCLUSION

4.1 SUMMARY DISCUSSION

Overall, effects from the construction of the Madison County Solar Array should be beneficial. Currently, as cropland, the action area does not benefit any threatened and endangered species. Corn and soybeans do not provide a nectar resource for adult monarch butterflies, and larval monarch butterflies only feed on milkweed. Milkweed plants in the action area are unlikely to be present due to agricultural disturbance; if any milkweed is present, it likely exists without a connection to other pollinator habitat. Following construction of the project and seeding of native vegetation, available pollinator habitat should be greatly increased. Additionally, with the inclusion of butterfly milkweed and common milkweed, construction of the project should have a long-term beneficial impact on monarch butterflies by increasing suitable reproductive habitat and food resources.

4.2 CONCLUSION

In conclusion, impacts to threatened and endangered species should either not occur or should be beneficial to species present in the area. The only species that may directly use the project action area is the monarch butterfly, a candidate species for listing. A lack of native vegetation in the action area at present suggest little to no use of the project action area by the monarch butterfly. Other threatened and endangered species listed within the IPaC do not have suitable habitat within or adjacent to the project action area. Resulting changes in vegetation from cropland to native vegetation in the project area following construction should be beneficial to multiple species, including the monarch butterfly and other pollinators.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
Phone: (308) 382-6468 Fax: (308) 384-8835

In Reply Refer To:
Project Code: 2023-0090493
Project Name: Madison County Solar Array

September 22, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website (https://ipac.ecosphere.fws.gov/) at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may

affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.
If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/media/endangered-species-consultation-handbook or at our Nebraska Field Office webpage (https://www.fws.gov/office/nebraska-ecological-services/project-planning-and-review-under-endangered-species-act).
We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Consultation Code in the header of this letter (i.e., YEAR-XXXXXXX) with any request for consultation or correspondence about your project that you submit to our office.

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Act, there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts and permitting see https://www.fws.gov/program/migratory-bird-permit
The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.
In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit:

https://www.federalregister.gov/documents/2012/10/03/2012-24433/migratory-bird-conservation-executive-order-13186

Platte River System: The Platte River, its tributaries, and associated wetland habitats are resources of national importance. Due to the cumulative effect of many water depletion projects

in the Platte River basin, the Service considers any direct or indirect depletion of flows from the Platte River system to be significant and will continue to further deteriorate the already stressed habitat conditions. Federal agencies must consult with the Service under section 7 of the ESA for projects in Nebraska that may lead to water depletions or have the potential to impact water quality in the Platte River system, because these actions my affect threatened and endangered species inhabiting the downstream reaches of these river systems. The federally listed species that could be impacted from Platte River water depletions include the federally endangered Whooping Crane (Grus americana), and Pallid Sturgeon (Scaphirhynchus albus); the threatened Piping Plover (Charadrius melodus) and Western Prairie Fringed Orchid (Platanthera praeclara). In general, depletions include evaporative losses and/or consumptive use of surface or groundwater within the affected basin, often characterized as diversions minus return flows. Project elements that could be associated with depletions include, but are not limited to: borrow sites, ponds, lakes, and reservoirs (e.g., for detention, recreating, irrigation, storage, stock watering, municipal storage, and power generation); hydrostatic testing of pipelines; wells; dust abatement; diversion structures; and water treatment facilities. For more information on consultation requirements for the Platte River species, please visit https://fws.gov/partner/platte-river-recovery-implementation-program

Nebraska Nongame and Endangered Species Conservation Act: Federally listed species protected under the Endangered Species Act are also state-listed under the Nebraska statute, the Nebraska Nongame and Endangered Species Conservation Act. There may be state-listed species affected by the proposed project that are not federally listed. To determine if the proposed project may affect state-listed species, the Service recommends that the project proponent contact the Nebraska Game and Parks Commission (NGPC) Planning and Program Division located at 2200 North 33rd Street Lincoln, Nebraska 68503-0370. For more information and to request an environmental review from the NGPC, visit their Environmental Review website at http://outdoornebraska.gov/environmentalreview/ for instructions and contact information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
(308) 382-6468

PROJECT SUMMARY

Project Code: 2023-0090493
Project Name: Madison County Solar Array
Project Type: Power Gen - Solar
Project Description: Bluestem Energy Solutions, LLC (Bluestem) is a developer, owner, and operator of renewable energy resources and works to identify, develop, and implement local energy solutions for utilities. Bluestem has proposed the Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed project is positioned on an existing parcel that is approximately 68-acres that is located in Madison, Madison County, Nebraska. More specifically, the Project is located on parcel number 590137032 and the legal property description of PT E1/2 SE1/4 LESS HWY 29-22-1. (Figure 1, Appendix A).

The Project site is located south of North Main Street and west of United States Highway 81 (US-81). The solar array would encompass the northwest portion of the property and occupy approximately 15 acres of the 68-acre parcel. Underground conduit would extend south beyond the solar array to 829th Road. The project site is surrounded by row crop agriculture in all directions with a small area on the northwest portion directly abutting North Main Street and the ROW, the southwest corner abuts a rural residential property, and the south boundary abuts 829th Road and the ROW. An aerial view of the existing parcel and the Project area is depicted on the Site Map (Figure 2, Appendix A).

The Madison County Solar Array will contain approximately 32 rows and containing up to 7,488 Photovoltaic (PV) cell panels or modules, that may be five (5) to seven (7) feet from the ground. The modules will be positioned on a single axis tracking system rotating east to west following the path of the sun throughout the day. Row spacing will be approximately 20 feet between rows. A total of 16 inverters would be used throughout the array to covert the DC electricity to AC electricity, which the electrical grid uses. A white rock or gravel access road will be located at the entrance to the array on the northwest corner of the property for access from North Main Street. The entire 15-acre parcel would be enclosed with a six (6) feet tall chain link fence that would also contain three strands of barbed wire on top of the fence to provide additional security to the property. After construction of the solar array, the soil will

be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the property line from the southeast corner of the property to connect to the existing overhead power lines along 829th Road. The proposed Project is depicted in the Site Plan Map attached (Figure 3, Appendix A).

Bluestem will own, operate, and maintain the system. The Project will provide locally generated energy, result in increased income for landowners, and enhance the economy and tax base for Madison County. The Project will be constructed in approximately six (6) months during Q1 and Q2 of 2025. Upon completion, the Project will require routine maintenance that would be performed by offsite labor personnel. The Project will not require a septic or county sewer connection. If water use is required, the use would be minimal and would likely come from the municipal source or would be sourced from an onsite well.

The purpose of the project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.848071950000005,-97.44777031653149,14z

Counties: Madison County, Nebraska

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened

FISHES

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered
Topeka Shiner *Notropis topeka (=tristis)* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4122	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

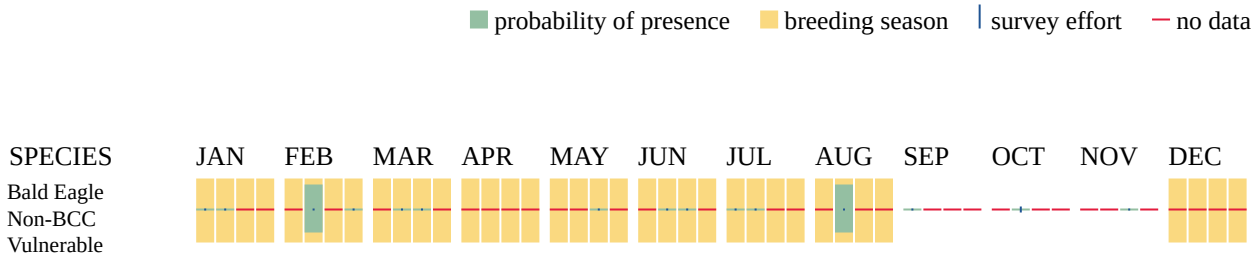
Probability of Presence (▪)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

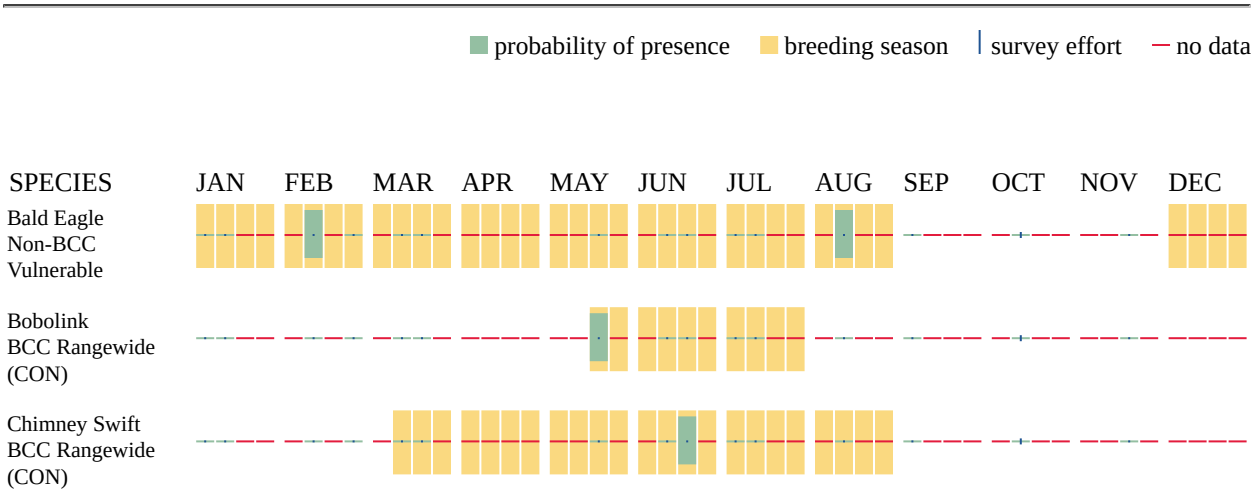
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R4SBC

IPAC USER CONTACT INFORMATION

Agency: Department of Agriculture
Name: Chase Jelden
Address: 6415 2nd Avenue
Address Line 2: Suite 1
City: Kearney
State: NE
Zip: 68847
Email cjelden@olsson.com
Phone: 3087087650

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Rural Development
Name: Jeff Carpenter
Email: jeff.carpenter@usda.gov

June 13, 2023

Ms. Jessica Tapp
Nebraska Game and Parks Commission
2200 North 33rd Street
Lincoln, NE 68503

RE: United States Department of Agriculture - Rural Development
Bluestem Energy Solutions, LLC. Madison, Nebraska

Dear Ms. Tapp:

Olsson, Inc (Olsson), on behalf of Bluestem Energy Solutions, LLC (Bluestem), is to provide information to the United States Department of Agriculture (USDA)-Rural Development in the process of completing a National Environmental Policy Act (NEPA) review to assess the environmental impacts of the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison, Madison County, Nebraska. After construction of the property, the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the solar array to the southwest corner of the property to connect to the existing overhead power lines along 829th Road. The purpose of the Project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources. Enclosed are a series of maps that depict the proposed Project's area of potential affect for all construction activities.

The proposed Project does not represent a "major construction activity" as defined in 50 CFR 402.02. The USDA does not think the project will result in an undertaking of any State or Federally-listed or proposed threatened or endangered species. Please advise us of any concerns you may have related to possible effects of the project listed above on such species or critical habitat. Nebraska Games and Parks have also been notified.

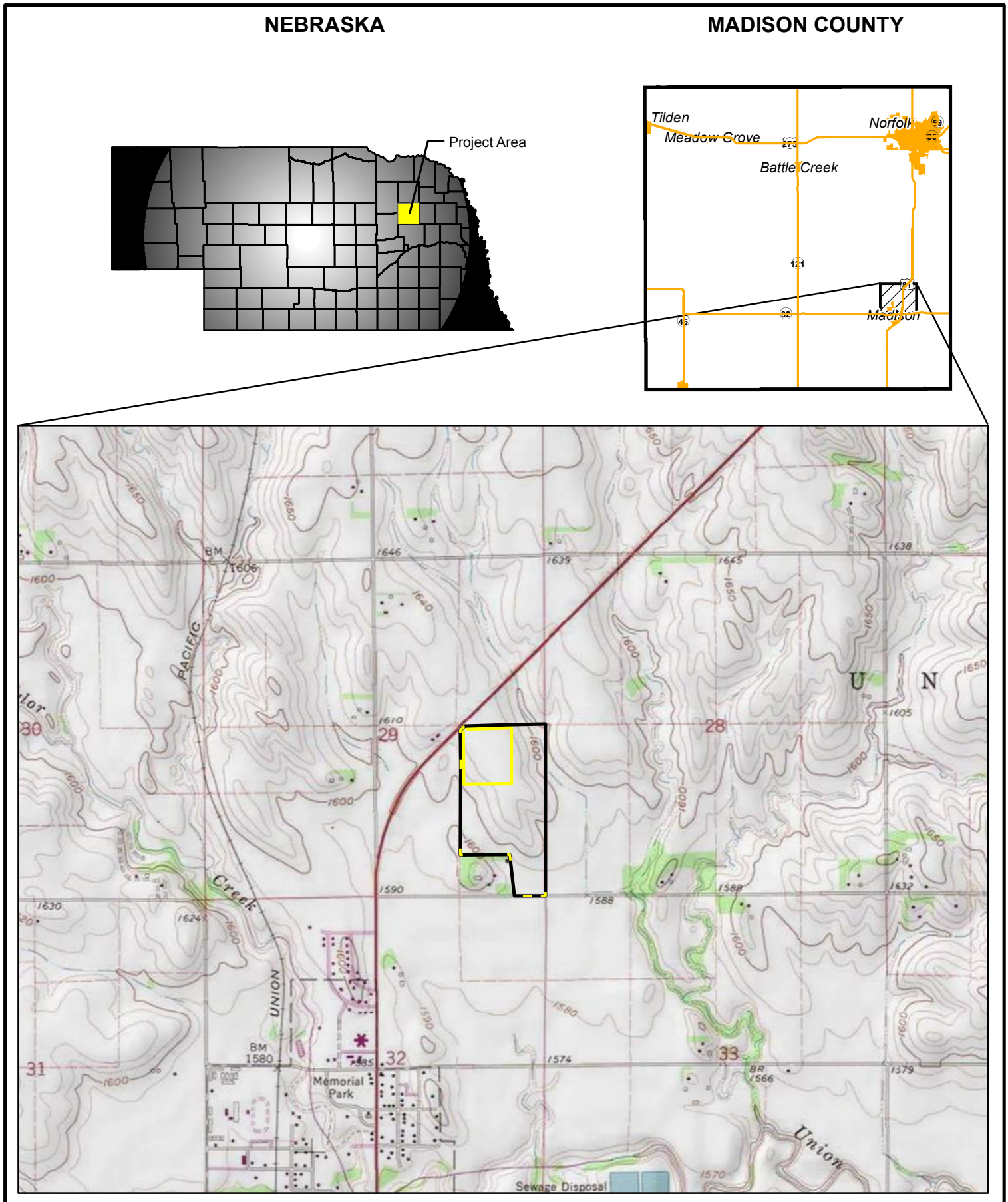
We would appreciate a response within 30 days. If you need any further information or wish to discuss the Project, please contact Chase Jelden at 308-708-7650 or cjelden@olsson.com

Sincerely,

Chase Jelden
Natural Resources and Planning

Olsson
2111 South 67th Street, Suite 200
Omaha, NE 68106

Enclosure: Site Location Map
Site Map
Site Plan
CERT
IPaC



Madison Solar Array
Bluestem Energy Solutions, LLC
Madison County, Nebraska
Olsson Project # 023-03812
Project Location Map
Figure 1

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: June 07, 2023

WGS 1984 ARC System Zone 11

Basemap: USA Topo Maps

N

0 87.5 175 350

ft

1 " = 350 '

Solar Array

Property

Madison Solar Array

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Site Map

Figure 2

F:\2023\03501-04000\023-03812\40-Design\GIS\23-06-07_NRPL_Figures.mxd PUBLISHED BY: mczerwinski DATE: June 07, 2023

WGS 1984 ARC System Zone 11

Basemap: Google Satellite

MADISON COUNTY SOLAR LAYOUT
SYSTEM SIZE DC: 2.88 MW
SYSTEM SIZE AC: 2.00 MW

MODULE: ET SOLAR 385 WATTS
TOTAL # OF MODULES: 7,488
TOTAL # OF STRINGS: 288
MODULES PER STRING: 26
STRINGS PER INVERTER: 18

SINGLE AXIS TRACKER SYSTEM

INVERTERS:
CHINT CPS-SCH125KTL-DO-US-600
TOTAL # OF INVERTERS: 16

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

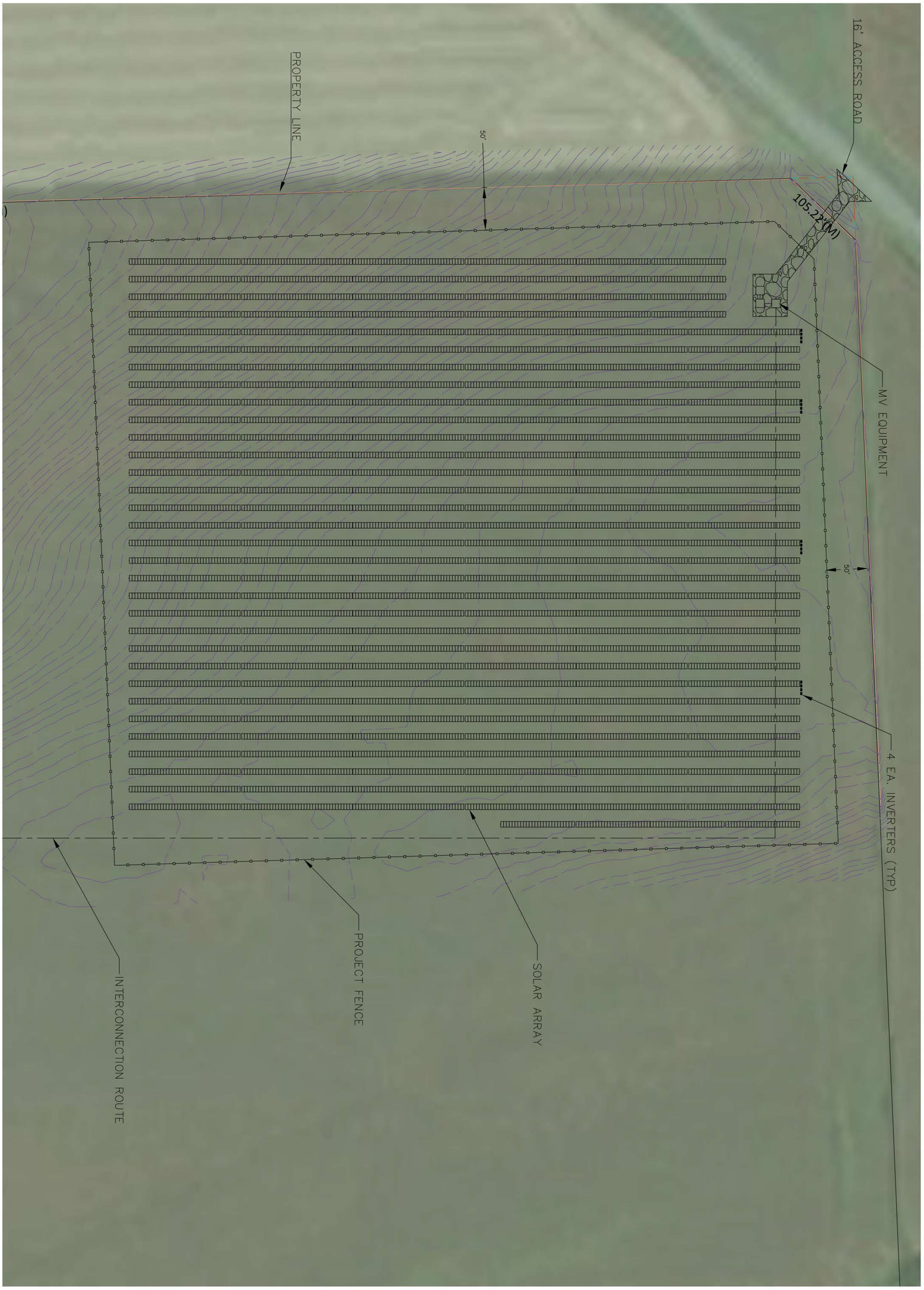
The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 200'

OVERALL SITE

G1.0



MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

SOLAR ARRAY

SCALE 1" = 50'

DATE: 1/27/2022

G1.1

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

Boyd Jones
950 S 10TH ST, STE 100
OMAHA, NE 68108

MADISON COUNTY SOLAR

The East half of the Southeast Quarter of Section 29, Township 22 North, Range 1, West of the 6th P.M., Madison County, Nebraska, less and except that part thereof conveyed to the State of Nebraska by Warranty Deed filed October 3, 1944, at Book 78, Page 513.

DATE: 1/27/2022

SCALE 1" = 30'

POI LOCATION

G1.2

Environmental Review Report

Project Information

Report Generation Date:	6/6/2023 04:43:02 PM
Project Title:	Bluestem Solar Array, Madison County, Nebraska
User Project Number(s):	023-03812
System Project ID:	NE-CERT-009896
Project Type:	Energy Production/Storage/Transfer, Solar
Project Activities:	None Selected
Project Size:	69.55 acres
County(s):	Madison
Watershed(s):	Elkhorn
Watershed(s) HUC 8:	Lower Elkhorn
Watershed(s) HUC 12:	Middle Union Creek
Biologically Unique Landscape(s):	None
Township/Range and/or Section(s):	T22R01WS29
Latitude/Longitude:	41.848419 / -97.447653

Contact Information

Organization:	Olsson
Contact Name:	Chase Jelden
Contact Phone:	4024746311
Contact Email:	cjelden@olsson.com
Contact Address:	601 P Street, Suite 200 Lincoln NE 68508
Prepared By:	
Submitted On Behalf Of:	USDA-RD

Project Description

Bluestem Energy Solutions, LLC (Bluestem) is a developer, owner, and operator of renewable energy resources and works to identify, develop, and implement local energy solutions for utilities. Bluestem has proposed the Madison County Solar Array, a Project would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed project is positioned on an existing parcel that is approximately 68-acres that is located in Madison, Madison County, Nebraska. More specifically, the Project is located on parcel number 590137032 and the legal property description of PT E1/2 SE1/4 LESS HWY 29-22-1. (Figure 1, Appendix A). The Project site is located south North Main Street and west of Untied States Highway 81 (US-81). The Project area encompasses the entire the northwest portion of the property with the solar array (approximately 15 acres) and underground conduit would extend south beyond the solar array to 829th Road. The project site is surrounded by row crop agriculture in all directions with a small area on the northwest portion directly abutting North Main Street and the ROW, the southwest corner abuts a rural residential property, and the south boundary abuts 829th Road and the ROW. An aerial view of the existing parcel and the Project area is depicted on the Site Map (Figure 2, Appendix A). The Madison County Solar Array will contain approximately 32 rows and containing up to 7,488 Photovoltaic (PV) cell panels or modules, that may be five (5) to seven (7) feet from the ground. The modules will be positioned on a single axis tracking system rotating east to west following the path of the sun throughout the day. Row spacing will be approximately 20 feet between rows. A total of 16 inverters would be used throughout the array to covert the DC electricity to AC electricity, which the electrical grid uses. A white rock or gravel access road will be located at the entrance to the array on the northwest corner of the property. The entire property would be enclosed with a six (6) feet tall chain link fence that would also contain three strands of barbed wire on top of the fence to provide additional security to the property. After construction of the property the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the property line from the southeast corner of the property to connect to the existing overhead power lines along 829th Road. The proposed Project is depicted in the Site Plan Map attached (Figure 3, Appendix A) Bluestem will own, operate, and maintain the system. The Project will provide locally generated energy, result in increased income for landowners, and enhance the economy and tax base for Madison County. The Project will be constructed in approximately six (6) months during Q1 and Q2 of 2025.Upon completion the Project will require routine maintenance that would be performed by offsite labor personnel. The Project will not require a septic or county sewer connection. If water use is required, the use would be minimal and would likely come from the municipal source or would be sourced from an onsite well. The purpose of the project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources.

Introduction

The Nebraska Game and Parks Commission (Commission) and the U.S. Fish and Wildlife Service (Service) have special concerns for endangered and threatened species, migratory birds, and other fish and wildlife and their habitats. Habitats frequently used by fish and wildlife species are wetlands, streams, riparian areas, woodlands, and grasslands. Special attention is given to proposed projects which modify wetlands, alter streams, result in loss of riparian habitat, convert/remove grasslands, or contaminate habitats. When this occurs, the Commission and Service recommend ways to avoid, minimize, or compensate for adverse effects to fish and wildlife and their habitats.

CONSULTATION PURSUANT TO THE NEBRASKA NONGAME AND ENDANGERED SPECIES CONSERVATION ACT (NESCA)

The Commission has responsibility for protecting state-listed endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). Pursuant to § 37-807 (3) of NESCA, all state agencies shall, in consultation with the Commission, ensure projects they authorize (i.e., issue a permit for), fund or carry out do not jeopardize the continued existence of state-listed endangered or threatened species or result in the destruction or modification of habitat of such species which is determined by the Commission to be critical. If a proposed project may affect state-listed species or designated critical habitat, further consultation with the Commission is required.

Informal consultation pursuant to NESCA can be completed by using the Conservation and Environmental Review Tool (CERT). The CERT analyzes the project type and location, and based on the analysis, provides information about

potential impacts to listed species, habitat questions and/or conservation conditions.

- If project proponents agree to implement conservation conditions, as outlined in the report and applicable to the project type, then this document serves as documentation of consultation and the following actions can be taken to move forward with the project:
    - Sign the report in the designated areas.
    - Upload the signed PDF as part of their "final" project submittal.
    - By agreeing to and implementing the conservation conditions as outlined (if applicable), then further consultation with the Commission is not required.
- If the report indicates the project may have impacts on state-listed species, then the following actions must be taken:
    - Project proponent is required to contact and consult with the Commission. Contact information can be found within this document.

TECHNICAL ASSISTANCE AND CONSULTATION PURSUANT TO THE ENDANGERED SPECIES ACT (ESA)

The Service has responsibility for conservation and management of fish and wildlife resources for the benefit of the American public under the following authorities: 1) Endangered Species Act of 1973 (ESA); 2) Fish and Wildlife Coordination Act; 3) Bald and Golden Eagle Protection Act; and 4) Migratory Bird Treaty Act. The National Environmental Policy Act (NEPA) requires compliance with all of these statutes and regulations.

Pursuant to section 7(a)(2) of ESA, every federal agency, shall in consultation with the Service, ensure that an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

If a proposed project may affect federally listed species or designated critical habitat, Section 7 consultation is required with the Service. It is the responsibility of the lead federal action agency to fully evaluate all potential effects (direct and indirect) that may occur to federally listed species and critical habitat in the action area. The lead federal agency provides their effect determination to the Service for concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by implementation of the project, the lead federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of federal funds (section 7(d) of ESA), or issuing any federal permits or licenses.

The information generated in this report DOES NOT satisfy consultation obligations between the lead federal agency and the Service pursuant to ESA. For the purposes of ESA, the information in this report should be considered as TECHNICAL ASSISTANCE, and does not serve as the Service's concurrence letter, even if the user signs and agrees to implement conservation conditions in order to satisfy the consultation requirements of NESCA.

Overall Results

The following result is based on a detailed analysis of your project.

- Potential impacts on listed species may occur as a result of this project. Please proceed with the following: Sign and date the certification section. Upload the document as "final." Email a copy of the report with a request for review to the Nebraska Game and Parks Commission (ngpc.envreview@nebraska.gov) and copy the U.S. Fish and Wildlife Service (nebraskaes@fws.gov) for further consultation.

Additional Information

Potential impacts on listed species may occur as a result of this project. Further consultation with the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service is required.

Certification

I certify that ALL of the project information in this report (including project location, project size/configuration, project type, project activities, answers to questions) is true, accurate, and complete. If the project type, activities, location, size, or configuration of the project change, or if any of the answers to any questions asked in this report change, then this information is no longer valid and we recommend running the revised project through CERT to get an updated report.

_____ _____

Applicant/project proponent signature Date

Additional Considerations

Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668c) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Under the Eagle Act, “take” of eagles, their parts, nests or eggs is prohibited. Disturbance resulting in injury to an eagle or a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior is a form of “take.”

Bald eagles use mature, forested riparian areas near rivers, streams, lakes, and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and the wintering period extends from December-March. The golden eagle is found in arid open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Golden eagles are often a permanent resident in the Pine Ridge area of Nebraska. Additionally, many bald and golden eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5-miles of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching, and roosting habitats, respectively. The frequency and duration of eagle use of these habitats in the winter depends upon ice and weather conditions. Human disturbances and loss of wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These affects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species.

To comply with the Eagle Act, it is recommended that the project proponent determine if the proposed project would impact bald or golden eagles or their habitats. This can be done by conducting a habitat assessment, surveying nesting habitat for active and inactive nests, and surveying potential winter roosting habitat to determine if it is being used by eagles. The area to be surveyed is dependent on the type of project; however for most projects we recommend surveying the project area and a ½ mile buffer around the project area. If it is determined that either species could be affected by the proposed project, the Commission recommends that the project proponent notify the Nebraska Game and Parks Commission as well as the Nebraska Field Office, U.S. Fish and Wildlife Service for recommendations to avoid “take” of bald and golden eagles.

Migratory Bird Treaty Act and Nebraska Revised Statute §37-540

We recommend the project proponent comply with the Migratory Bird Treaty Act (16 U.S.C. 703-712: Ch. 128 *as amended*) (MBTA). The project proponent should also comply with Nebraska Revised Statute §37-540, which prohibits take and destruction of nests or eggs of protected birds (as defined in Nebraska Revised Statute §37-237.01). Construction activities in grassland, wetland, stream, woodland, and river bank habitats that would result in impacts on birds, their nests or eggs protected under these laws should be avoided. Although the provisions of these laws are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period of May 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For

example, raptors can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10. If development in this area is planned to occur during the primary nesting season or at any other time which may result in impacts to birds, their nests or eggs protected under these laws, we request that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. If a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities, the Nebraska Game and Parks Commission and the Nebraska Field Office, U.S. Fish and Wildlife Service should be contacted immediately. For more information on avoiding impacts to migratory birds, their nests and eggs, or to report active bird nests that cannot be avoided by planned construction activities, please contact the U.S. Fish and Wildlife Service and/or the Nebraska Game and Parks Commission (contact information within report). Adherence to these guidelines will help avoid unnecessary impacts on migratory birds.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires consultation with the U.S. Fish and Wildlife Service (Service) and the State fish and wildlife agency (i.e., Nebraska Game and Parks Commission) for the purpose of preventing loss of and damage to fish and wildlife resources in the planning, implementation, and operation of federal and federaly funded, permitted, or licensed water resource development projects. This statute requires that federal agencies take into consideration the effect that the water related project would have on fish and wildlife resources, to take action to prevent loss or damage to these resources, and to provide for the development and improvement of these resources. The comments in this letter are provided as technical assistance only and are not the document required of the Secretary of the Interior pursuant to Section 2(b) of FWCA on any required federal environmental review or permit. This technical assistance is valid only for the described conditions and will have to be revised if significant environmental changes or changes in the proposed project take place. In order to determine whether the effects to fish and wildlife resources from the proposed project are being considered under FWCA, the lead federal agency must notify the Service in writing of how the comments and recommendations in this technical assistance letter are being considered into the proposed project.

Section 404 of the Clean Water Act

In general, the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service have concerns for impacts to wetlands, streams and riparian habitats. We recommend that impacts to wetlands, streams, and associated riparian corridors be avoided and minimized, and that any unavoidable impacts to these habitats be mitigated. If any fill materials will be placed into waterways or wetlands, the U.S. Army Corps of Engineers Regulatory Office in Omaha should be contacted to determine if a 404 permit is needed.

Agency Contact Information

Nebraska Game and Parks Commission
Environmental Review Team
2200 North 33rd Street
Lincoln, NE 68503
phone: (402) 471-5423
email: ngpc.envreview@nebraska.gov

U.S. Fish and Wildlife Service

Nebraska Ecological Services
9325 South Alda Road
Wood River, NE 68883
phone: (308) 382-6468
email: nebraskaes@fws.gov

Bluestem Solar Array, Madison County, Nebraska

Aerial Image Basemap With Locator Map

3-mile Information Buffer Boundary

Project Review Boundary

Project Boundary

Project Size (acres): 69.55

Lat/Long (DD): 41.8484 / -97.4477

County(s): Madison

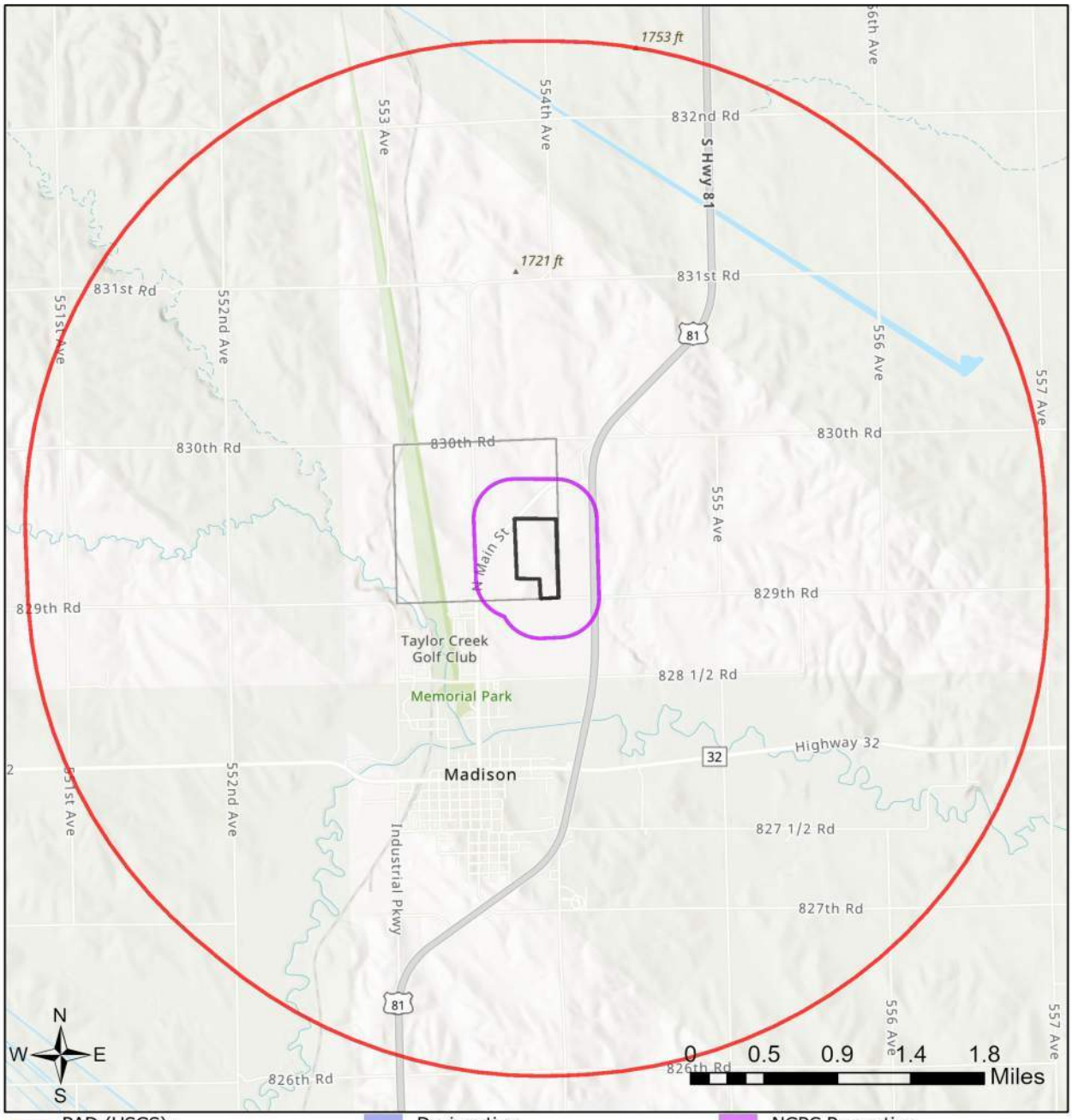
BUL(s):

Township/Range/Section(s): T22R01WS29

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Bluestem Solar Array, Madison County, Nebraska

Topographic Basemap With Sections and Protected Areas

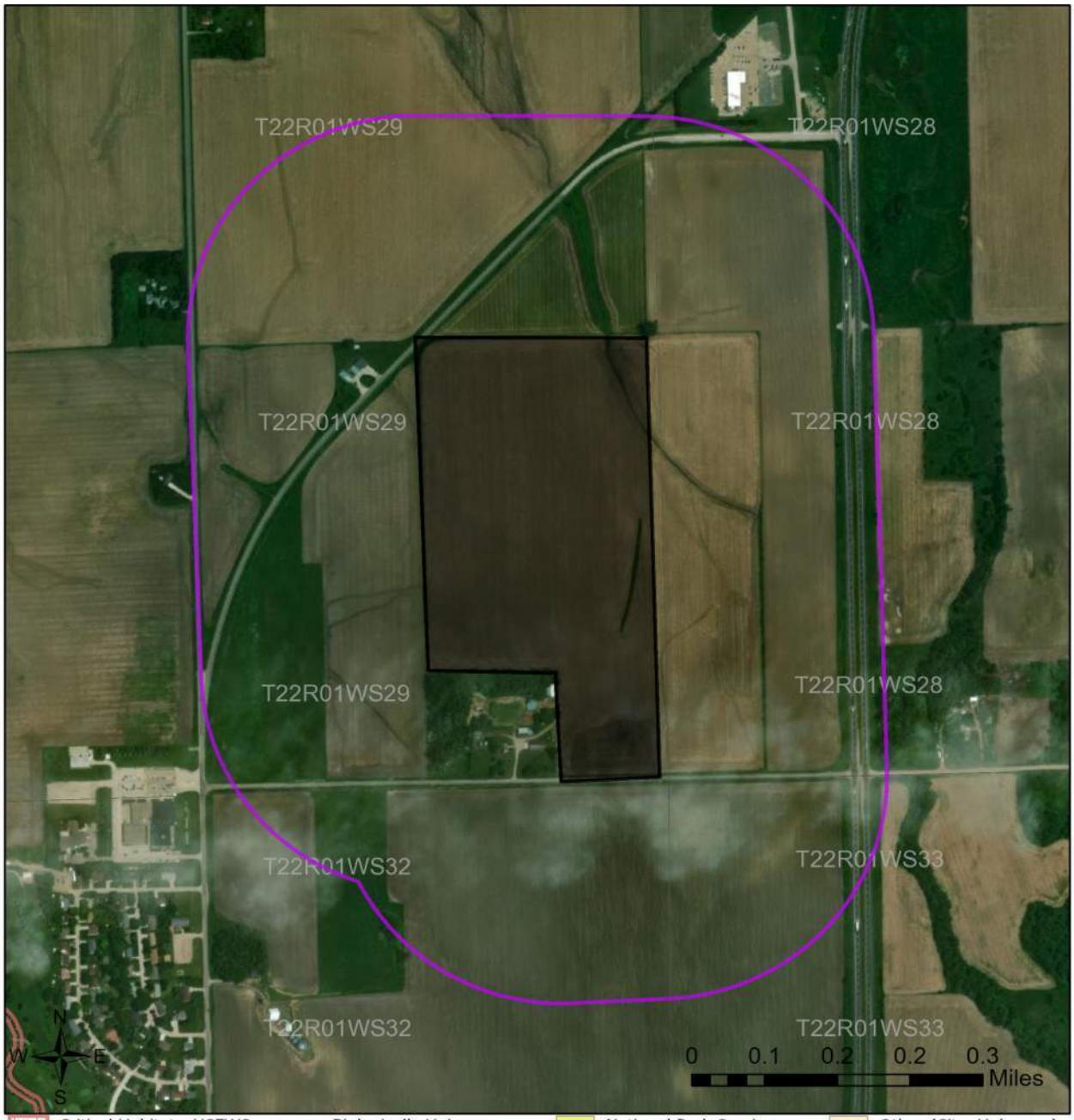


- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- NGPC Properties
- Sections
- 3-mile Information Buffer Boundary
- Project Review Boundary
- Project Boundary

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Bluestem Solar Array, Madison County, Nebraska

Web Map As Submitted By User



- Critical Habitat - USFWS
- Missouri National Recreation River
- Niobrara National Scenic River
- 1
- 2
- Biologically Unique Landscapes
- NGPC Properties
- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- Sections
- Townships
- Counties
- Project Review Boundary
- Project Boundary

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Table 1
Protected Areas in Immediate Vicinity of Project (project review area)

This table has no results.

Table 2
Documented Occurrences in Immediate Vicinity of Project (project review area):
Natural communities and selected special areas

This table has no results.

Table 3
Regional Documented Occurrences of Species within 1 Mile of Project Review Area:
Tier 1 and 2 at-risk species and additional S1-S3 plants

Scientific Name	Common Name	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Haliaeetus leucocephalus	Bald Eagle			Tier 2	S3	G5	Vertebrate Animal - Birds
Notropis topeka	Topeka Shiner	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Platanthera praeclara	Western Prairie Fringed Orchid	T	T	Tier 1	S2	G3	Vascular Plant - Monocots

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Ammodramus henslowii	Henslow's Sparrow	Range			Tier 1	S1	G4	Vertebrate Animal - Birds
Asio flammeus	Short-eared Owl	Range			Tier 1	S2	G5	Vertebrate Animal - Birds
Atrytone arogos iowa	Iowa Skipper	Range			Tier 1	S1	G2G3T2T3	Invertebrate Animal - Butterflies and Skippers
Boloria selene nebraskensis	Nebraska Fritillary	Range			Tier 1	SNR	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Calidris subruficollis	Buff-breasted Sandpiper	Range			Tier 1	S2N	G4	Vertebrate Animal - Birds
Catocala nuptialis	Married Underwing	Range			Tier 1	SNR	G3	Invertebrate Animal - Underwing Moths
Catocala whitneyi	Whitney Underwing	Range			Tier 1	S1	G2G3	Invertebrate Animal - Underwing Moths
Cicindela limbata limbata	Sandy Tiger Beetle	Range			Tier 1	S4	G5T3T4	Invertebrate Animal - Beetles
Coccyzus erythropthalmus	Black-billed Cuckoo	Range			Tier 1	S3	G5	Vertebrate Animal - Birds
Danaus plexippus	Monarch	Range			Tier 1	S2	G4	Invertebrate Animal - Butterflies

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
								and Skippers
Ellipsoptera lepida	Ghost Tiger Beetle	Range			Tier 1	S2	G3G4	Invertebrate Animal - Beetles
Emydoidea blandingii	Blanding's Turtle	Range		NC	Tier 1	S4	G4	Vertebrate Animal - Turtles
Euphyes bimacula illinois	Two-spotted Skipper	Range			Tier 1	S3	G4T1T2	Invertebrate Animal - Butterflies and Skippers
Euphyes conspicua buchholzi	Bucholz Black Dash	Range			Tier 1	S1	G4G5T1	Invertebrate Animal - Butterflies and Skippers
Fundulus sciadicus	Plains Topminnow	Range			Tier 1	S3	G4	Vertebrate Animal - Fishes
Haliaeetus leucocephalus	Bald Eagle	Range			Tier 2	S3	G5	Vertebrate Animal - Birds
Hesperia ottoe	Ottoe Skipper	Range			Tier 1	S2	G3	Invertebrate Animal - Butterflies and Skippers
Lanius ludovicianus	Loggerhead Shrike	Range			Tier 1	S3	G4	Vertebrate Animal - Birds
Lasiurus borealis	Eastern Red Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lasiurus cinereus	Hoary Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lethe eurydice fumosus	Smoky-eyed Brown	Range			Tier 1	S3	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Myotis septentrionalis	Northern Long-eared Myotis	Range	T	T	Tier 1	S1S2	G1G2	Vertebrate Animal - Mammals
Notropis topeka	Topeka Shiner	Model	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Perimyotis subflavus	Tricolored Bat	Range			Tier 1	S3	G2G3	Vertebrate Animal - Mammals
Perognathus flavescens perniger	Plains Pocket Mouse	Range			Tier 1	SNR	G5TNR	Vertebrate Animal - Mammals
Platanthera praeclara	Western Prairie Fringed Orchid	Range	T	T	Tier 1	S2	G3	Vascular Plant - Flowering Plants
Speyeria idalia	Regal Fritillary	Range			Tier 1	S3	G3?	Invertebrate Animal - Butterflies and Skippers

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
Phone: (308) 382-6468 Fax: (308) 384-8835

In Reply Refer To: June 07, 2023
Project Code: 2023-0090493
Project Name: Madison County Solar Array

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/media/endangered-species-consultation-handbook or at our Nebraska Field Office webpage (https://www.fws.gov/office/nebraska-ecological-services/project-planning-and-review-under-endangered-species-act).

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts and permitting see https://www.fws.gov/program/migratory-bird-permit

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit:

https://www.federalregister.gov/documents/2012/10/03/2012-24433/migratory-bird-conservation-executive-order-13186

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Consultation Code

(YEAR-XXXXXXX) in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
(308) 382-6468

PROJECT SUMMARY

Project Code: 2023-0090493
Project Name: Madison County Solar Array
Project Type: Power Gen - Solar
Project Description: Bluestem Energy Solutions, LLC (Bluestem) is a developer, owner, and operator of renewable energy resources and works to identify, develop, and implement local energy solutions for utilities. Bluestem has proposed the Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed project is positioned on an existing parcel that is approximately 68-acres that is located in Madison, Madison County, Nebraska. More specifically, the Project is located on parcel number 590137032 and the legal property description of PT E1/2 SE1/4 LESS HWY 29-22-1. (Figure 1, Appendix A).

The Project site is located south of North Main Street and west of United States Highway 81 (US-81). The solar array would encompass the northwest portion of the property and occupy approximately 15 acres of the 68-acre parcel. Underground conduit would extend south beyond the solar array to 829th Road. The project site is surrounded by row crop agriculture in all directions with a small area on the northwest portion directly abutting North Main Street and the ROW, the southwest corner abuts a rural residential property, and the south boundary abuts 829th Road and the ROW. An aerial view of the existing parcel and the Project area is depicted on the Site Map (Figure 2, Appendix A).

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be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the property line from the southeast corner of the property to connect to the existing overhead power lines along 829th Road. The proposed Project is depicted in the Site Plan Map attached (Figure 3, Appendix A).

Bluestem will own, operate, and maintain the system. The Project will provide locally generated energy, result in increased income for landowners, and enhance the economy and tax base for Madison County. The Project will be constructed in approximately six (6) months during Q1 and Q2 of 2025. Upon completion, the Project will require routine maintenance that would be performed by offsite labor personnel. The Project will not require a septic or county sewer connection. If water use is required, the use would be minimal and would likely come from the municipal source or would be sourced from an onsite well.

The purpose of the project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.848071950000005,-97.44777031653149,14z

Counties: Madison County, Nebraska

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened

FISHES

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered
Topeka Shiner *Notropis topeka (=tristis)* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4122	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

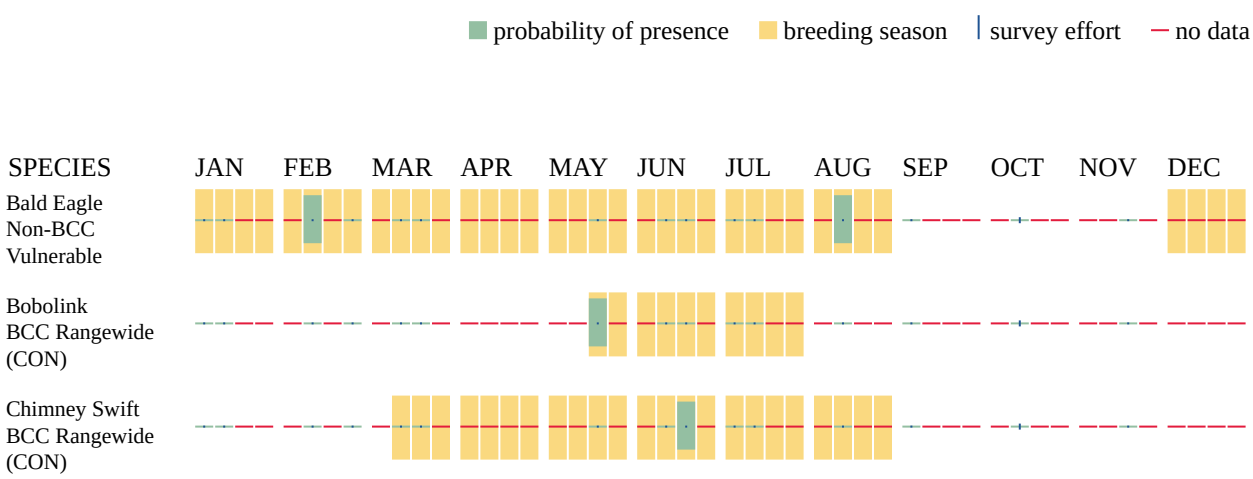
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R4SBC

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Rogan Maxwell
Address: 601 P Street
Address Line 2: Suite 200
City: Lincoln
State: NE
Zip: 68508
Email rmaxwell@olsson.com
Phone: 5312057792

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Agriculture
Name: Rogan Maxwell
Email: rmaxwell@olsson.com

NEBRASKA GAME PARKS

2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641

July 10, 2023

Chase Jelden
Olsson
2111 South 67th Street, Suite 200
Omaha, Nebraska 68106

RE: Bluestem Energy Solutions, LLC Madison Solar Array, NGPC Project No. SOLR23001, Project Proponent No. 023-03812, Madison County

Dear Chase Jelden:

Nebraska Game and Parks Commission (NGPC) staff members have reviewed the information for the proposal identified above. This review was requested pursuant to the National Environmental Policy Act (NEPA). As we understand it, the project would involve the installation of a 15-acre Solar Array for renewable energy generation and associated collection and interconnection lines north of the City of Madison.

The proposed project would not impact any NGPC State Park, State Recreation Area, State Wildlife Management, or any other NGPC owned or managed properties. Additionally, we have reviewed our Land and Water Conservation Fund (LWCF) grant files and development of this project would have no impact to a LWCF encumbered property.

Based on our review of the information provided, aerial photographs, and the Nebraska Natural Heritage database, the project is located within the estimated range of the following state-listed endangered or threatened species: state-listed endangered Northern long-eared bat *(Myotis septentrionalis)*, Topeka shiner *(Notropis topeka)*, and the state-listed threatened Western prairie fringed orchid *(Platanthera praeclara)*.

During the summer, Northern long-eared bats typically roost singly or in colonies underneath bark or in cavities, crevices, or hollows of live and dead trees and/or snags (typically ≥ 3 inches dbh) and often prefer to be along streams or riparian corridors where water is readily available. There does not appear to be any suitable roosting habitat within 1,000 feet of the project area, therefore, it is unlikely that Northern long-eared bat will be adversely impacted by construction of the solar array.

The Topeka shiner is a small minnow occurring in small prairie streams with pools containing clear, clean water. Declines are attributed to the degradation of its stream habitat including channelization, siltation and decline in water quality and quantity. The range of this species is very limited. In Nebraska, it is only found in southeast Madison County and in southeast Cherry County. The project as described does not appear to impact any nearby cool-water streams, therefore, it does not appear Topeka shiner will be impacted.

Western prairie fringed orchid occurs in native tall or mixed-grass prairies that are associated with wet meadows. Due to the project area having been previously disturbed due to agricultural practices, it does not appear that the project will have an adverse impact to Western prairie fringed orchid.

Under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712: Ch 128 as amended) construction activities in grassland, wetland, stream, and woodland habitats that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided. The primary nesting season for migratory birds is from April 1 to July 15. However, some species of migratory birds are known to nest

outside of this period. Construction activities that involve vegetation removal should be scheduled to avoid impacting migratory bird nesting. If this is not feasible, then a survey will be needed. The U.S. Fish and Wildlife Service, Ecological Services Office in Grand Island can be contacted for information on how to avoid the unnecessary take of migratory birds.

Thank you for opportunity to review this proposal. Please contact me if you have any questions regarding these comments at **402-471-5423** or **amelia.baker@nebraska.gov**.

Sincerely,

Amelia Baker
Environmental Specialist II
Planning and Programming Division

NEBRASKA
GAME PARKS

2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641

May 3, 2024

Chase Jelden
Olsson
2111 South 67th Street, Suite 200
Omaha, Nebraska 68106

Re: Bluestem Energy Solutions, LLC Madison Solar Array, NGPC Project No. SOLR23001; NE-CERT-009896; Madison County, Nebraska

Dear Mr. Jelden:

Please make reference to your correspondence dated March 25, 2024. This letter is in response to a request for a review pursuant to the National Environmental Policy Act (NEPA). As we understand it, the project would involve the installation of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array covering approximately 15 acres, north of the City of Madison in Madison County, Nebraska. Additional information indicates the solar array would interconnect to the City of Madison's electric distribution system and one hundred percent of the electricity would be used locally by their rate payers. The Nebraska Game and Parks Commission (Commission) has responsibility for protecting endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). We have reviewed the project pursuant to NESCA and offer the following comments.

Solar energy is widely considered environmentally friendly as it is renewable and produces little to no emissions. Potential consequences of global warming warrant investigation and production of alternative, non-carbon-emitting, energy sources. However, all forms of energy production, including renewable energy, can be found to have some environmental impact. Studies on wildlife and solar energy facilities are scarce; however, recent information collected at solar facilities in the Southwest United States indicates that wildlife, particularly avian species, can be negatively affected by solar energy development. Direct impacts can occur when birds or bats collide with solar panels and mirrors, or traditional terrestrial migration routes are impeded by the location of a solar facility. Indirect effects can occur when wildlife species are displaced by altering, segmenting, or removing necessary features of their habitat. Impacts can likely be reduced or avoided by smart siting and placement of solar panels, mirrors and towers, and associated infrastructure, as well as implementation of other management practices.

The Commission has developed guidelines for solar developers to help assess and minimize potential environmental impacts that could result from commercial solar energy development. Each project and situation is unique; therefore, avoiding impacts is accomplished through proper evaluation and site selection, proper design of solar arrays and associated structures, and pre and post construction surveys and monitoring. The following recommendations are based on the guidelines and contain additional information pertinent to the proposed site.

1. ***Avoid impacts to protected species:***

   Avoid placing solar arrays, associated infrastructure, and roads in areas where they would have a direct or indirect impact on species protected under the Nebraska Nongame and Endangered Species Conservation Act, the federal Endangered Species Act, and the Bald and Golden Eagle Protection Act. Site solar arrays in areas where impacts to migratory birds would be minimized in accordance with the Migratory Bird Treaty Act.

   - The proposed project is within the range of the federally and state-listed endangered **northern long-eared bat** (*Myotis septentrionalis)* and **Topeka shiner** (*Notropis topeka*); the federally and state-listed threatened **western prairie fringed orchid** (*Platanthera praeclara)*; and the proposed endangered **tri-colored bat** (*Perimyotis subflavus*). We recognize that the project is primarily sited in tilled agricultural fields; however, there may be suitable maternity roost trees in the vicinity. Additionally, in Nebraska, the Topeka shiner is only found in southeast Madison County, where the project area is located, and in southeast Cherry County. Suitable habitat for western prairie fringed orchid does not appear to be present within the proposed project area due to regular agricultural disturbance.

Northern Long-Eared Bat and **Tri-Colored Bat**

During the summer, northern long-eared bats (NLEB) typically roost singly or in colonies underneath bark or in cavities, crevices, or hollows of live and dead trees and/or snags (typically ≥ 3 inches diameter at breast height). Males and non-reproductive females may also roost in cooler places, like caves and mines. This species of bat seems opportunistic in selecting roosts, using trees based on the presence of cavities, crevices, or peeling bark. They have also occasionally been found roosting in structures like barns and sheds, particularly when traditional roosting habitat is not available. They forage on insects in upland and lowland woodlots and tree lined corridors. NLEBs typically overwinter in hibernacula that include caves and abandoned mines; however, this species may also use other structures resembling caves or mines, such as abandoned railroad tunnels, storm sewer entrances, dry wells, aqueducts, and other similar structures.

During the summer, tri-colored bats typically roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. In addition, tricolored bats have been observed roosting during summer among pine needles, eastern red cedar (*Juniperus virginiana*), within artificial roosts like barns, beneath porch roofs, bridges, concrete bunkers, and rarely within caves. Female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations. Female tricolored bats form maternity colonies and switch roost trees regularly. Males roost singly. They forage on insects in upland and lowland woodlots and tree lined corridors. In Nebraska, tri-colored bats typically overwinter in hibernacula that include caves and abandoned mines but may also use other structures resembling caves or mines, such as abandoned railroad tunnels, and other similar structures. Tri-colored bats exhibit high site fidelity with many individuals returning year after year to the same hibernaculum. While tri-colored bat is not yet listed, it is a species of greatest conservation need and should be considered for protection in development of this project.

- While records of NLEBs or tri-colored bats have not been documented within or near the project area, these extremely mobile species may occur in the project area. In areas that provide potentially suitable habitat for NLEB or tri-colored bat, we recommend tree clearing be avoided during the active season (April 1 – October 31).

This will minimize impacts to roosting adults and pups at roosts that have not yet been identified. Additionally, we recommend avoiding the use of insecticide that targets prey species of NLEB and tri-colored bat.

Topeka Shiner

Topeka shiner is a state and federally listed endangered species. It is a small minnow occurring in small prairie streams with pools containing clear, clean water. Declines are attributed to the degradation of its stream habitat including channelization, siltation and decline in water quality and quantity. The range of this species is very limited. In Nebraska, it is only found in southeast Madison County and in southeast Cherry County. The significant reduction of this species in number and distribution indicates it is a sensitive species. Additional reductions in stream flows to these areas would negatively impact this species.

- The are records of and habitat for Topeka shiner within 1-mile of the project boundaries. Practices that allow soil to runoff into waterways following rainfall events cause additional siltation of streams and increase turbidity which can result in a lowering of water quality and thus, a loss in the diversity of natural aquatic systems. There is no aquatic habitat present within the project boundary, nevertheless, the Commission recommends that the project proponent incorporate rigorous soil erosion control practices both during and after the proposed construction and alignment procedures in order to avoid impacts to fish and other aquatic organisms.

2. ***Avoid Rare Plant Communities, Natural Legacy Tier 1 Species, and Areas of Wildlife Concentrations:***

Site solar arrays and other infrastructure away from occurrences of at-risk species, rare plant communities (i.e., tallgrass prairie, oak woodland, saline wetlands), and areas where wildlife concentrate (e.g., high quality prairie, riparian areas, wet meadows, wetlands, bird wintering areas). The Nebraska Natural Heritage Program tracks occurrences of "at-risk" species and native plant communities within the state. At-risk species and communities are those that are locally, nationally, or globally most imperiled. State listed endangered and threatened species are considered at-risk, but not all at-risk species are listed as endangered or threatened. All at-risk species and communities are considered a valuable state resource worthy of ensuring continued existence in Nebraska. One goal of the *Nebraska Natural Legacy Project* (Schneider et al. 2011) is to prevent non-listed at-risk species from becoming listed as endangered or threatened.

3. ***Minimize fragmentation and impacts to streams and wetlands***

Existing roads and utility corridors should be utilized. New access roads and utility corridors, as well as solar array sites should be configured to avoid high quality habitats and minimize habitat fragmentation. Access roads and utility corridors should have alignments that minimize stream crossing and wetland impacts.

4. ***Develop away from protected lands:***

State and federally owned and managed wildlife or recreation properties (e.g., State Parks, Wildlife Management Areas, State Recreation Areas, Waterfowl production Areas, National Wildlife Refuges, etc.) should be avoided for biological and aesthetic reasons. A

one-mile buffer is recommended around all state-owned and managed wildlife and recreation properties. In some cases, a larger buffer may be recommended.

- No state-owned or managed lands are located within the immediate vicinity of the project.

5. ***Develop on previously disturbed lands:***

Site solar facilities on previously altered landscapes, such as areas of cultivation, near towns, or urban and industrial areas. Avoid siting facilities in areas of contiguous intact native habitat and areas of concentrated wildlife use. If the site selected has not been previously disturbed, mow or graze the area around the installation site prior to construction and do not grade the footprint unless required by the topography. Avoid siting the facilities on highly erodible lands as the shading from arrays may reduce or eliminate vegetation and result in soil erosion.

- Aerial review of the proposed location of the project appears to be currently cultivated for agricultural purposes and appears to have been previously disturbed for several decades.

6. ***Restore disturbed areas:***

Minimize ground disturbance during construction and decommissioning. After construction is complete, restore disturbed areas which are not needed for facility operations (e.g., roads, staging sites, laydown yards, etc.). After a project becomes decommissioned, restore the site such that the habitat is better-than or equal-to the original habitat conditions present at the site. Use site-appropriate native species on previously undisturbed or grazed ground when replanting or seeding areas that have been disturbed.

7. ***Reduce the risk of bird electrocution:***

Bury all collection lines from solar arrays within the energy facility. Any above ground power lines (i.e., from the solar array to the power grid), riser poles, transformers, and conductors should be constructed according to current Avian Power Line Interaction Committee (APLIC) standards. Bird flight diverters should be installed on the overhead power lines associated with the project.

8. ***Minimize attractants and disturbances:***

Minimize the number and intensity of lights associated with the solar project, including operation and maintenance facilities and substations. Use lights that are hooded downward (i.e., downshielded). Train personnel to be aware of wildlife in the area, reduce vehicle speed, and avoid disturbing wildlife.

9. ***Additional recommendations:***

Use a fence design that will allow for wildlife passage and will not impede migratory movements. Larger openings along the bottom will allow foxes and other small animals to pass through the solar facility. Use C-style pipe or cap open pipes to minimize bird deaths during construction.

In most cases, siting infrastructure in existing crop fields will greatly reduce potential impacts to native plant and wildlife species and will reduce habitat loss and fragmentation. However, siting infrastructure in crop fields adjacent to grasslands, woodlands, wetlands, rivers, and migratory bird stopover sites can still pose a threat to birds and bats which nest and/or feed in crop fields. Land use and cover in this area, as previously stated, consists of row crop agriculture interspersed with grassed drainageways and grazed rangelands and canyons. **Overall, this site appears to be a reasonable area for solar development with regards to wildlife if it is developed properly and if appropriate conservation measures are implemented.**

If at any time during the planning, construction, operational, or decommissioning phases the proposed project changes, new information regarding potential impacts of solar energy development on species protected under state and federal wildlife laws becomes available, or new species become listed as endangered or threatened, then additional surveys or avoidance, minimization, and/or mitigation measures may be required.

Please note this correspondence does not satisfy consultation requirements of the Nongame and Endangered Species Conservation Act. Under authority of Neb. Rev. Stat. §37-807 (3), all Nebraska state agencies are required to consult with the Commission to ensure any actions authorized, funded, or carried out by them do not jeopardize the continued existence of a state listed species. This requirement would extend to any permit issued or authorized by a state agency, such as the Nebraska Power Review Board or the Nebraska Department of Environment and Energy.

For an assessment of potential impacts to habitats and species protected under federal wildlife laws, including federally listed, candidate or proposed endangered or threatened species, please contact Nebraska Field Office (nebraskaes@fws.gov), U.S. Fish and Wildlife Service, 9325 South Alda Road, Wood River, NE 68883.

Thank you for the opportunity to comment. We encourage continued coordination with the Commission and the U.S. Fish and Wildlife Service as this project moves forward. If you have any questions or need additional information, please feel free to contact me at (402) 471-5423 or amelia.baker@nebraska.gov.

Sincerely,

Amelia Baker
Environmental Specialist II
Planning and Programming Division

ec: USFWS (Nebraska Ecological Services Field Office)
NGPC (Ruby Rolland)

REFERENCES

Schneider, R., K. Stoner, G. Steinauer, M. Panella, and M. Humpert. 2011. The Nebraska Natural Legacy Project: State Wildlife Action Plan, 2nd ed. The Nebraska Game and Parks Commission, Lincoln, NE.

Tannerfeldt, M., A. Moehrenschlager and A. Angerbjorn. 2003. *Den ecology of swift, kit and arctic foxes: A review*. In The Swift Fox: Ecology and conservation of swift foxes in a changing world, M. Sovada and L. Carbyn editors. Canadian Plains Research Center, University of Regina.

Environmental Review Report

Project Information

Report Generation Date:	4/25/2024 03:30:16 PM
Project Title:	Bluestem Solar Array, Madison County, Nebraska
User Project Number(s):	023-03812
System Project ID:	NE-CERT-009896
Project Type:	Energy Production/Storage/Transfer, Solar
Project Activities:	None Selected
Project Size:	69.55 acres
County(s):	Madison
Watershed(s):	Elkhorn
Watershed(s) HUC 8:	Lower Elkhorn
Watershed(s) HUC 12:	Middle Union Creek
Biologically Unique Landscape(s):	None
Township/Range and/or Section(s):	T22R01WS29
Latitude/Longitude:	41.848419 / -97.447653

Contact Information

Organization:	Olsson
Contact Name:	Chase Jelden
Contact Phone:	4024746311
Contact Email:	cjelden@olsson.com
Contact Address:	601 P Street, Suite 200 Lincoln NE 68508
Prepared By:	
Submitted On Behalf Of:	USDA-RD

Project Description

Bluestem Energy Solutions, LLC (Bluestem) is a developer, owner, and operator of renewable energy resources and works to identify, develop, and implement local energy solutions for utilities. Bluestem has proposed the Madison County Solar Array, a Project would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed project is positioned on an existing parcel that is approximately 68-acres that is located in Madison, Madison County, Nebraska. More specifically, the Project is located on parcel number 590137032 and the legal property description of PT E1/2 SE1/4 LESS HWY 29-22-1. (Figure 1, Appendix A). The Project site is located south North Main Street and west of Untied States Highway 81 (US-81). The Project area encompasses the entire the northwest portion of the property with the solar array (approximately 15 acres) and underground conduit would extend south beyond the solar array to 829th Road. The project site is surrounded by row crop agriculture in all directions with a small area on the northwest portion directly abutting North Main Street and the ROW, the southwest corner abuts a rural residential property, and the south boundary abuts 829th Road and the ROW. An aerial view of the existing parcel and the Project area is depicted on the Site Map (Figure 2, Appendix A). The Madison County Solar Array will contain approximately 32 rows and containing up to 7,488 Photovoltaic (PV) cell panels or modules, that may be five (5) to seven (7) feet from the ground. The modules will be positioned on a single axis tracking system rotating east to west following the path of the sun throughout the day. Row spacing will be approximately 20 feet between rows. A total of 16 inverters would be used throughout the array to covert the DC electricity to AC electricity, which the electrical grid uses. A white rock or gravel access road will be located at the entrance to the array on the northwest corner of the property. The entire property would be enclosed with a six (6) feet tall chain link fence that would also contain three strands of barbed wire on top of the fence to provide additional security to the property. After construction of the property the soil will be stabilized with the Nebraska Department of Transportation (NDOT) recommended native Nebraska pollinator seed mix to provide a native herbaceous cover below the solar array. An interconnection route would extend south of the property line from the southeast corner of the property to connect to the existing overhead power lines along 829th Road. The proposed Project is depicted in the Site Plan Map attached (Figure 3, Appendix A) Bluestem will own, operate, and maintain the system. The Project will provide locally generated energy, result in increased income for landowners, and enhance the economy and tax base for Madison County. The Project will be constructed in approximately six (6) months during Q1 and Q2 of 2025.Upon completion the Project will require routine maintenance that would be performed by offsite labor personnel. The Project will not require a septic or county sewer connection. If water use is required, the use would be minimal and would likely come from the municipal source or would be sourced from an onsite well. The purpose of the project is to provide the rate payers of Madison, Nebraska with a competitively priced alternative energy source. The Project is being proposed in order to meet the growing demand for energy production from environmentally friendly and renewable resources.

Introduction

The Nebraska Game and Parks Commission (Commission) and the U.S. Fish and Wildlife Service (Service) have special concerns for endangered and threatened species, migratory birds, and other fish and wildlife and their habitats. Habitats frequently used by fish and wildlife species are wetlands, streams, riparian areas, woodlands, and grasslands. Special attention is given to proposed projects which modify wetlands, alter streams, result in loss of riparian habitat, convert/remove grasslands, or contaminate habitats. When this occurs, the Commission and Service recommend ways to avoid, minimize, or compensate for adverse effects to fish and wildlife and their habitats.

CONSULTATION PURSUANT TO THE NEBRASKA NONGAME AND ENDANGERED SPECIES CONSERVATION ACT (NESCA)

The Commission has responsibility for protecting state-listed endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). Pursuant to § 37-807 (3) of NESCA, all state agencies shall, in consultation with the Commission, ensure projects they authorize (i.e., issue a permit for), fund or carry out do not jeopardize the continued existence of state-listed endangered or threatened species or result in the destruction or modification of habitat of such species which is determined by the Commission to be critical. If a proposed project may affect state-listed species or designated critical habitat, further consultation with the Commission is required.

Informal consultation pursuant to NESCA can be completed by using the Conservation and Environmental Review Tool (CERT). The CERT analyzes the project type and location, and based on the analysis, provides information about

potential impacts to listed species, habitat questions and/or conservation conditions.

- If project proponents agree to implement conservation conditions, as outlined in the report and applicable to the project type, then this document serves as documentation of consultation and the following actions can be taken to move forward with the project:
    - Sign the report in the designated areas.
    - Upload the signed PDF as part of their "final" project submittal.
    - By agreeing to and implementing the conservation conditions as outlined (if applicable), then further consultation with the Commission is not required.
- If the report indicates the project may have impacts on state-listed species, then the following actions must be taken:
    - Project proponent is required to contact and consult with the Commission. Contact information can be found within this document.

TECHNICAL ASSISTANCE AND CONSULTATION PURSUANT TO THE ENDANGERED SPECIES ACT (ESA)

The Service has responsibility for conservation and management of fish and wildlife resources for the benefit of the American public under the following authorities: 1) Endangered Species Act of 1973 (ESA); 2) Fish and Wildlife Coordination Act; 3) Bald and Golden Eagle Protection Act; and 4) Migratory Bird Treaty Act. The National Environmental Policy Act (NEPA) requires compliance with all of these statutes and regulations.

Pursuant to section 7(a)(2) of ESA, every federal agency, shall in consultation with the Service, ensure that an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

If a proposed project may affect federally listed species or designated critical habitat, Section 7 consultation is required with the Service. It is the responsibility of the lead federal action agency to fully evaluate all potential effects (direct and indirect) that may occur to federally listed species and critical habitat in the action area. The lead federal agency provides their effect determination to the Service for concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by implementation of the project, the lead federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of federal funds (section 7(d) of ESA), or issuing any federal permits or licenses.

The information generated in this report DOES NOT satisfy consultation obligations between the lead federal agency and the Service pursuant to ESA. For the purposes of ESA, the information in this report should be considered as TECHNICAL ASSISTANCE, and does not serve as the Service's concurrence letter, even if the user signs and agrees to implement conservation conditions in order to satisfy the consultation requirements of NESCA.

Overall Results

The following result is based on a detailed analysis of your project.

- Potential impacts on listed species may occur as a result of this project. Please proceed with the following: Sign and date the certification section. Upload the document as "final." Email a copy of the report with a request for review to the Nebraska Game and Parks Commission (ngpc.envreview@nebraska.gov) and copy the U.S. Fish and Wildlife Service (nebraskaes@fws.gov) for further consultation.

Additional Information

Potential impacts on listed species may occur as a result of this project. Further consultation with the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service is required.

Certification

I certify that ALL of the project information in this report (including project location, project size/configuration, project type, project activities, answers to questions) is true, accurate, and complete. If the project type, activities, location, size, or configuration of the project change, or if any of the answers to any questions asked in this report change, then this information is no longer valid and we recommend running the revised project through CERT to get an updated report.

4/25/2024

Applicant/project proponent signature Date

Additional Considerations

Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668c) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Under the Eagle Act, “take” of eagles, their parts, nests or eggs is prohibited. Disturbance resulting in injury to an eagle or a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior is a form of “take.”

Bald eagles use mature, forested riparian areas near rivers, streams, lakes, and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and the wintering period extends from December-March. The golden eagle is found in arid open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Golden eagles are often a permanent resident in the Pine Ridge area of Nebraska. Additionally, many bald and golden eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5-miles of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching, and roosting habitats, respectively. The frequency and duration of eagle use of these habitats in the winter depends upon ice and weather conditions. Human disturbances and loss of wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These affects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species.

To comply with the Eagle Act, it is recommended that the project proponent determine if the proposed project would impact bald or golden eagles or their habitats. This can be done by conducting a habitat assessment, surveying nesting habitat for active and inactive nests, and surveying potential winter roosting habitat to determine if it is being used by eagles. The area to be surveyed is dependent on the type of project; however for most projects we recommend surveying the project area and a ½ mile buffer around the project area. If it is determined that either species could be affected by the proposed project, the Commission recommends that the project proponent notify the Nebraska Game and Parks Commission as well as the Nebraska Field Office, U.S. Fish and Wildlife Service for recommendations to avoid “take” of bald and golden eagles.

Migratory Bird Treaty Act and Nebraska Revised Statute §37-540

We recommend the project proponent comply with the Migratory Bird Treaty Act (16 U.S.C. 703-712: Ch. 128 *as amended*) (MBTA). The project proponent should also comply with Nebraska Revised Statute §37-540, which prohibits take and destruction of nests or eggs of protected birds (as defined in Nebraska Revised Statute §37-237.01). Construction activities in grassland, wetland, stream, woodland, and river bank habitats that would result in impacts on birds, their nests or eggs protected under these laws should be avoided. Although the provisions of these laws are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period of May 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For

example, raptors can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10. If development in this area is planned to occur during the primary nesting season or at any other time which may result in impacts to birds, their nests or eggs protected under these laws, we request that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. If a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities, the Nebraska Game and Parks Commission and the Nebraska Field Office, U.S. Fish and Wildlife Service should be contacted immediately. For more information on avoiding impacts to migratory birds, their nests and eggs, or to report active bird nests that cannot be avoided by planned construction activities, please contact the U.S. Fish and Wildlife Service and/or the Nebraska Game and Parks Commission (contact information within report). Adherence to these guidelines will help avoid unnecessary impacts on migratory birds.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires consultation with the U.S. Fish and Wildlife Service (Service) and the State fish and wildlife agency (i.e., Nebraska Game and Parks Commission) for the purpose of preventing loss of and damage to fish and wildlife resources in the planning, implementation, and operation of federal and federaly funded, permitted, or licensed water resource development projects. This statute requires that federal agencies take into consideration the effect that the water related project would have on fish and wildlife resources, to take action to prevent loss or damage to these resources, and to provide for the development and improvement of these resources. The comments in this letter are provided as technical assistance only and are not the document required of the Secretary of the Interior pursuant to Section 2(b) of FWCA on any required federal environmental review or permit. This technical assistance is valid only for the described conditions and will have to be revised if significant environmental changes or changes in the proposed project take place. In order to determine whether the effects to fish and wildlife resources from the proposed project are being considered under FWCA, the lead federal agency must notify the Service in writing of how the comments and recommendations in this technical assistance letter are being considered into the proposed project.

Section 404 of the Clean Water Act

In general, the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service have concerns for impacts to wetlands, streams and riparian habitats. We recommend that impacts to wetlands, streams, and associated riparian corridors be avoided and minimized, and that any unavoidable impacts to these habitats be mitigated. If any fill materials will be placed into waterways or wetlands, the U.S. Army Corps of Engineers Regulatory Office in Omaha should be contacted to determine if a 404 permit is needed.

Agency Contact Information

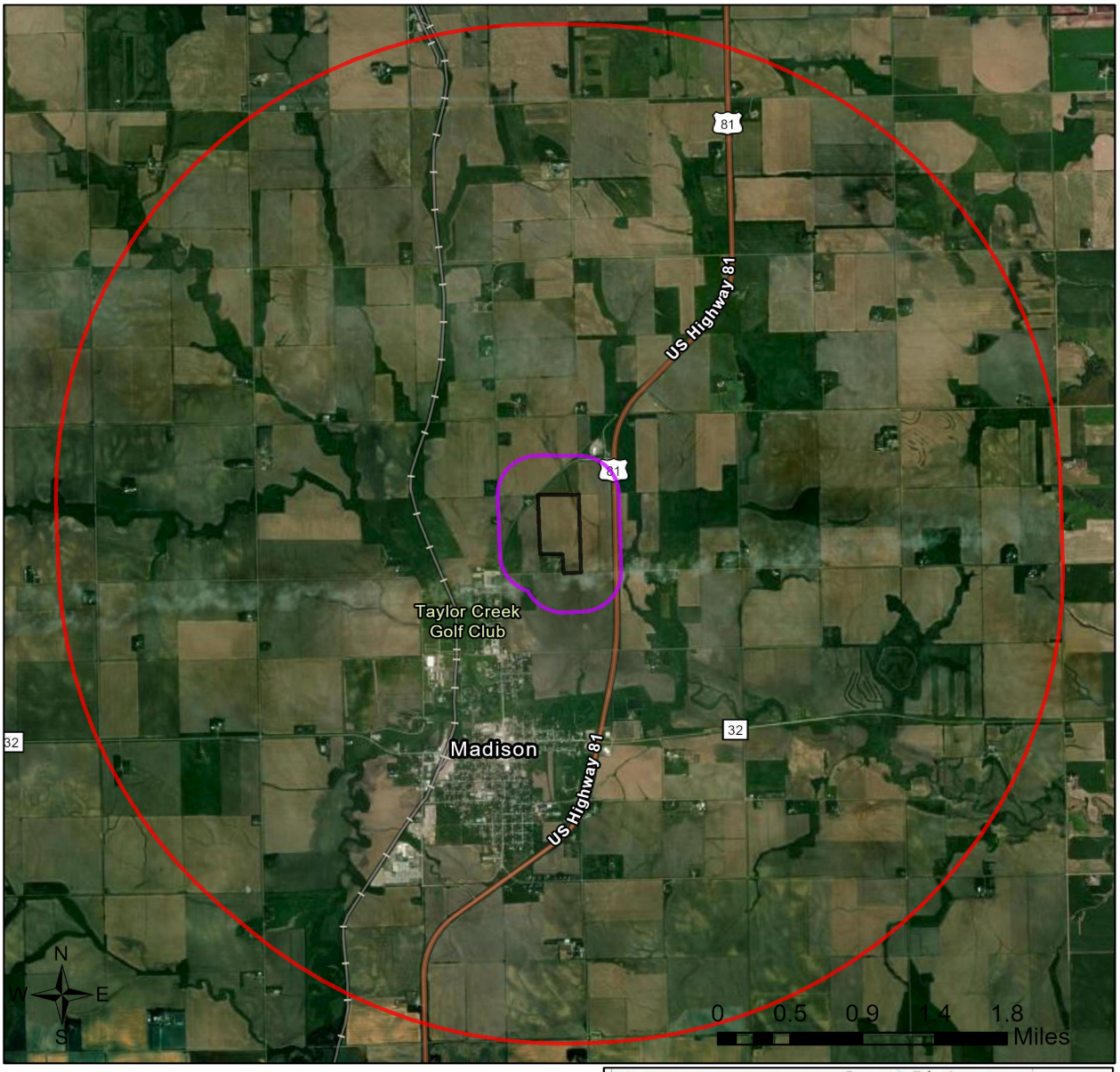
Nebraska Game and Parks Commission
Environmental Review Team
2200 North 33rd Street
Lincoln, NE 68503
phone: (402) 471-5423
email: ngpc.envreview@nebraska.gov

U.S. Fish and Wildlife Service

Nebraska Ecological Services
9325 South Alda Road
Wood River, NE 68883
phone: (308) 382-6468
email: nebraskaes@fws.gov

Bluestem Solar Array, Madison County, Nebraska

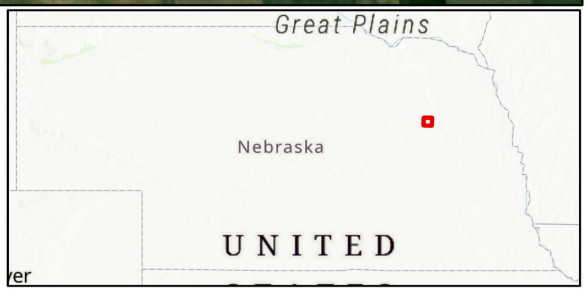
Aerial Image Basemap With Locator Map



3-mile Information Buffer Boundary

Project Review Boundary

Project Boundary



Project Size (acres): 69.55

Lat/Long (DD): 41.8484 / -97.4477

County(s): Madison

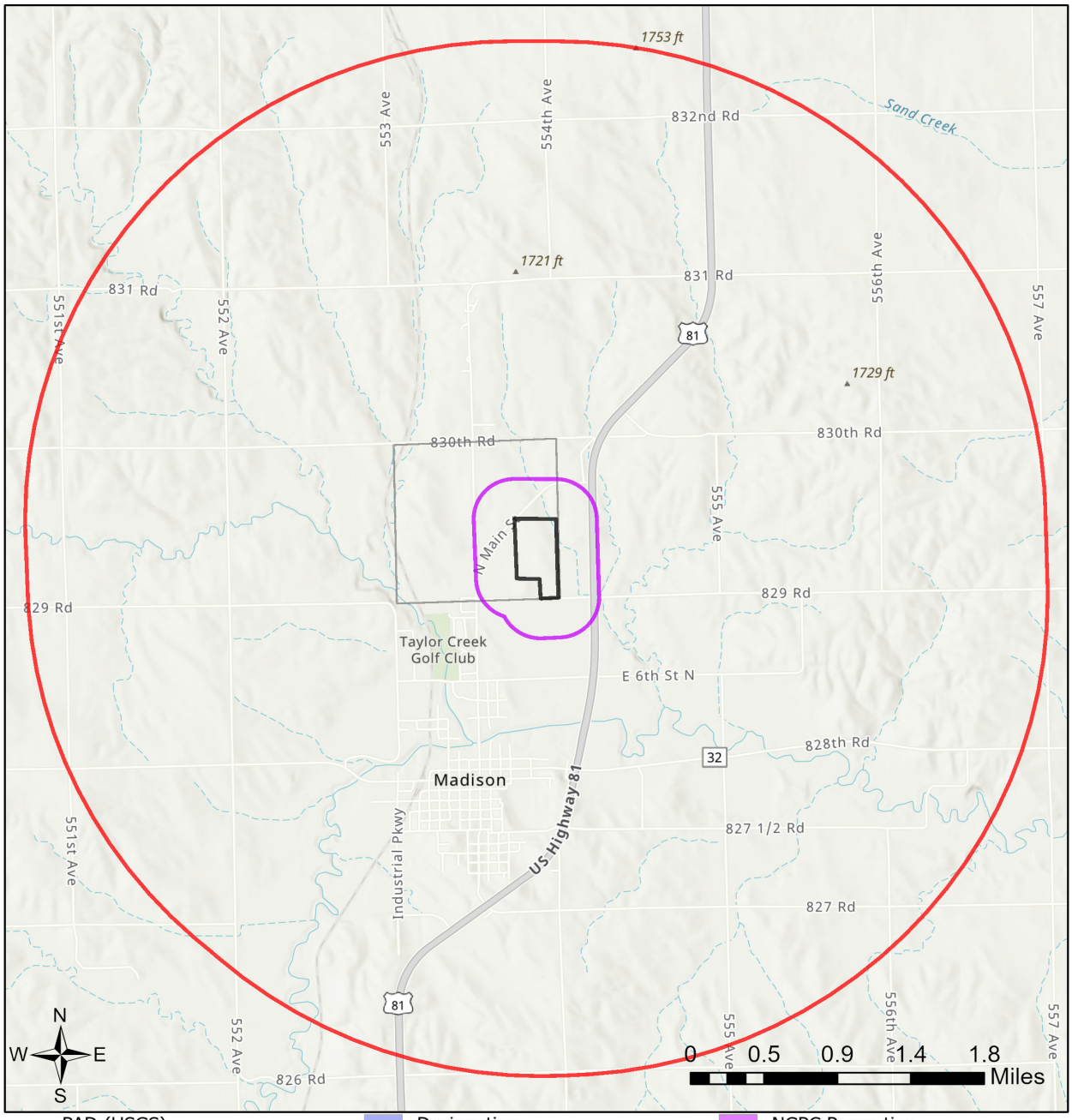
BUL(s):

Township/Range/Section(s): T22R01WS29

Nebraska Game & Parks Commission, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS
Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Earthstar Geographics

Bluestem Solar Array, Madison County, Nebraska

Topographic Basemap With Sections and Protected Areas

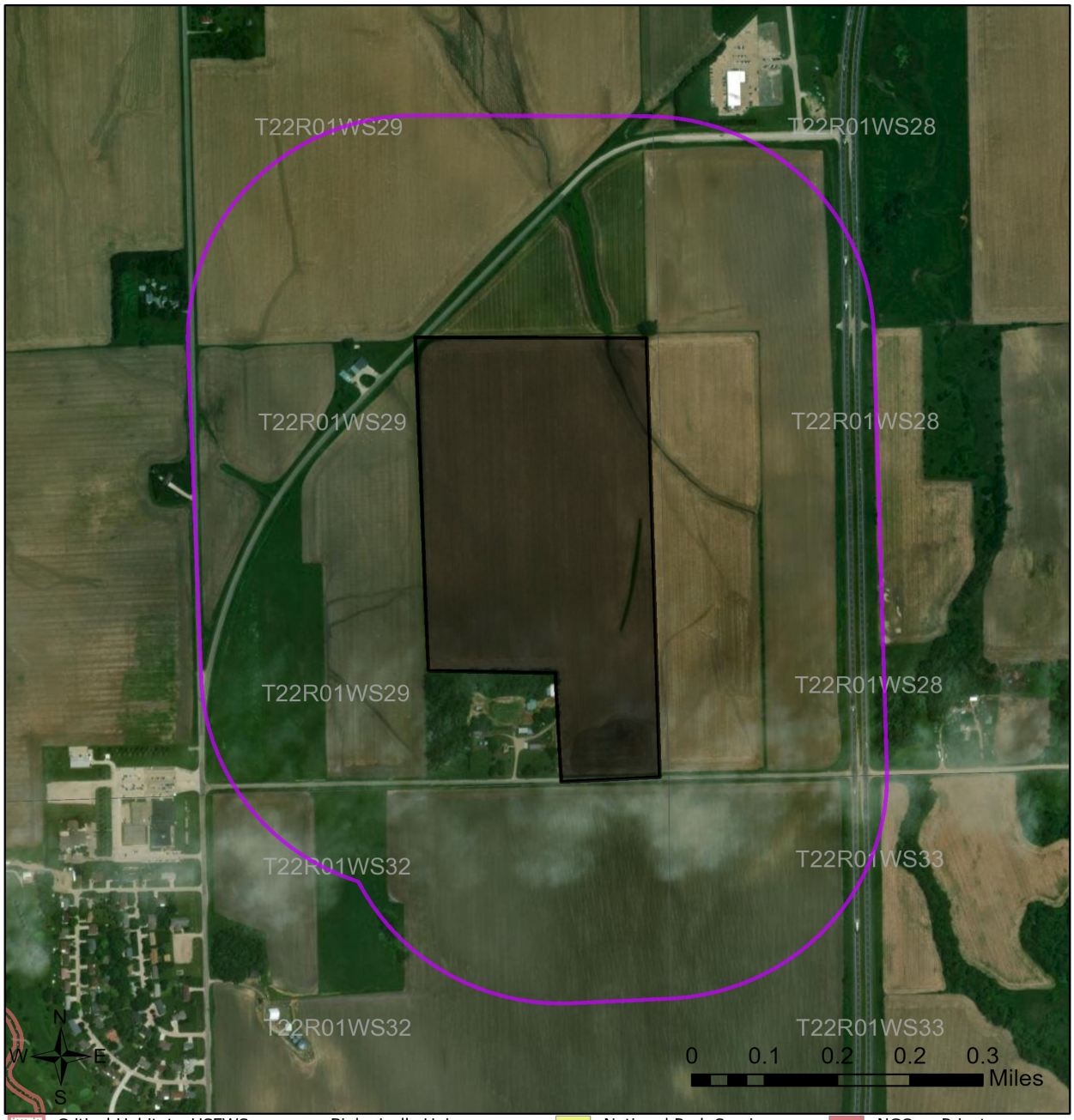


- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- NGPC Properties
- Sections
- 3-mile Information Buffer Boundary
- Project Review Boundary
- Project Boundary

Nebraska Game & Parks Commission, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS
Esri, NASA, NGA, USGS

Bluestem Solar Array, Madison County, Nebraska

Web Map As Submitted By User



- Critical Habitat - USFWS
- Missouri National Recreation River
- Niobrara National Scenic River
- 1
- 2
- Biologically Unique Landscapes
- NGPC Properties
- PAD (USGS) - boundaries
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation
- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)
- Sections
- Counties
- Project Review Boundary
- Project Boundary

Maxar

Table 1
Protected Areas in Immediate Vicinity of Project (project review area)

This table has no results.

Table 2
Documented Occurrences in Immediate Vicinity of Project (project review area):
Natural communities and selected special areas

This table has no results.

Table 3
Regional Documented Occurrences of Species within 1 Mile of Project Review Area:
Tier 1 and 2 at-risk species and additional S1-S3 plants

Scientific Name	Common Name	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Haliaeetus leucocephalus	Bald Eagle			Tier 2	S3	G5	Vertebrate Animal - Birds
Notropis topeka	Topeka Shiner	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Platanthera praeclara	Western Prairie Fringed Orchid	T	T	Tier 1	S2	G3	Vascular Plant - Monocots

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
Ammodramus henslowii	Henslow's Sparrow	Range			Tier 1	S1	G4	Vertebrate Animal - Birds
Asio flammeus	Short-eared Owl	Range			Tier 1	S2	G5	Vertebrate Animal - Birds
Atrytone arogos iowa	Iowa Skipper	Range			Tier 1	S1	G2G3T2T3	Invertebrate Animal - Butterflies and Skippers
Boloria selene nebraskensis	Nebraska Fritillary	Range			Tier 1	SNR	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Calidris subruficollis	Buff-breasted Sandpiper	Range			Tier 1	S2N	G4	Vertebrate Animal - Birds
Catocala nuptialis	Married Underwing	Range			Tier 1	SNR	G3	Invertebrate Animal - Underwing Moths
Catocala whitneyi	Whitney Underwing	Range			Tier 1	S1	G2G3	Invertebrate Animal - Underwing Moths
Cicindela limbata limbata	Sandy Tiger Beetle	Range			Tier 1	S4	G5T3T4	Invertebrate Animal - Beetles
Coccyzus erythropthalmus	Black-billed Cuckoo	Range			Tier 1	S3	G5	Vertebrate Animal - Birds
Danaus plexippus	Monarch	Range			Tier 1	S2	G4	Invertebrate Animal - Butterflies

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	SRank	GRank	Taxonomic Group
								and Skippers
Ellipsoptera lepida	Ghost Tiger Beetle	Range			Tier 1	S2	G3G4	Invertebrate Animal - Beetles
Emydoidea blandingii	Blanding's Turtle	Range		NC	Tier 1	S4	G4	Vertebrate Animal - Turtles
Euphyes bimacula illinois	Two-spotted Skipper	Range			Tier 1	S3	G4T1T2	Invertebrate Animal - Butterflies and Skippers
Euphyes conspicua buchholzi	Bucholz Black Dash	Range			Tier 1	S1	G4G5T1	Invertebrate Animal - Butterflies and Skippers
Fundulus sciadicus	Plains Topminnow	Range			Tier 1	S3	G4	Vertebrate Animal - Fishes
Haliaeetus leucocephalus	Bald Eagle	Range			Tier 2	S3	G5	Vertebrate Animal - Birds
Hesperia ottoe	Ottoe Skipper	Range			Tier 1	S2	G3	Invertebrate Animal - Butterflies and Skippers
Lanius ludovicianus	Loggerhead Shrike	Range			Tier 1	S3	G4	Vertebrate Animal - Birds
Lasiurus borealis	Eastern Red Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lasiurus cinereus	Hoary Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals
Lethe eurydice fumosus	Smoky-eyed Brown	Range			Tier 1	S3	G5T3T4	Invertebrate Animal - Butterflies and Skippers
Myotis septentrionalis	Northern Long-eared Myotis	Range	T	T	Tier 1	S1S2	G1G2	Vertebrate Animal - Mammals
Notropis topeka	Topeka Shiner	Model	E	E	Tier 1	S1	G3	Vertebrate Animal - Fishes
Perimyotis subflavus	Tricolored Bat	Range			Tier 1	S3	G2G3	Vertebrate Animal - Mammals
Perognathus flavescens perniger	Plains Pocket Mouse	Range			Tier 1	SNR	G5TNR	Vertebrate Animal - Mammals
Platanthera praeclara	Western Prairie Fringed Orchid	Range	T	T	Tier 1	S2	G3	Vascular Plant - Flowering Plants
Speyeria idalia	Regal Fritillary	Range			Tier 1	S3	G3?	Invertebrate Animal - Butterflies and Skippers

From: Baker, Amelia <amelia.baker@nebraska.gov> **On Behalf Of** NGPC EnvReview
Sent: Friday, May 3, 2024 11:56 AM
To: Chase Jelden <cjelden@olsson.com>
Cc: Nebraskaes, FW6 <nebraskaes@fws.gov>; Rolland, Ruby <ruby.rolland@nebraska.gov>
Subject: RE: United States Department of Agriculture - Rural Development, Bluestem Energy Solutions, LLC Madison, Nebraska Solar Array

Hello Chase,

Please see the attached NGPC technical assistance letter for this project. As the project moves closer to development and permitting, please contact us to work through the Nebraska Nongame and Endangered Species Conservation Act (NESCA) consultation process on behalf of the Nebraska Power Review Board and/or the Nebraska Department of Environment and Energy.

Thank you,

Amelia Baker
Environmental Specialist II
Planning & Programming Division
Office: (402) 471-5423 | Email: amelia.baker@nebraska.gov
Environmental Review Website: Environmental Review | Nebraska Game & Parks Commission (outdoornebraska.gov)
Conservation and Environmental Review Tool (CERT): Home | Nebraska CERT (outdoornebraska.gov)

From: Chase Jelden <cjelden@olsson.com>
Sent: Thursday, April 25, 2024 3:57 PM
To: NGPC EnvReview <ngpc.envreview@nebraska.gov>
Cc: Nebraskaes, FW6 <nebraskaes@fws.gov>; Baker, Amelia <amelia.baker@nebraska.gov>
Subject: RE: United States Department of Agriculture - Rural Development, Bluestem Energy Solutions, LLC Madison, Nebraska Solar Array

ShareFile Attachments Expires October 22, 2024

2023.0710.NEPA.OLS.BluestemEnergySolut...son.pdf	160.9 KB
CERT_project_report_bluestem_solar_arra...NAL.pdf	2.5 MB
NGPC Consultation letter.pdf	2.8 MB
Signed USFWS Consultation Letter (Flat).pdf	4.1 MB

Download Attachments

Chase Jelden uses ShareFile to share documents securely.

To whom it may concern,

Olsson, Inc. (Olsson) on behalf of USDA-Rural Development is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) in order that it may assess the environmental impacts of the Bluestem Energy Solutions, LLC Solar project to construct the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison. Enclosed is an U. S. Geological Survey map that depicts the proposed project's area of potential effect for all construction activities and a description of the work involved.

The proposed Project does not represent a "major construction activity" as defined in 50 CFR 402.02. The USDA does not think the project will result in an undertaking of any State or Federally-listed or proposed threatened or endangered species. Please advise us of any concerns you may have related to possible effects of the project listed species or critical habitat. USFWS has also been notified.

This project has been through quite the loop. The initial consultation with NGPC started out as an Environmental Review and then earlier this year it was requested to be upgraded to full Environmental Assessment. During the review of the EA, USDA requested additional follow up with NGPC on the CERT for project approval. Please see the attached FINAL CERT, Initial letter sent to NGPC on June 13, 2023, July 10, 2023 NGPC Response, and USFWS project concurrence.

Please let me know if you need any additional information.

Sincerely,
Chase Jelden

From: Baker, Amelia <amelia.baker@nebraska.gov>
Sent: Monday, July 10, 2023 2:37 PM
To: Chase Jelden <cjelden@olsson.com>
Cc: Tapp, Jessica <Jessica.tapp@nebraska.gov>; Nebraskaes, FW6 <nebraskaes@fws.gov>; NGPC EnvReview <ngpc.envreview@nebraska.gov>
Subject: RE: United States Department of Agriculture - Rural Development, Bluestem Energy Solutions, LLC Madison, Nebraska Solar Array

Hello Chase –

Please see the attached completed review for the above referenced project.

In regard to future projects, please send review requests for comments to the Environmental Review Team (ERT) inbox @NGPC EnvReview. The ERT inbox is monitored regularly for new projects in order to ensure timeliness and receipt of new projects. There are times when a member of the team may be out of the office, but if a project lands within the ERT inbox, it will be received regardless.

Best regards,

Amelia Baker
Environmental Specialist II
Nebraska Game and Parks Commission
Office: (402) 471-5423 | Email: amelia.baker@nebraska.gov

From: Chase Jelden <cjelden@olsson.com>
Sent: Tuesday, June 13, 2023 1:06 PM
To: Tapp, Jessica <Jessica.tapp@nebraska.gov>
Subject: United States Department of Agriculture - Rural Development, Bluestem Energy Solutions, LLC Madison, Nebraska Solar Array

Dear Ms. Tapp:

Olsson, Inc. (Olsson) on behalf of USDA-Rural Development is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) in order that it may assess the environmental impacts of the Bluestem Energy Solutions, LLC Solar project to construct the proposed Madison County Solar Array, a Project that would include the development of a 2 megawatt (MW) alternating current (AC), 2.88 MW direct current (DC), solar array located just north of the City of Madison, Nebraska. The solar array would interconnect to the City of Madison's electric distribution system and 100 percent of the electricity will be used locally by their rate payers. The proposed Project is positioned on an existing parcel that is approximately 68 acres and the solar array would occupy approximately 15 acres of the northwest corner of the existing parcel located north from the City of Madison. Enclosed is an U. S. Geological Survey map that depicts the proposed project's area of potential effect for all construction activities and a description of the work involved.

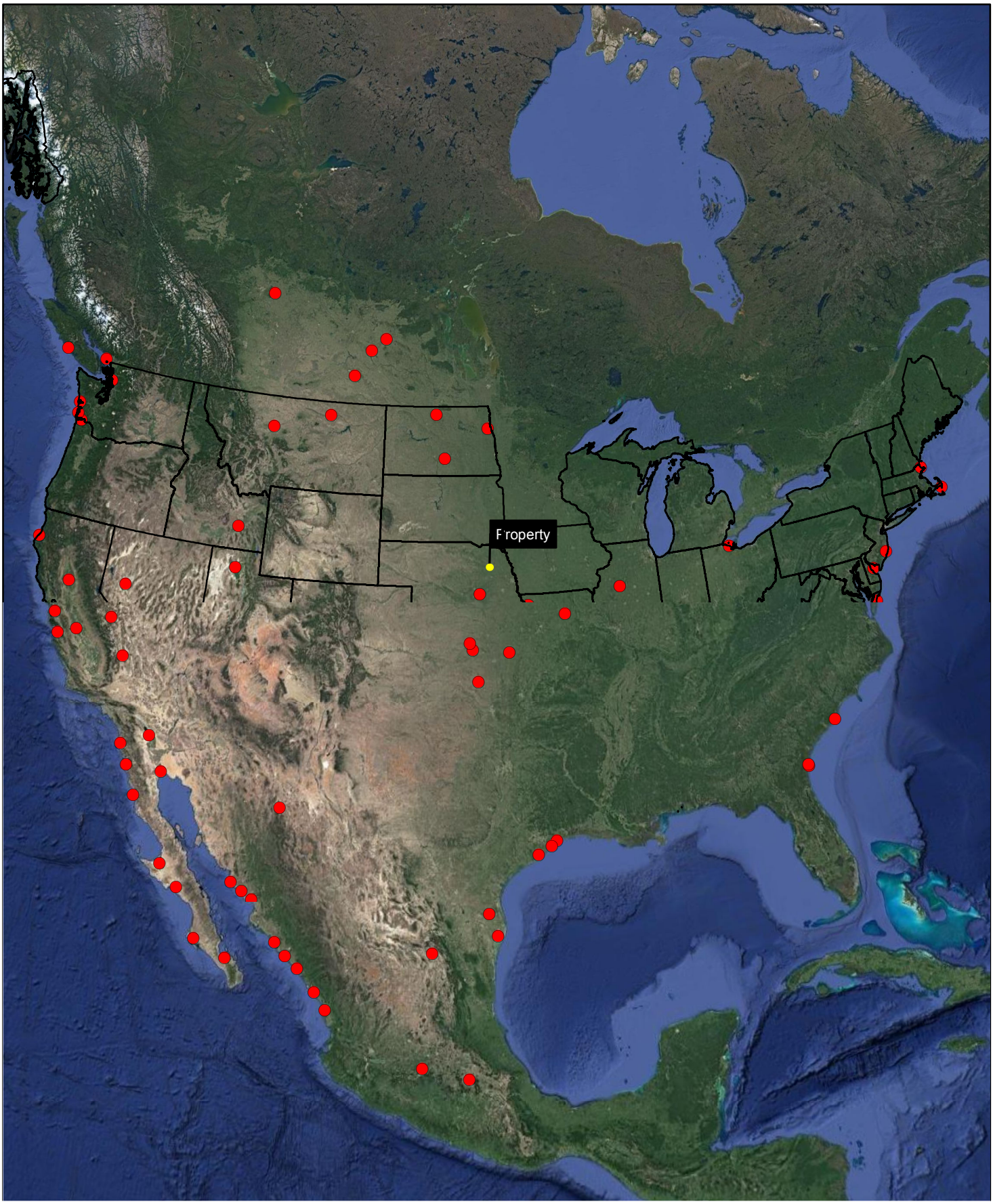
The proposed Project does not represent a "major construction activity" as defined in 50 CFR 402.02. The USDA does not think the project will result in an undertaking of any State or Federally-listed or proposed threatened or endangered species. Please advise us of any concerns you may have related to possible effects of the project listed species or critical habitat. USFWS has also been notified.

Sincerely,
Chase Jelden

Chase Jelden
Environmental

C 308.293.3733

2111 S. 67th Street, Suite 200
Omaha, NE 68106
O 402.341.1116



N

0 100 200 400

Miles

1 " = 400 miles

olsson

Western Hemisphere Shorebird Reserve Network (WHSRN) Site

Property

State Boundary

Madison Solar

Bluestem Energy Solutions, LLC

Madison County, Nebraska

Olsson Project # 023-03812

Western Hemisphere Shorebird Reserve Network (WHSRN) Sites Map

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NAD 1983 StatePlane Nebraska FIPS 2600 Feet

Basemap: Google Satellite