Environmental Assessment

Gering Proposed Solar Project
Gering, Scotts Bluff County, Nebraska

July 18, 2024 | Terracon Project No. 0522P069 – Task 2

Prepared for:
U.S. Department of Agriculture
Rural Development Service

and

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List of Acronyms and Abbreviations

APE	Area of Potential Effect
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CREC	Controlled Recognized Environmental Condition
CSW	Construction Storm Water
DC	Direct Current
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
EMF	Electromagnetic Fields and Interference
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCL	Formally Classified Land
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
FONSI	Finding of No Significant Impact
IPaC	Information, Planning, and Conservation System
kW	Kilowatt
LEP	Limited English Proficiency
MEAN	Municipal Energy Agency of Nebraska
NAAQS	National Ambient Air Quality Standards
NDEE	Nebraska Department of Environment and Energy
NDNR	Nebraska Department of Natural Resources
NEPA	National Environmental Policy Act
NGPC	Nebraska Game and Parks Commission
NPDES	National Pollutant Discharge Elimination System

NPS	National Park Service
NOA	Notice of Availability
NO_2	Nitrogen Dioxide
NOI	Notice of Intent
NO_x	Nitrogen Oxides
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
O_3	Ozone
OSHA	Occupational Safety and Health Administration
PAD-US	Protected Lands Database of the U.S.
Pb	Lead
PPA	Power Purchase Agreement
PV	Photovoltaic
REC	Recognized Environmental Condition
RUS	Rural Utilities Service
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
THPO	Tribal Historic Preservation Office
TNW	Traditionally Navigable Water
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
WOTUS	Waters of the United States

Introduction

This Environmental Assessment (EA) was prepared in accordance with Title 7 of the Code of Federal Regulations (CFR) Part 3100 (7 CFR 3100), which prescribes the policies and procedures of the U.S. Department of Agriculture (USDA) for implementing the National Environmental Policy Act (NEPA) of 1969, as amended, Title 7 CFR 1970 which provides environmental policies and procedures for the Rural Utilities Service (RUS), the regulations of the Council on Environmental Quality, 40 CFR parts 1500 through 1805, and the USDA Rural Development guidance document 1970-C. Guidance document 1970-C serves as a guide for preparing EAs under NEPA. An EA is a concise public document used by the USDA to determine whether impacts associated with a project justify a finding of no significant impact or if preparation of an Environmental Impact Statement is needed.

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and Rural Utilities Service. The agencies have in excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants in order to accomplish program objectives. The Applicant, SE Municipal Solar LLC is applying for funds under the Powering Affordable Clean Energy (PACE) Program for a Renewable Energy Resource (RER) system. The funding will be in the form of a Project Loan for approximately 57% of the total project cost. The Project Loan will receive 40% loan forgiveness through the PACE program. The Applicant submitted a letter of intent for the project, which was approved on November 27th, 2023 and RUS is in the process of reviewing the completed PACE Application which was submitted on December 29th, 2023.

An applicant seeking financial assistance from the USDA must sufficiently describe its proposal so that the USDA can apply the appropriate environmental review procedures for the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C] 4321, et seq.), related to review and approval. Serving as the lead federal agency, the RUS is responsible for compliance with NEPA, and as such, RUS must decide whether or not to provide financing assistance for this proposed project. Pursuant to CFR 7, the USDA must demonstrate that any decision complies with NEPA and requires that the environmental consequences of the Proposed Action and its alternatives be examined. This EA presents such an examination. The RUS's decision to approve financial assistance will be the analysis outlined in this EA in addition to subsequent detailed engineering and financial reviews.

The Municipal Energy Agency of Nebraska (MEAN) issued a request for proposals soliciting distributed solar electric generation for the City of Gering, Nebraska. Distributed generation refers to electricity, usually from renewable sources, that is situated near the users as opposed to centralized generation from power plants where the electricity would have to be transmitted greater distances (thus increasing costs) to the consumer. SE Municipal Solar,

LLC (SE Municipal Solar) prepared the winning bid to develop a solar facility and connect to the City of Gering's electric grid, as well as obtain all necessary permits.

Terracon, retained by the applicant (SE Municipal Solar), has prepared this assessment in accordance with 7 CFR 1970, Subparts A (Environmental Policies) and C (NEPA EAs) as well as 40 CFR 1500. As part of this process, RUS will complete an independent analysis of this document to concur with scope and content. Once this analysis is complete, RUS may adopt this assessment as its EA in accordance with 7 CFR 1794.41.

1.0 PURPOSE AND NEED

1.1 Project Description

The proposed project area is in northeastern Gering, Nebraska and consists of a 22.6-acre tract of vacant, undeveloped agricultural land located approximately 500 feet to the west of the intersection of U Street (County Road N) and Lockwood Road (County Road 23) in Scotts Bluff County. The site occurs in the southern portion of parcel ID 0010016716 (Nebraska Scotts 2022). A general location map is provided as Figure 1. The project site is relatively level, with a gentle gradient toward the north-northeast and an approximate elevation of 3,870 feet above mean sea level. The nearest surface water feature is a manmade lagoon approximately 70 feet west that is associated with the adjacent wastewater treatment facility. North Platte River is located approximately 1,300 feet north of the site.

The 22.6-acre site will be developed with the solar facility, which includes the solar panels and associated support structures (racking), electrical inverters/transformers, buried electrical conduit, access apron, overhead lines, and security fencing. The proposed solar generation facility will be placed on land owned by the City of Gering, connecting to its municipal electric distribution system.

The project will deliver its generation to a transformer on-site owned by Gering and will connect to its distribution system. Power will not be exported to other communities and is for the benefit of the City of Gering. SE Municipal Solar will be responsible for constructing the powerline from the arrays to the point of interconnection. Gering's municipal utility will be responsible for providing a transformer at the point of interconnection and connecting it to its distribution system.

Figure 1. Aerial Photograph of the Project Site (Project Area Outlined in Red)

All project facilities would be designed, constructed, and operated in accordance with applicable laws, City and County ordinances, regulations, and standards. Construction of the project is anticipated to begin in 2023 and should take approximately three to four months to complete once construction begins.

The project site is located on property zoned for heavy industrial use by the City of Gering (City of Gering 2019). The site is adjoined to the north by vacant land and the North Platte River; to the east by vacant land; to the south by vacant land and a property with abandoned cars and dilapidated storage shed; and to the west by a wastewater treatment facility. The Western Nebraska – Scotts Bluff Regional airport is located approximately 3.5 miles northeast

of the site. Land use within the site appears to be crop production and the surrounding region is generally characterized by agriculture to the north, east, and south, and industrial and commercial use to the west (City of Gering 2020b). Beyond the agricultural fields are residential structures approximately 680 feet east of the southern project boundary and a neighborhood approximately 2,300 feet to the west-southwest of the site, which is surrounded by commercial development. The site is situated in the western quarter of Nebraska approximately 22 miles east of Wyoming and approximately 57 miles north of Colorado. A United States Geological Survey (USGS) topographic map is provided as Figure 2.

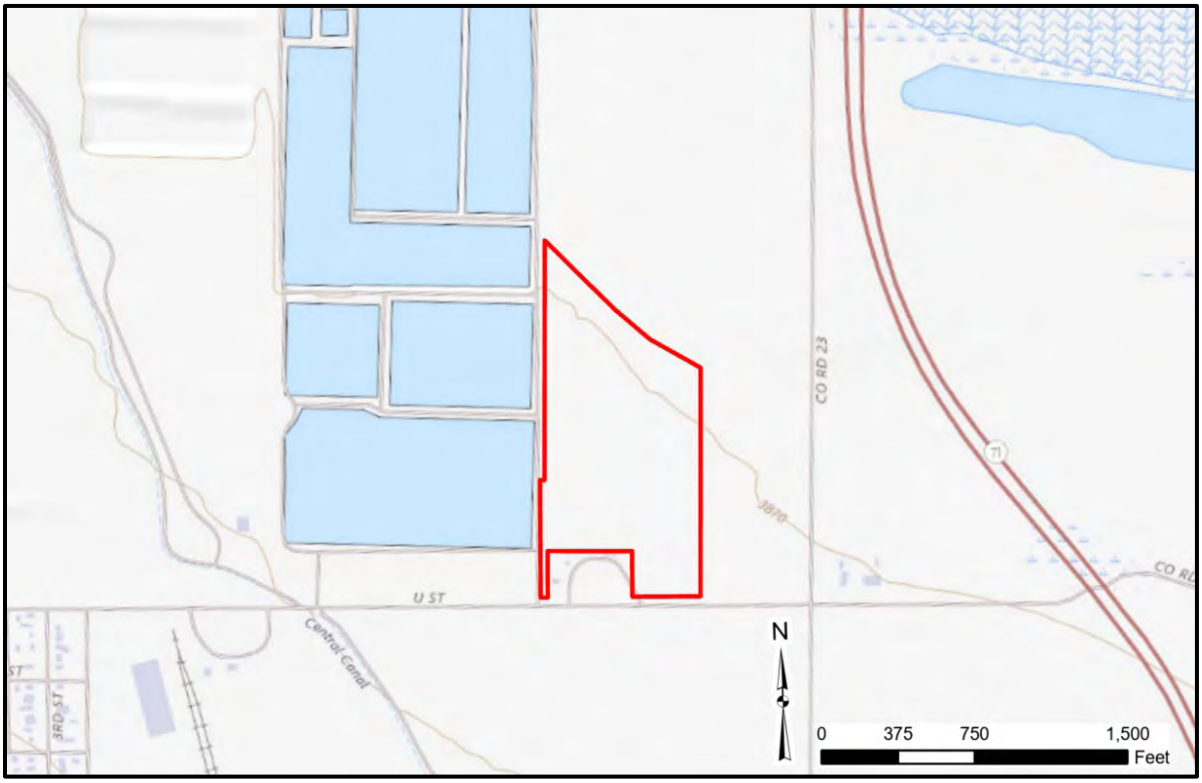

Figure 2. 2022 USGS Topographic Map of the Project Site (Project Area Outlined in Red)

1.2 Purpose and Need

The goal of the PACE program is to support clean, affordable energy across America. The purpose of the project is to construct a renewable distributed generation facility that will produce and supply the City of Gering with up to five percent of its annual energy usage, per the existing power purchase agreement (PPA) with SE Municipal Solar. The project will enable Gering to lock in a competitive price for electricity over the next 25 years.

2.0 ALTERNATIVES EVALUATED INCLUDING THE PROPOSED ACTION

2.1 Proposed Action and Preferred Alternative

The Proposed Action will include the construction and operation of a 4.78-MW DC PV solar energy power system for the City of Gering. The project involves installation of ground-mounted photo voltaic (PV) solar arrays of various kilowatt (kW) sizes using single axis trackers as detailed in the site plans in Appendix B and Figure 3. Each array will be placed generally as shown on the site layout below in Figure 3. These are estimates and the module placements may vary inside the general layout area. The layout areas have been previously disturbed through agricultural activities or prior construction (overhead power lines, road rights-of-way, wells) in the area. Each array will have driven posts for mounting of the racking with cross pieces for the actual module installation. The posts for racking will be in rows with the posts generally 8 to 10 feet apart and 4 to 6 feet deep, posts are generally 3 inches in diameter. Each row of racking will be connected by a trench along the edge of the array, the trench from each portion of the array will be connected by a trench along the edge of the array and the trench from each portion of the array will extend to the location of the transformer on a concrete pad, where the City will take control of the energy generated. The trenches will be 18 to 24 inches deep and 12 inches wide. The ground disturbance will also include an area for project construction staging including parking and equipment/component storage. This area will receive heavy traffic and may be rutted at times. Ground-located facilities will be surrounded by perimeter safety fencing and will feature internet-accessible Supervisory Control and Data Acquisition (SCADA) readouts.

A trench (18 to 24 inches deep and 12 inches wide) would be extended approximately 20 feet outside of the western boundary for the underground MV (medium voltage) cable to connect the arrays to a new overhead line along a new 34.5 kV distribution line that SE Municipal Solar will construct. This distribution line will be erected parallel to the western boundary; the northern extent will be the point of MV connection, and the line will extend south approximately 650 feet, connecting to the existing distribution line along U Street, the point of interconnection. Gering's municipal utility will provide a transformer at the point of interconnection. No other ground disturbance outside of project boundaries is anticipated. The MV line is illustrated in purple on Figure 3 and the distribution line is indicated in red.

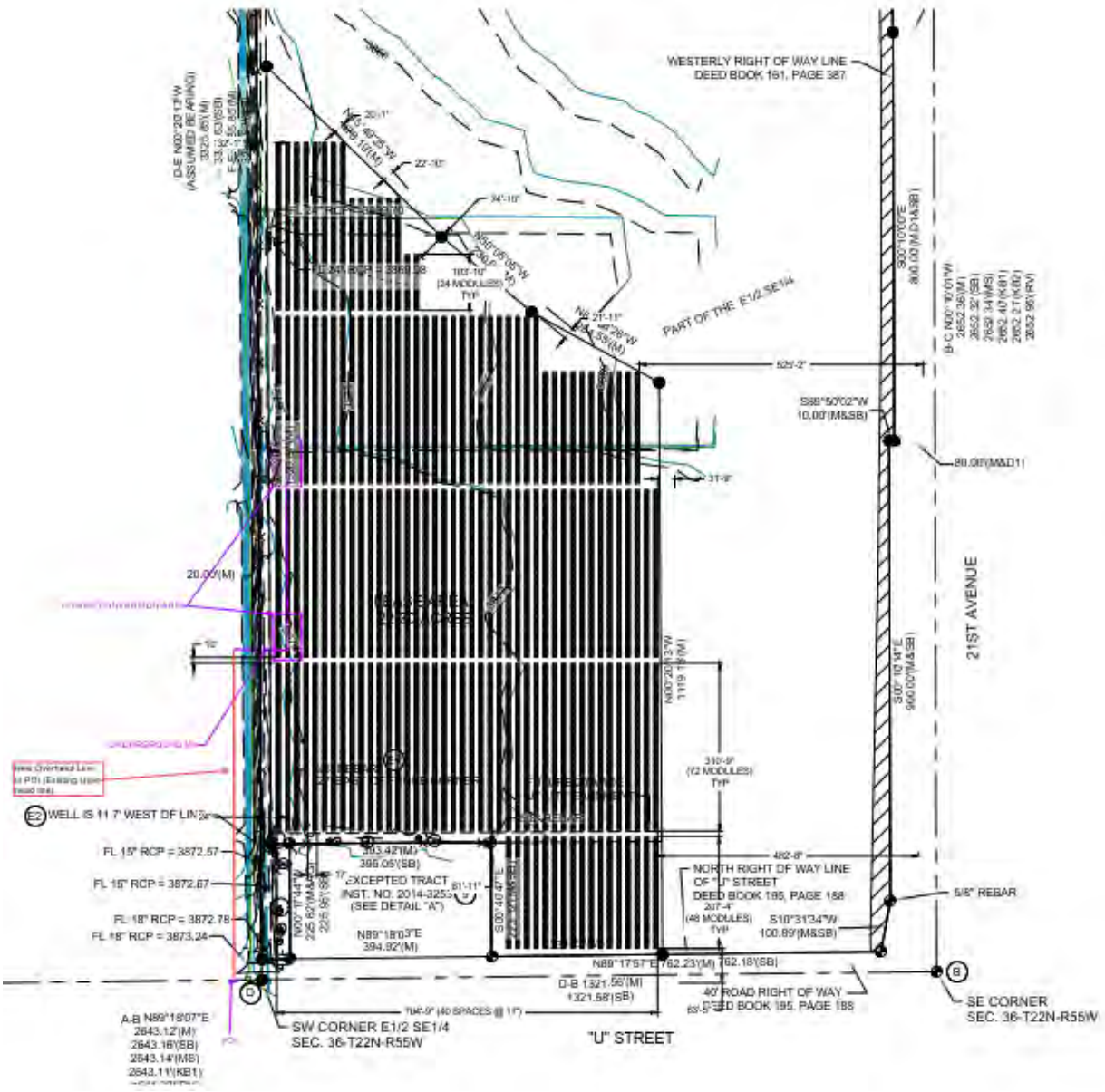

Figure 3. Site Layout

Access to the facility for construction and operations will be from existing gravel roadways in the southwestern corner of the site along the west and east sides of the property with abandoned cars and a dilapidated storage shed. The areas where arrays will be installed on driven piles will be accessed by vehicles driving on the existing ground surface. No grading for roads will be required and no new roads will be constructed.

Decommissioning

Within six months of ceasing operation, SE Municipal Solar shall remove all solar facilities from the property with the exception of electrical lines buried at least four feet deep. Major pieces of equipment may be recycled or reused. The galvanized steel and aluminum racks

may be sold for scrap or recycled. Electrical equipment could either be salvaged for reuse or recycled. Components such as cable would have a high resale value due to copper and aluminum content. Concrete from footings could be crushed and recycled as granular fill material. As much of the facility would consist of reusable or recyclable materials, there would be minimal residual waste for disposal as a result of decommissioning the facility. Small amounts of registrable waste materials would be managed in accordance with state requirements or subsequent applicable legislation. Residual non-hazardous wastes would be disposed of at a licensed landfill in operation at the time of decommissioning.

Subject to landowner preference, restoration would include a return to the original or functionally similar pre-construction drainage patterns, which may include installation of farm drainage tiles, decompaction of soil, and seeding with an appropriate, low-growing vegetative cover to stabilize soil, enhance soil structure, and increase soil fertility.

Beginning on the commercial operations date, a financial security in an amount equal to the expected net cost to complete the decommission and reclamation would be maintained. The amount would be updated every five years based on an estimate by a qualified third-party engineer.

2.2 Other Alternatives Evaluated and Not Carried Forward

The following actions were considered as part of the NEPA process, but eliminated from detailed study as part of this EA:

Alternative sites were not evaluated. For the proposed project to fulfill its purpose of supplying distributed power generation to the City of Gering, the site on which the solar energy power system would be constructed and operated had to meet the following requirements:

- Located in a relatively undeveloped area near Gering;
- Adjacent to existing grid connections;
- Accessible by existing roadways;
- Size, configuration, land use, and topography suitable to accommodate enough arrays to produce 4.78 MW;
- No structures to be demolished;
- Not in a floodplain;
- Not in wetlands;
- No impact to surface water;
- Attainable compliance with local ordinances and development permits;
- Availability for lease / development; and
- Reasonable land and development costs.

The project site was selected by the City of Gering because it meets the required criteria and is available for lease. The City of Gering owns the site of the proposed solar facility and the

interconnection and selected this location because of its capacity to accommodate sufficient distributed generation without adversely affecting system stability.

Other means of electricity generation were considered, but it was determined that the only viable means of power generation in this instance would be from the construction and operation of a solar array.

Wind – The project site is not conducive for wind turbine placement due to its proximity to an urban center and limited available size for the project footprint. The National Renewable Energy Laboratory estimates that a single two-megawatt wind turbine requires 1.5 acres, and with required spacing between turbines the total required area increases to about 128 acres (Denholm et al. 2009). The use of wind turbines to generate electricity is not feasible at this site and the alternative was not considered.

Geothermal – The US Department of Energy recognized that moderate geothermal energy potential exists; however, these resources are better suited for direct use such as heating buildings or greenhouses and not for energy generation (USEIA 2022). Geothermal energy for this alternative was not considered.

2.3 No Action Alternative (Status Quo)

Under the No Action Alternative, the site would not be developed with a solar facility. The City of Gering would not receive the required distributed power in accordance with the PPA with SE Municipal Solar. The anticipated generation from this potential alternative energy/solar source would not be available, and Gering would then have to seek alternative electric generation sources to meet anticipated need to replace existing power supply contracts that will come to an end. The project area would continue as agricultural land. The No Action Alternative does not achieve the project's purpose and need.

2.4 Environmental Resources Not Carried Forward for Detailed Analysis

The determination of environmental resources to be analyzed versus those not carried forward for detailed analysis is part of the EA scoping process. Council on Environmental Quality (CEQ) and regulations (40 CFR §1501.7[a] [3]) encourage project proponents to identify and eliminate from detailed study the resource areas that are not important or have no potential to be impacted through implementation of their respective Proposed Actions (CEQ 1997). Some resource areas or some aspects of resource areas would not be affected by the proposed or alternative actions. Resource areas that have been eliminated from further study in this document and the rationale for eliminating them are presented below:

Coastal Resources - The project area is not located within a state identified in the Coastal Zone Management Act of 1972 or Coastal Barriers Resources Act; therefore, there are no impacts to coastal resources. No further analysis is required.

Corridor Analysis – A corridor analysis is not applicable for this project area as it does not follow a linear path nor have large electrical transmission lines, telecommunication cables, water or wastewater pipelines leading to or away from it; therefore, a detailed analysis is not required.

Electromagnetic Fields and Interference (EMF) - No EMF transmitting objects such as overhead high-voltage electric transmission lines, substations, cell or microwave towers will be installed as part of the Proposed Action; therefore, detailed analysis of EMF is not required. All of the necessary transmission lines are currently present, adjacent to the subject property.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

This chapter describes the current conditions of the environmental resources, either manmade or natural, that would be affected by implementation of the Proposed Action or alternatives. This chapter also describes the potential environmental impacts that are likely to occur as a result of implementation of the Proposed Action. The No Action Alternative provides a baseline against which the impacts of the Proposed Action can be compared.

3.1 Land Use

3.1.1 Affected Environment

Land use refers to the use of land for various activities, including commercial, industrial, recreational, agricultural, and residential. Adopted plans and development regulations control the type of land use and the intensity of development or activities permitted. Changes in land use patterns that result from development can affect the character of an area and result in physical impacts to the environment. This section describes the land use and ownership resources occurring in the project area and the potential impacts to those resources due to project implementation.

General Land Use and Zoning

The project area consists of approximately 22.6 acres of undeveloped land (see Appendix A). generally situated on the northeast boundary of the city of Gering (Figure 3). The project area falls within the jurisdiction of Scotts Bluff County and is within Scotts Bluff County Assessor Parcel ID 0010016716 (Nebraska Scotts 2022). This parcel is currently zoned as Heavy Industrial District (MH) by the City of Gering (City of Gering 2020b).

The project area covers only a portion of the parcel, which is owned by the City of Gering. The project area consists of vacant agricultural land. The vegetation on the site primarily

consists of herbaceous groundcover. Land adjoining the project area to the north and east consists of vacant land and is zoned MH. Land adjoining the site to the west is zoned MH and is developed with the City of Gering Wastewater Treatment Facility. A dilapidated storage building and vacant land zoned MH is present south of the site. In site plans this lot is indicated as an "excepted tract" that will not be affected by the proposed project (see Figure 3 and Appendix B). Single-family residential properties and urban infrastructure associated with Gering become more prominent further west-southwest beyond the project area (Terracon 2022). The southern boundary of the project area abuts an existing roadway (U Street).

Important Farmland

The Farmland Protection Policy Act (FPPA) and USDA Departmental Regulation No. 9500-3, Land Use Policy, provide protection for important farmland, prime forestland, and prime rangeland. The USDA regulation 7 CFR Part 658 implements the FPPA (1970). The FPPA, 7 U.S.C. 4201, was enacted in 1981 in order to minimize the loss of prime farmland and unique farm, forest, and range lands as a result of Federal actions by converting these lands to nonagricultural uses. As defined by FPPA, prime farmland is farmland that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and is also available for these uses. A unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops; it has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops.

The USDA Natural Resources Conservation Service (NRCS) soil survey contains information regarding USDA-identified prime farmland soils, which are required for a prime a farmland designation (Figure 4, Table 1). Three soil types are present across varying degrees of slope (NRCS 2022): Mitchell silt loam, 0 to 1 percent slopes (prime farmland if irrigated); Mitchell silt loam, wet variant, 0 to 1 percent slopes (prime farmland if irrigated); and Otero-Bayard fine sandy loams, 0 to 3 percent slopes (prime farmland if irrigated). The soil types are considered prime farmland if irrigated, and make up 68.3%, 30.8%, and 0.9% of the site, respectively (NRCS 2021). The USDA NRCS Custom Soil Resource Report in Appendix A provides the full soil report and soil classifications within the project area.

Formally Classified Lands

Formally Classified Lands (FCLs) are properties administered either by federal, state, or local agencies, or properties that have been given special protection through formal legislative designation. Review of FCLs for the project area began with a review of the USDA guidance document regarding FCLs. FCLs may cover a broad spectrum of agency oversight, so documentation entails referencing multiple agency databases. The Protected Lands Database of the U.S. (PAD-US) combines a number of agency databases into a single source documenting lands with some level of federal, state, local, and private protection (Appendix A) (GreenInfo 2022, USGS 2022c). Review of the PAD-US revealed that there are no known protected lands within the project area. The nearest PAD-US documented protected land is the City of Gering owned park, Hampton Park, located approximately 2,850 feet to the southwest (GreenInfo 2022). In addition to the PAD-US, multiple agency databases were

reviewed including the United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS), Nebraska State Historic Preservation Office (SHPO), the National Park Service (USNPS), and USGS (2022a) to determine if the project area is located within the administrative boundaries of FCLs. No FCLs were identified within the area or adjacent or immediately adjacent to the north, south, east and west.

Table 1. Project Area Soil Map Units and Farmland Rating

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1712	Otero-Bayard fine sandy loams, 0 to 3 percent slopes	Prime farmland if irrigated	0.2	0.9%
5834	Mitchell silt loam, 0 to 1 percent slopes	Prime farmland if irrigated	15.5	68.3%
5852	Mitchell silt loam, wet variant, 0 to 1 percent slopes	Prime farmland if irrigated	7.0	30.8%
Totals for Area of Interest			**22.6**	**100.00%**

Figure 4. NRCS Soil Survey Map

3.1.2 Environmental Consequences

No Action Alternative

Under the No-Action Alternative the agricultural land would continue its under its current use practices; therefore, there would be no change in land use and no impacts are anticipated.

Preferred Alternative

Under the Proposed Action, of the entire property will be utilized for the solar farm. The project area is zoned as an MH district and the Proposed Action meets MH criteria (see Zoning Map in Appendix A). The MH district allows for the widest range of industrial operations permitted in the City of Gering, for those industrial uses which are able to meet certain performance standards to protect nearby property from undesirable environmental conditions. Residential and other similar uses are prohibited from this district in order to limit

environmental effects associated with certain commercial and industrial uses, irrespective of their meeting performance standards (City of Gering 2020b). Since the Proposed Action meets the assigned land uses within the zoning designation, the Proposed Action will not require a change in zoning.

Land use within the project area would change from undeveloped vacant land to industrial use. This would not result in negative impacts because current use of the land does not provide services to the community that would be affected by a change in use. Additionally, all remaining surrounding land would largely remain undeveloped. There were no protected or formally classified land occurring adjacent or in the vicinity of the project site; therefore no impact to FCLs are anticipated.

The USDA NRCS, Nebraska State Office prepared the Farmland Conversion Impact Rating form (AD-1006) for the proposed site. The NRCS determined that the combined rating of the site is 153. The rating was provided on June 30, 2022 and is provided in Appendix F. The FPPA states that sites with a rating less than 160 need no further consideration for protection and no additional evaluation is necessary. Therefore, no significant impacts to farmland are expected.

3.1.3 Mitigation Measures

There are no mitigation or management measures because the proposed change in land use is consistent with zoning classifications.

3.2 Floodplains

3.2.1 Affected Environment

No floodplains are indicated within the project area by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No. 310731005A (effective February 15, 1979) and the Nebraska Department of Natural Resources Floodplain Management Interactive Map (NDNR 2022). The entire project area lies within Zone C, areas of minimal flooding. A Zone B floodplain is present approximately 30 feet to the north of the project area. The Zone B floodplain includes areas between the limits of 100-year and 500-year floodplains. A map of the floodplain is included in Appendix A.

3.2.2 Environmental Consequences

Because there are no mapped floodplains within the project area, no impacts to floodplains will occur under the No Action or Preferred Alternatives. Based on the Nebraska Floodplain Map, the site is within Zone C which is above the anticipated 500-year flood elevation. A detailed analysis of floodplains is not required.

3.2.3 Mitigation Measures

No mitigation measures are warranted.

3.3 Wetlands

3.3.1 Affected Environment

The USACE and EPA define wetlands as follows: *"Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas*."

National Wetlands Inventory (NWI) data for the project site was reviewed to identify potential wetland areas (USFWS 2022d). NWI data for the project site was published by U.S. Fish and Wildlife Service (USFWS) and depicts possible wetland areas based on stereoscopic analysis of high-altitude aerial photographs. A review of the NWI data did not identify wetland features within the site (Figure 5). The surrounding area is undeveloped land and the nearest mapped NWI features to the site are freshwater ponds (wastewater lagoons) approximately 70 feet west of the site.

The Corps of Engineers 1987 Wetlands Delineation Manual references three levels of routine wetland determinations. This project utilized the Level 1 – Onsite Inspection Unnecessary method. Level 1 may be employed when the available information is sufficient for making a determination on the entire project area. A summary of the available information used to determine the presence or absence of wetlands in or near the project area is given below.

Hydrology:

Terracon prepared a geotechnical report in August 2022 that indicated that groundwater was observed approximately nine feet below ground surface at five boring locations located within the project boundary. The USDA's Web Soil Survey indicates that the water table is greater than 6.5 feet below the ground surface (bgs). The locations of the five bore holes are representative of the site as a whole and none exhibited evidence of hydrology sufficient to support wetlands.

Soil:

The USDA's Web Soil Survey report indicates that minor components of the soil map units on the project site have hydric soil ratings. See Soil Report in Appendix A. These minor components constitute one to two percent of the Otero-Bayard fine sandy loams and Mitchell silt loam map units. Due to the sparsity of hydric soils (one to two percent of the soil's components) and the depth to groundwater (nine feet bgs in June) it can be concluded that the site does not support wetlands. According to the Corps of Engineers 1987 Wetland Delineation Manual, a wetland must exhibit visible indicators of hydric soils, hydrology and hydrophytic vegetation.

On August 22, 2023, a wetland field delineation was conducted (E&A, 2023). One wetland approximately 0.001 acre in size was identified near the west boundary of the project area. The wetland was located within a roadside ditch and was dominated by reed canary grass (*Phylaris arundinacea*). The wetland was isolated from any other waters and would not be considered jurisdictional under Section 404 of the Clean Water Act. The wetland delineation report is included in Appendix A. The delineated wetland is shown in Photograph Number 7 in the delineation report and below.

Photograph Number: 7
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: South
Description: South facing view of Wetland Area 1.

3.3.2 Environmental Consequences

The wetland delineated on the project site near the west boundary is isolated and would not be considered subject to permitting requirements under Section 404 of the Clean Water Act. Additionally, it is located within a roadside ditch and will be outside of the perimeter fence. No impacts to wetlands will occur.

3.3.3 Mitigation Measures

No mitigation measures are warranted.

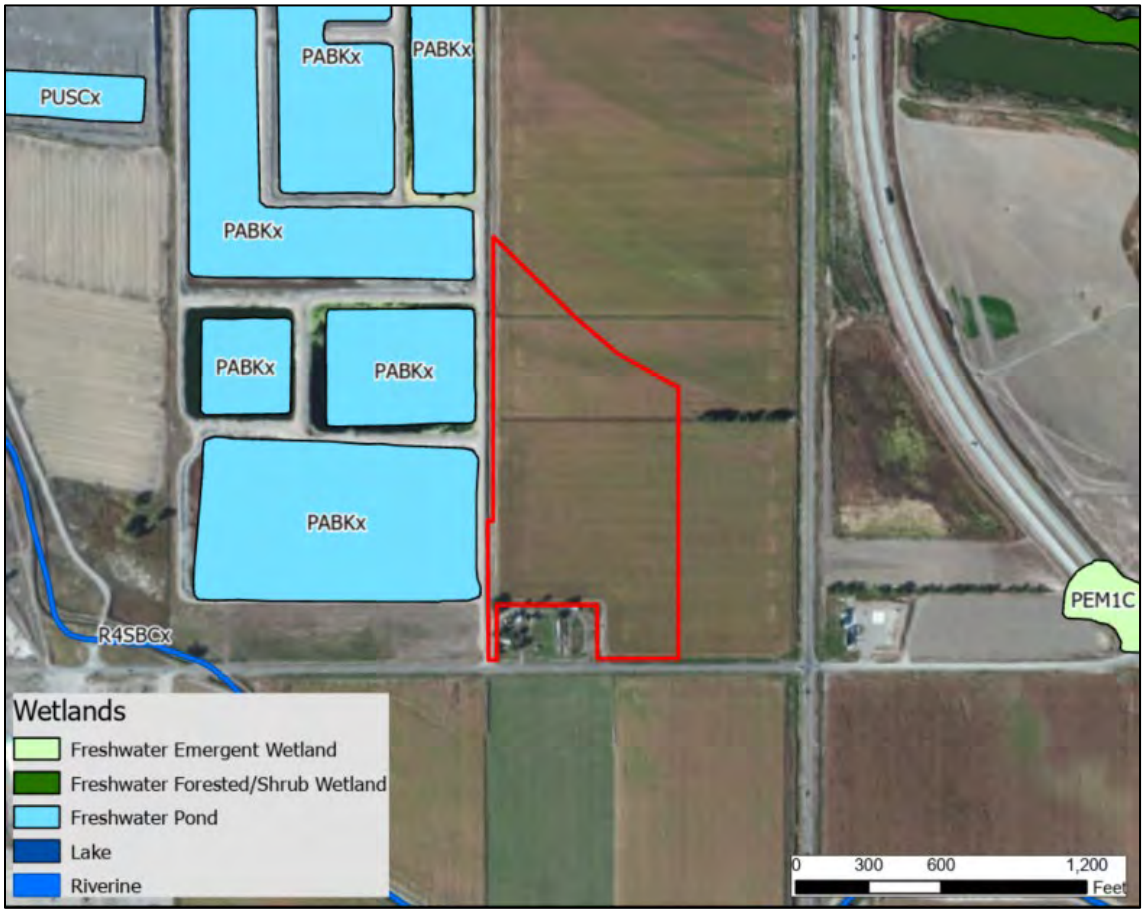

Figure 5. NWI Map (Project Area Outlined in Red)

3.4 Water Resources

3.4.1 Affected Environment

Surface Water

The project area is within the Middle North Platte-Scotts Bluff watershed (HUC 10180009). Data from the USGS National Hydrography Dataset (NHD) indicates that no streams or waterbodies are present within the project boundaries. In addition, no aquatic features were observed during the site visit (Terracon 2022). Outside of the project area several reservoirs are depicted to the west and a canal/ditch is illustrated to the west and south. On the USGS 7.5 minute topographic map, the North Platte River to the north of the project site is depicted as a perennial stream surrounded by areas of complex braided channels. The North Platte River is located approximately 1,300 feet north of the north boundary of the project area. The North Platte River is a perennial waterway with a mapped floodplain (FEMA) and several USGS monitoring gauges in the Gering and Scottsbluff vicinities.

Groundwater

A sole source aquifer is not located within the state of Nebraska (EPA 2018). However, the site is located within the High Plains aquifer (HPA), also known as the Ogallala aquifer (University 2022) (Appendix A). The estimated depth to the first occurrence of groundwater is approximately nine feet below ground surface (Terracon 2022). The City of Gering utilizes groundwater as their source of drinking water (City of Gering 2022a). The City operates five groundwater wells located in Gering and four wells west of Scotts Bluff; the groundwater withdrawn is from the North Platte River alluvium. The alluvium is a sand and gravel formation under the North Platte River Valley (City of Gering 2019, Nebraska Information 2020).

3.4.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, the existing land, unimproved areas, and associated pervious cover would remain; therefore, the amount of runoff should not increase, groundwater infiltration would remain the same, and the potential for erosion due to disturbed soil would not be present. No impacts to groundwater or surface water resources are anticipated.

Preferred Alternative

Implementation of the Proposed Action will result in no direct impacts to surface waters including the North Platte River or its adjacent/adjoining wetlands associated with construction and operation of the facility. No surface waters or wetlands were identified within site boundaries during aerial image review, NWI review, and site reconnaissance. The Proposed Action may result in negligible, short-term negative indirect effects to surface water quality. During construction approximately 22.6 acres of soils will be disturbed (including but not limited to parking and equipment/component storage) which potentially increases the opportunity for sediment to leave the construction site and enter surface waters. This has the potential to increase sediment load and decrease water quality if best management practices (BMPs) are not implemented to control sediment or other pollutants during construction.

Because the amount of soil to be disturbed is greater than one acre, the Proposed Action would require authorization under the Nebraska Department of Environment and Energy (NDEE) Construction Storm Water general permit (NER210000 CSW) that authorizes stormwater discharge under the National Pollutant Discharge Elimination System (NPDES). Prior to any ground disturbance, a Notice of Intent (NOI) must be filed with the NDEE and a Stormwater Pollution Prevention Plan (SWPPP) prepared and implemented to minimize construction-related impacts. Implementation of the SWPPP and BMPs, and compliance with the terms and conditions of NER210000 CSW would ensure impacts are not significant.

After construction activities are completed, the arrays and concrete pads for structures would be considered disconnected impervious surfaces, resulting in a negligible increase in the amount of runoff and slightly decreasing infiltration during rain events. Management of site runoff from the arrays and structures will be part of the site design and will prioritize retaining stormwater by maximizing vegetated surface area where practical. The small increase in impervious surface along with proper revegetation practices would minimize impacts to groundwater and surface waters.

The proposed action would not require the use of groundwater from the Ogallala aquifer because the area would not be staffed and does not require water to operate. Additionally, due to the minimal increase in impervious surfaces, the reduction of percolation to the Ogallala aquifer is anticipated to be de minimis; therefore, no impacts to groundwater resources are anticipated.

Under the Proposed Action, the potential for negative indirect short-term impacts to surface water exists. However, streams, creeks and wetlands are not present on the site, and with the implementation of BMPs and mitigation, the indirect short-term impacts are considered minor and mitigable.

3.4.3 Mitigation Measures

Because the area of disturbed soil will exceed one acre, authorization under NER210000 CGP is required along with the implementation of a SWPPP. The contractor will implement BMPs to ensure that during rain events, sediment and debris do not leave the site and increase sediment loading and pollutants entering the borrow ditch along the north side of U Street. BMPs to be utilized may include but are not limited to:

- Managing stockpiled materials to minimize the time between delivery and use;
- Covering stockpiled materials with tarps;
- Installing silt fences around material stockpiles, storm water drainage routes, culverts, and drains;
- Installing hay or fabric filters, netting, and mulching around material stockpiles, storm water drainage routes, culverts, and drains;
- Watering disturbed areas to control windblown dust;
- Installing track-out protection to minimize sediment being tracked onto pavement from vehicles exiting the work site;
- Suspending work during rainy conditions;
- Planning and conducting earthwork in a manner that minimizes the duration of exposure of unprotected soils;
- Maintaining temporary erosion control measures, such as berms, dikes, drains, sedimentation basins, seeding, and mulching, until permanent drainage and erosion control facilities are completed and operative; and
- Employing good housekeeping measures to minimize exposure of materials stored on site to stormwater.

3.5 Biological Resources

3.5.1 Affected Environment

Federal and State Listed Species

Section 7 of the Endangered Species Act (ESA) directs all Federal agencies to use their existing authorities to conserve threatened and endangered (T&E) species and, in consultation with the USFWS, to ensure that their actions (funded or carried out) do not jeopardize listed

species or destroy or adversely modify critical habitat. Lists of T&E species are published by the USFWS. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a Proposed Action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the USFWS further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the USFWS, to make "no effect" determinations. According to the USFWS, if a "no effect" determination has been made for a proposed project, it is not necessary to seek concurrence from the USFWS. However, if a "may affect" determination has been made for a proposed project, consultation with the USFWS will be necessary.

Federally listed T&E species are listed on the USFWS Information for Planning and Consultation (IPaC) tool (USFWS 2022b). An official species list dated April 13, 2023 was generated by IPaC on behalf of the Nebraska Ecological Services Field Office. The list of T&E species compiled by the USFWS on the IPaC for Scotts Bluff County, Nebraska includes five species whose known range extend into the project area (reference USFWS IPaC Official Species List in Appendix C). There is no critical habitat identified within the project area. Additionally, one species is state listed by the Nebraska Game and Parks Commission (NGPC) within Scotts Bluff County (NGPC 2023). Table 2 includes the species listed by the USFWS and NGPC in the proposed project area, their listing status, habitat descriptions, and habitat presence opinion. Appendix C includes the NGPC state species list and range maps.

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

Under the Migratory Bird Treaty Act (MBTA), it is illegal to "take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations" (USFWS 2022c). Similarly, the Bald and Golden Eagle Protection Act (BGEPA) protects Bald and Golden eagles (USFWS 2022a).

The IPaC identifies birds listed on the USFWS Birds of Conservation Concern list or those that warrant special attention in the identified project area. According to the IPaC, the Bald eagle (*Haliaeetus leucocephalus*), Chimney swift (*Chaetura pelagica*), Clark's grebe (*Aechmophorus clarkii*), Ferruginous hawk (*Buteo regalis*), Lesser yellowlegs (*Tringa flavipes*), and Red-headed woodpecker (*Melanerpes erythrocephalus*) may utilize the proposed project area. The Bald eagles' breeding season is from October to late July. The Chimney swift and Ferruginous hawk breed from March to August. Clark's grebe breeds June through August. The Lesser yellowlegs is listed as breeding elsewhere, and the Red-headed woodpecker breeds May through mid-September.

The Nebraska Important Bird Areas (IBA) Map shown on Figure 6 was created to inform the public of critical habitats and sites in an effort to conserve them and illustrate vital bird corridors, ecosystems, and conservation areas throughout Nebraska (NGPC 2022a). The proposed project area is not located within a Nebraska IBA. The Nebraska Bald Eagle Nest Locations Map was generated by the NGPC (NGPC 2017). According to the map, the closest documented Bald eagle nest is located over 100 miles southeast of the site. Figure 7 depicts the nests documented by the NGPC.

Table 2. Federal and State Listed Threatened or Endangered Species

Species	Status	Habitat Description	Habitat Present
Mammals			
Swift Fox (*Vulpes velox*)	SE	Swift Foxes require open shortgrass prairies or deserts with few shrubs and trees. The Swift Fox prefers areas where there are colonies of prairie dogs as they form a large part of their diet and their dens may be used as shelter.	No; absence of suitable habitat (deserts, prairie dog colonies) within or near the project area. No impact is anticipated.
Birds			
Piping Plover (*Charadrius melodus*)	FT, ST	In Nebraska, Piping Plovers breed along the Missouri, Platte, Elkhorn, Loup and Niobrara rivers. Piping Plovers only spend three to four months on their breeding grounds; the other eight to nine months are spent on their wintering grounds along the Gulf of Mexico and southern Atlantic Coast. They nest on river sandbars, sand and gravel mine sandpits, lake shore housing developments and reservoir shorelines.	Yes; Piping Plovers spend three to four months at their breeding grounds (April to June/July). Suitable habitat for the Piping Plover may be present near the Platte River 1,300 feet north of the site; however, based on distance the species is not likely to be present in the project area, but could occasionally forage there.
Whooping Crane (*Grus americana*)	FE, SE	Whooping Cranes prefer shallow braided riverine habitats and wetlands for roosting. Nebraska is one of the only places where a considerable amount of time is spent in rivers. They use agricultural fields, wet meadows, marsh habitats, and shallow rivers for feeding. Whooping Cranes typically select sites with wide, open views and those areas that are isolated from human disturbance.	Yes; fields within the vicinity may provide marginal shallow aquatic habitat when flooded by irrigation or rain. However, it is unlikely that the Whooping Crane would occur within the limits of the project area, although they may occasionally forage there.

Species	Status	Habitat Description	Habitat Present
Fish			
Pallid Sturgeon (*Scaphirhyunchus albus*)	FE, SE	Pallid Sturgeon tend to select main channel habitats in the Mississippi River stretch and main channel areas with islands or sand bars in the upper Missouri River system, including the Platte. Pallid Sturgeons have adapted to living close to the bottom of large rivers with high turbidity (muddy) and seasonal fluctuations in water level. Their preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, islands, sand flats and gravel bars.	No; absence of rivers or tributaries within project boundaries. No impact will result with utilization of BMPs to prevent disturbed soils from leaving the site.
Insects			
Monarch Butterfly (*Danaus plexippus*)	FC	Adult Monarchs are seen flying in Nebraska from June through the fall. Adults are found in a variety of habitats including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats with abundant nectar plants, including urbanized areas. Caterpillars are found on various species of the family Asclepiadaceae (occasionally treated as a subfamily Apocynaceae).	Yes; Wildflowers may serve as suitable stopover habitat during migration. The Monarch Butterfly is a candidate species and no consultation with USFWS is required at this time.
Plants			
Western Prairie Fringed Orchid (*Platanthera praeclara*)	FT, ST	The Western Prairie Fringed Orchid can be found in the tallgrass prairie landscape. In eastern Nebraska they are found in upland prairies and loess soils. In central and northeast Nebraska they occur in wet prairies and meadows. The Western Prairie Fringed Orchid can also be found in the sandy soils of sub-irrigated meadows in the Sandhills.	No; absence of suitable habitat within or near the project area. The fields are in agricultural use and are seasonally planted and harvested. No impact is anticipated.

FC – Federal candidate FE – Federally listed endangered ST – State listed threatened
FT – Federally listed threatened SE - State listed endangered

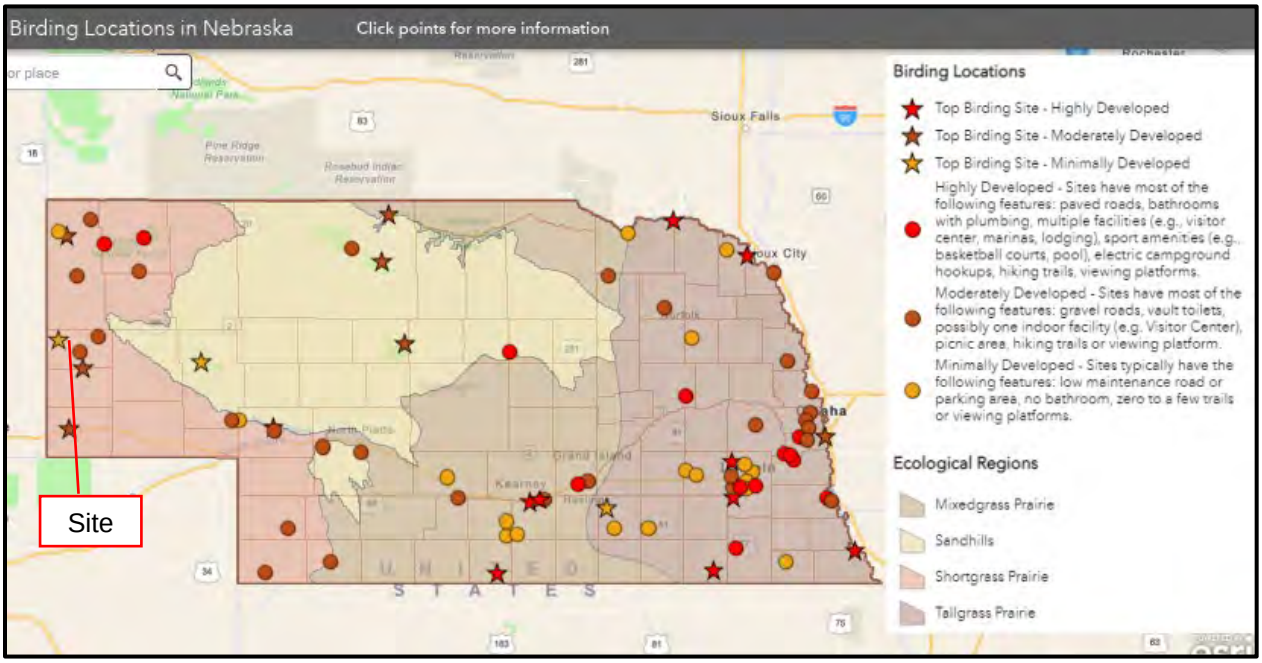

Figure 6. Nebraska Important Bird Areas Map

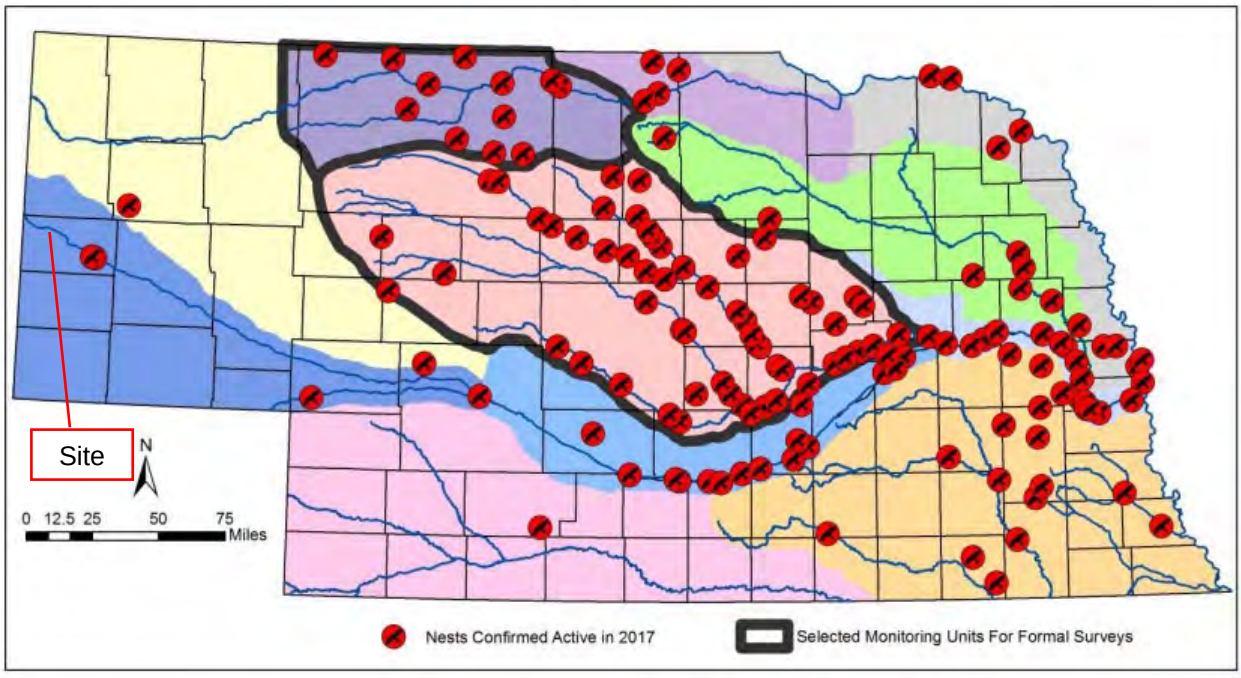

Figure 7. NGPC Bald Eagle Nest Locations Map

Wildlife Resources and Vegetation

The entire site has been highly disturbed by agricultural use beginning in the 1950s or earlier. The site is currently planted with soybeans.

Invasive Species

Executive Order 13112 (Invasive Species) was created to prevent the introduction of invasive species and to provide for their control. The Federal government cannot fund or authorize actions that may promote the introduction or spread of invasive species. The Nebraska Invasive Species Program (2022) identifies three classes of noxious/invasive vegetation: Category 1, Category 2, and Category 3 (See Appendix C). Category 1 plant species are not known to exist in each ecoregion but pose a significant risk if introduced; Category 2 plant species are a top priority for eradication of new and existing populations; and Category 3 plant species are established and prevention of spread to new areas is a priority. Common Category 2 priority species include: Russian knapweed (*Acroptilon repens*), Absinth wormwood (*Artemisia absinthium L.*), Caucasian and Yellow bluestem (*Bothriochloa bladhii* and *ischaemum*), Houndstongue (*Cynoglossum officinale*), Henbane (*Hyoscyamus niger*), Yellow flag iris (*Iris pseudacorus*), Dalmation toadflax (*Linaria dalmatica),* and Common buckthorn/European buckthorn (*Rhamnus Cathartica)*. These species were not observed during the site reconnaissance.

3.5.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, the proposed project site would remain in its current condition resulting in no impacts to wildlife or habitat.

Preferred Alternative

Federal and State Listed Species, Wildlife

Implementation of the Proposed Action would remove existing vegetation, which consists of agricultural crops. Potentially suitable habitat for two listed species (piping plover and whooping crane) is present within the project area and immediate vicinity, but these species are not likely to be adversely affected.

Swift fox

Swift foxes require open shortgrass prairies with few shrubs and trees. The major reason for Swift fox population decline is habitat destruction and eradication efforts for predators. The increase in agriculture has resulted in a significant decrease in shortgrass prairie habitat and prairie dog towns that provide prey and burrows to escape predators.

Due to the lack of shortgrass prairie habitat and prairie dog colonies within project limits, the proposed project would have **no effect** on the Swift fox.

Piping plover

In Nebraska, the Piping plover breeds along the Platte River at shorelines, mud flats, and sand flats. Piping plovers arrive in Nebraska in mid- to late-April for breeding and usually leave the breeding grounds shortly after chicks fledge, by early August. The juveniles depart a few weeks later.

Piping plover populations are threatened by human disturbance, continued habitat loss, pollution and contaminants on their breeding and wintering grounds, disease, and predation. The primary cause of population decline is habitat loss and destruction around large river systems (channelization, irrigation, reservoir construction).

Sand bars and floodplain habitat surrounding the North Platte River 1,300 feet to the north of the proposed project site is potentially suitable habitat for the Piping plover. Due to the site proximity to this habitat, there is potential for the Piping plover to rarely occur within project limits to forage. The site will continue to be usable to the species after panels have been installed. The proposed project may affect the species, so a determination of **may affect but not likely to adversely affect** is provided. USFWS concurrence was received on August 26, 2023.

Whooping crane

It is estimated that approximately half of the known Whooping crane individuals migrate through Nebraska. They utilize a variety of wetland habitats as stopover sites during spring and fall migration. Whooping cranes prefer shallow braided riverine habitats and wetlands for roosting, and agricultural fields, wet meadows, marsh habitats, and shallow rivers for feeding. They typically select sites with wide, open views and areas isolated from human disturbance.

Population decline was at its peak circa 1942 as a result of shooting and destruction of nesting habitat. In Nebraska, there are efforts to restore and protect roosting and foraging habitat along rivers used by the cranes during migratory stopovers.

There is a possibility for Whooping cranes to occur within site limits due to the species' use of agricultural fields and the proximity of the floodplain that may create seasonally wet fields immediately north of the site. The proposed project **may affect Whooping crane habitat but is not likely to adversely affect** the species due to more suitable habitat north of the site and because the land will continue to be usable to the species after panels have been installed. USFWS concurrence was received on August 26, 2023.

Pallid sturgeon

Pallid sturgeon can be found in the Mississippi and Missouri river systems. In Nebraska, a small number have been captured in the lower reaches of the Platte River. Pallid sturgeons appear to prefer a mixture of sand, gravel and rock substrate in the winter, and sand substrate in the summer and fall. Pallid sturgeon can be found in waters ranging widely in depth and velocity but are bottom-oriented and may select areas at least 0.8 m deep.

Alterations to the Missouri and Mississippi rivers (e.g., channeling, damming, etc.) are thought to have caused habitat losses that have resulted in a sharp decline in the population of Pallid sturgeon, and reproduction in the wild has declined to near-zero levels. Pallid sturgeon are also threatened by oxygen depletion, chemical contamination, and competition with non-native fish. The construction and operation of the solar facility will not contribute to these stressors or cause habitat loss.

The project site does not abut the North Platte River. A construction stormwater pollution prevention plan (SWPPP) will be implemented before and during construction of the proposed project and will include best management practices (BMPs) such as covering loose soil and installing sediment barriers. Although Pallid sturgeon are not sensitive to turbidity, BMPs to prevent sediment from reaching the river will be implemented. Construction and operation of the solar facility is anticipated to have **no effect** on the Pallid sturgeon.

Monarch butterfly

Monarchs migrate through a travel corridor that spans the entire country and includes Nebraska. The larvae require milkweed species for feeding and adults feed on nectar from flowering plants.

Threats to Monarch butterflies include pesticide use and habitat loss. Milkweeds have been significantly reduced in the Midwest due to the use of herbicides, and insecticides and deforestation of the overwintering fir forest habitats impact the Monarchs.

Wildflowers and flowers of planted crops within and around the project area may provide suitable stopover habitat for adult Monarch butterflies. While the project may affect Monarch habitat, the species is a candidate and not formally listed so consultation would not be required. Revegetation between the arrays will include pollinator-friendly species that will have a long-term positive impact on Monarch butterflies.

Western prairie fringed orchid

The western prairie fringed orchid (WPFO) is found in uncultivated tallgrass prairies west of the Mississippi River in moist soils that are often calcareous. WPFOs require periodic disturbance (e.g., fire, grazing, etc.) to persist. WPFOs are pollinated by Sphinx moths, its seeds are spread by wind or water, and seed germination and nutrition are dependent on mycorrhizal fungi.

The species is primarily threatened by the conversion of tallgrass prairie to developed cropland. The WPFO may also be threatened by pesticide application which harms Sphinx moths, overgrazing, and herbicide spraying.

There is no suitable habitat present in the proposed project area that would support WPFO, as the land is all cropland that is seasonally planted and harvested and treated with pesticides and herbicides. **No effect** to this species would occur.

Correspondence seeking concurrence with the ‘not likely to adversely affect’ determinations for the Piping plover and Whooping crane were received from USFWS on August 26, 2023. Communication and responses will be recorded in Table 8 and provided in Appendix F upon receipt.

Wildlife such as small mammals and birds that may pass through or forage in the proposed project area would be expected to avoid the area during construction. Superior habitat within the North Platte River riparian area is adjacent to the north. Security fencing placed around

the perimeter of the site will limit the use of the project area by larger terrestrial species, but smaller animals would be able to continue to access the area. In the long term, small mammals (rabbits, ground squirrels, etc.) may prefer the area if the larger predators (domestic cats and dogs, coyotes) are fenced out. There are short-term, direct, and minor impacts anticipated to local wildlife species, with the potential for long-term advantages to some species.

MBTA / BGEPA

According to the Bald and Golden Eagle Protection Act (USFWS 2022a), development within 660 feet of a nest is subject to development restrictions and potential mitigation. The nearest Bald eagle nest identified by the NGPC is much further than 660 feet from the site (Figure 7); therefore, potential development regulations would not apply under the BGEPA unless a nest is identified prior to or during construction. Furthermore, site development plans consist of the placement of solar panels with maximum heights of 10 feet which removes the potential for panels to be used as vantage point structures for eagles. Potential impacts to Bald eagles that may currently use the site or use the site after completion of construction as a flight corridor are not likely. Superior habitat provided by the North Platte River riparian corridor exists adjacent to the project to the north.

Activities from the Proposed Action will have the potential to impact birds that are protected by the MBTA. The current use of the site (cultivation) prevents ground nesters from using the project area during the growing season and the seasonal application of herbicides and pesticides would make the project area undesirable habitat.

Overall, there is the potential for impacts to migratory birds in the form of interactions with PV facilities. Aquatic habitats preferred by Clark's grebe and Lesser yellowlegs are absent within the project area. Canopy cover is absent which provides habitat for the Chimney swift and Red-headed woodpecker. There is superior habitat for migratory birds along the North Platte River riparian corridor north of the project area; therefore, the presence of species that prefer canopy cover is very unlikely within the project area. While the new distribution line that connects the facility to the point of interconnection would be approximately 30 feet tall by 650 feet long, there are existing power and telecommunication lines adjacent to the site, so the new distribution line is not expected to affect bird populations or migrations more than the status quo. Bird diverters may be added to the new overhead distribution line to make it more visible to birds and reduce the likelihood of collisions. Additionally, construction activities within site boundaries would generally be near ground level and not greater than 10 feet high. Therefore, if BMPs for minimizing impacts to migratory birds are adopted and the facility is revegetated with pollinator-friendly species of grasses and forbs, the proposed project may have a long-term positive impact on migratory birds.

Invasive Species

The proposed project does involve grading and excavation work which can contribute to the spread of invasive species throughout the project site and to surrounding areas. The majority of the work will use on-site soils which may contain invasive plants and seeds. Soil may be brought in from other areas of the community to meet the needs of the project. These soils

could also contain invasive plants and seeds which could contribute to the spread of invasive plants throughout the site. However, mitigation measures will be incorporated into project plans to prevent the spread of invasive plants in the region.

At the time of decommissioning a rehabilitation plan will be developed to restore agricultural lands and wildlife habitat in areas affected by the project to the same or functionally similar preconstruction state, unless circumstances prevailing shortly in advance of the decommissioning indicate that other use is more appropriately or explicitly desired by the landowner.

3.5.3 Mitigation Measures

Federally and State Listed Species

To ensure there are no impacts to the Pallid sturgeon due to disturbed soil entering the Platte River, temporary erosion control measures will be utilized during construction. Erosion control includes practices such as stabilization of loose soils with cover material and silt fences.

Consultation with the USFWS has been initiated to seek concurrence with anticipated unlikely adverse project impacts to the Piping plover and Whooping crane and/or guidance to minimize impacts.

In the event that T&E species are discovered during construction, activities will halt until consultation is completed with the USFWS and/or NGPC and protection measures are implemented.

MBTA / BGEPA

Stressors for migratory birds include vegetation alteration and removal, ground disturbance, structures, noise, light, chemicals, and human presence. Surveys for migratory birds and other listed species will be conducted within the project area prior to construction by a qualified biologist or environmental scientist during the nesting and breeding season.

No mitigation measures are recommended for Bald and Golden Eagles due to the distance to the nearest documented nest and the absence of suitable nesting trees within the project area.

Invasive Species

Temporary erosion control measures would be used during construction to eliminate soil erosion and spread of invasive species. Generally, soils used for site construction would be taken from the surrounding landscape where possible. Any soil brought onto the site will be from areas that are free of invasive plants. Revegetation efforts should utilize species that are endemic to the area and are suitable for the soil type that exists at the site. Reseeding efforts should also be initiated as soon as practical after construction is completed, and should include, in addition to grasses, native forbs and pollinator species to occupy the niches that invasive weeds may otherwise colonize. An increase in weed species is expected for the first

one or two growing seasons after construction. A weed management plan will be developed by the applicant that specifies post-construction measures to be taken to identify and manage noxious weed species until the site is revegetated with the desirable species. These measures may include overseeding, controlled grazing or chemical treatments depending on the species identified and the desired measure of control.

3.6 Cultural Resources and Historic Properties

3.6.1 Affected Environment

The cultural environment includes those aspects of the physical environment that relate to human culture and society, along with the social institutions that form and maintain communities and link them to their surroundings. Section 106 of the National Historic Preservation Act (Section 106) requires federal agencies to take into account the effects of their "undertakings" on historic properties that are within the proposal's "area of potential effect" (APE) and to provide the Advisory Council on Historic Preservation (ACHP) with a reasonable opportunity to comment on such undertakings (ACHP 2022). The regulations implementing Section 106 establish the process through which federal agencies meet this statutory requirement. Notwithstanding the above statement, in most cases Agency actions will not be reviewed by the ACHP but rather by State Historic Preservation Officers (SHPO) and Tribal Historic Preservation Officers (THPOs) on and off tribal land. Federal agencies must consider whether their activities could affect historic properties that are already listed, determined eligible, or not yet evaluated under the National Register of Historic Places (NRHP) criteria. Properties that are either listed in or eligible for listing in the NRHP are provided the same measure of consideration under Section 106.

Criteria have been established as guidance for evaluating potential entries to the NRHP. "Significance" in American history, architecture, archaeology, and culture is granted to districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that meet at least one of the following criteria:

- An association with events that have made a significant contribution to the broad patterns of history (Criterion A);
- An association with the lives of persons significant in history (Criterion B);
- Embody the distinctive characteristics of a type, period, or method of construction;
- Represent the work of a master; possess high artistic value; or represent a significant and distinguished entity whose components may lack individual distinction (Criterion C); or
- Have yielded, or may likely yield, information important in prehistory or history (Criterion D).

In Nebraska, cultural resources are protected under the federal National Historic Preservation Act (NHPA) of 1966, as amended.

The National Historic Preservation Act of 1966, as amended (54 U.S.C. § 300101et seq.) and the Advisory Council on Historic Preservation's implementing regulations, 36 CFR Part 800 (2004), require Federal agencies to consider the effect their actions may have on historic properties prior to carrying out such actions. A cultural resources investigation of the project area was completed in 2022. The Area of Potential Effect (APE) consisted of the project site, 22.6 acres. The background records search indicated that no previously recorded archeological sites or documented historic structures are in the APE.

3.6.2 Environmental Consequences

No Action Alternative

Under the no action alternative, no changes to cultural resources are anticipated.

Preferred Alternative

A significant impact on cultural resources would result if any of the following were to occur from construction or operation of the Proposed Action: 1) Damage to, or loss of, a site of archaeological, tribal, or historical value that is listed, or eligible for listing, in the NRHP; or 2) Adverse impacts to NRHP-eligible properties that cannot be satisfactorily mitigated as determined through consultation with the SHPO and other consulting parties.

A site review request was submitted to the Nebraska State Preservation Office (NSHPO) associated with a request for Section 106 consultation on May 5, 2022. The NSHPO determined that the proposed undertaking is unlikely to affect any cultural resources listed on the National Register of Historic Places or eligible for such listing. The NSHPO acknowledges the possibility of encountering buried or obscured cultural material or human remains during ground disturbing activities associated with construction because the project area occurs within areas that have not been evaluated by professional archeologists. Based upon the recommendation of no effect to historic properties by the NSPHO, no impact on cultural resources is anticipated. The consultation letter is included in Appendix F.

To comply with tribal consultation requirements under EO 13175, the applicant sent letters requesting comments to 12 federally recognized tribes: Apache Tribe of Oklahoma; Arapaho Tribe of the Wind River Reservation, Wyoming; Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota; Cheyenne and Arapaho Tribes, Oklahoma; Comanche Nation, Oklahoma; Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota; Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana; Oglala Sioux Tribe; Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota; Santee Sioux Nation, Nebraska; and the Standing Rock Sioux Tribe of North and South Dakota. These tribes may have an interest in evaluating the project’s effects on cultural or archeological resources and were requested to participate.

On May 24, 2022, Mr. Merle Marks of the Crow Creek Sioux Tribe (CCST), indicated in email correspondence that the CCST had no concerns or objections related to the project, and that any inadvertent discoveries should be reported to the CCST THPO.

On February 20, 2024, "finding" letters were sent to the 12 tribes above with results of the SHPO review indicating "No Historic Properties Affected" by the project. On February 20, 2024, Mr. Jon Eagle, Sr., THPO of the Standing Rock Sioux Tribe of North and South Dakota responded indicating he would defer comments to tribes closer to the project area. No other comments were received.

See Appendix F for Agency and Tribe correspondence.

3.6.3 Mitigation Measures

There is the potential to encounter currently unidentified cultural resources during the site development process, which is known as inadvertent discovery. If buried cultural resources are discovered during construction activities, construction activity would immediately cease within a 50-foot radius and the NSHPO and RUS notified within 24 hours. All twelve tribes will be notified of an inadvertent discovery. Construction within the 50-foot radius of the find will not continue until notification from RUS is received. An inadvertent discovery plan should be developed and kept on site during construction and maintenance activities. The construction and maintenance crews will be familiarized with the plan and its contents, so they can take appropriate action if an inadvertent discovery is made.

3.7 Aesthetics

3.7.1 Affected Environment

Visual and aesthetic resources include features of both the built and natural environment that together make the visual environment. Examples of these resources can include parks; natural areas; scenic features; open vistas; water bodies; and other landscape features. Historic or urban core districts can also be visual resources. All of these visual resources create aesthetic qualities that are valued by the public that is viewing or could view the resources. Viewers may include neighbors (who occupy land adjacent or visible to the project), travelers (who may see the Proposed Action using existing transportation), and Native Americans and other consulting parties with an interest in the project area.

The visual quality of an area may be affected by the introduction of new buildings or structures. Visually sensitive areas include regions of high scenic beauty, scenic overlooks, scenic highways, wilderness areas, integral vistas, parks, national forests, and along wild and scenic, recreational, and/or national inventory rivers.

Gering is located in the Shortgrass Prairie Ecoregion, which is known for being the driest and warmest of the great plains grasslands. The North Platte River (located north of the site) crosses the ecoregion and fosters wet meadows, deciduous woodlands, and tributary streams. The principal distinguishing characteristics of this ecoregion are its varied topography with diverse soil types, ranging from sand to clays (NGPC 2022d). A high percentage of land is used for cropland. The City of Gering consists of single-family homes, commercial buildings, land used for agriculture, five schools and associated recreational facilities. The project area consists of an approximate 22.6-acre tract of land used for

agriculture and is currently planted with soybeans. Adjoining properties to the project area include undeveloped and/or agricultural land, roadways, and the City of Gering Wastewater Treatment Facility. The proposed solar facility site is zoned for industrial uses.

The project area can be seen from U Street (County Road N) and, looking to the north and County Road 23 (Lockwood Road), looking to the west. The project area is also observable by those working within the existing City of Gering Wastewater Treatment Facility to the west. To the north of the project area is city-owned property and beyond, is the North Platte River, approximately 1,300 feet north. There are no national or state scenic byways within the vicinity of the site (USNPS 2018).

3.7.2 Environmental Consequences

No Action Alternative

Under the "No Action" alternative, no impacts due to aesthetics are anticipated. Since the site will remain undeveloped, the current visual aspect of the area will remain unchanged, therefore no impact is anticipated.

Preferred Alternative

The terrain at the project area is relatively level and at full tilt, the proposed solar arrays will be ten feet tall which should not obstruct surrounding views. An approximately 650-foot-long by 30-foot-tall distribution line would be erected along the southwestern boundary to connect the facility to the point of interconnection, but power and telecommunication lines are already present along both sides of U Street. This would yield a similar scope to current conditions and should not have a significant effect on aesthetics. The northern portion of the project area will be undeveloped, providing a visual buffer for any persons viewing the North Platte River located north of the site. The project area is bounded by an unpaved road used by the City of Gering Wastewater Treatment Facility workers and is not considered a major thoroughfare or scenic route. Visually sensitive areas were not observed on immediately adjacent properties. The closest visually sensitive area to the site is the North Platte River, which is located approximately 1,300 feet north of the site. The proposed solar facility follows the City of Gering setback requirements of not being within 1,320 feet of wildlife management areas and state recreational areas, wetlands, and neighboring dwelling units as measured from the centerline of all solar panels (City of Gering 2020a). Construction will cause a minor and temporary impact to aesthetics, but this impact is not considered significant. Due to their limited height and the lack of visually sensitive areas, the solar panel structures are not considered significant impacts to visual resources. Similarly, the new distribution line would not have a significant impact due to existing conditions in the area.

3.7.3 Mitigation Measures

The proposed solar development will have minimal impact to aesthetics; therefore, no mitigation measures are required.

3.8 Air Quality

3.8.1 Affected Environment

Air quality at the project area is regulated by the NDEE, which administers federal and state air quality standards. The United States Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) under the Clean Air Act (CAA) and its associated Amendments. The CAA was signed December 31, 1970 and amended August 7, 1977 and September 14, 1990. The CAA Amendments set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated technologies, and established national emission standards for hazardous air pollutants. Federal air quality standards have been established for six criteria pollutants: ozone (O_3), particulate matter (PM 2.5 and 10), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb) (EPA 2022b). Details on these pollutants can be reviewed in Table 3. Although O_3 is considered a criteria pollutant and is measurable in the atmosphere, it is often not considered as a pollutant when reporting emissions from specific sources, because O_3 is not typically emitted directly from most emissions sources. Ozone is formed in the atmosphere from its precursors – nitrogen oxides (NO_x) and volatile organic compounds (VOCs) – that are directly emitted from various sources. Thus, emissions of NO_x and VOCs are commonly reported instead of O_3. Under these standards, a geographic location with pollutant levels below air quality standards is said to be in "attainment," while higher levels are in "non-attainment." Table 3 lists air quality standards for the six criteria pollutants.

The CAA Amendments requires federal actions to conform to any applicable State Implementation Plan (SIP). EPA (2022b) has promulgated regulations implementing this requirement under *40 CFR Part 93*. A SIP must be developed to achieve the NAAQS in non-attainment areas (i.e., areas not currently attaining the NAAQS for any pollutant) or to maintain attainment of the NAAQS in maintenance areas (i.e., areas that were non-attainment areas but are currently attaining that NAAQS). General conformity refers to federal actions other than those conducted according to specified transportation plans (which are subject to the Transportation Conformity Rule). Therefore, the General Conformity rule applies only to non-transportation actions in non-attainment or maintenance areas.

New construction and conversion activities which are located in "non-attainment" or "maintenance" areas, as determined by the EPA may need to be modified or mitigation measures developed and implemented to conform to the SIP. The Clean Air Act (42 U.S.C. 7401 et seq.) prohibits federal assistance to projects that are not in conformance with the SIP. Scotts Bluff County, Nebraska is not located within a non-attainment or maintenance area for any criteria pollutants (EPA Green Book 2022).

Pollutant	Primary/Secondary	Value	Form
Carbon Monoxide 1-hr average	Primary	35 ppm 9 ppm	No to be exceeded more than once per year

Pollutant	Primary / Secondary	Value	Form
8-hr average			
Nitrogen Dioxide 1-hr average Annual average	Primary Primary and Secondary	100 ppb 53 ppb	Hourly - 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years Annual Average – Annual Mean
Ozone 8-hr average(b)	Primary and Secondary	0.070 ppm	Annual fourth highest maximum 8-hour concentration, averaged over 3 years
Lead	Primary and Secondary	0.15 µg/m^3	Rolling average
Particle Matter $_{10}$ 24-hr average	Primary and Secondary	150 µg/m^3	Not to be exceeded more than one per year on average over 3 years
Particle Matter$_{2.5}$ 24-hr average Annual average Annual average	Primary and Secondary Primary Secondary	35 µg/m^3 12.0 µg/m^3 15.0 µg/m^3	98th Percentile, averaged over 3 years Annual mean, averaged over 3 years Annual mean, averaged over 3 years
Sulfur Dioxide 1-hr average 3-hr average	Primary Secondary	75 ppb 0.5 ppm	99th Percentile of 1-hr daily maximum concentrations, averaged over 3 years Not to be exceeded more than one per year

Table 3. National Ambient Air Quality Standards
Source: EPA 2022b. Available at: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

3.8.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, the proposed project site would remain in its current condition therefore, no air quality impacts are anticipated.

Preferred Alternative

Temporary impacts on air quality are anticipated during the clearing, grading, and excavating of the site due to dust generated from earthwork and construction. Fugitive dust emissions and emissions from construction vehicles may temporarily increase levels of air pollutants during excavation and construction. Impacts to air quality are expected to be short-term and minor.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked on and the level of construction activity. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. The EPA estimates that the effects of fugitive dust from construction activities would be reduced significantly with an effective watering program.

The project area is currently in attainment and therefore no additional mitigation measures are required for development. Additionally, there would be no long-term air quality effects associated with routine operation of the solar site. Construction of a solar site could alternatively reduce air emissions, as this is a renewable energy project.

3.8.3 Mitigation Measures

Dust mitigation measures will be required during construction of the proposed solar site. Measures may include watering of disturbed areas and sweeping or other methods to control tire track-out at intersections with construction and paved areas. Minor emissions from construction can be further reduced or mitigated through the use of BMPs. BMPs for dust control include:

- spraying water on exposed surfaces to minimize dust,
- limiting the area of uncovered soil to the minimum needed for each activity,
- siting of staging areas to minimize fugitive dust,
- using a soil stabilizer (chemical dust suppressor),
- mulching,
- using a temporary gravel cover,
- limiting the number and speed of vehicles on the site,
- and covering trucks transporting soil, sand, or other loose material off-site,
- limiting vehicle idling time,
- using low or ultra-low sulfur fuel (including biodiesel),
- conducting proper vehicle maintenance, and
- using electric-powered tools (instead of gas-powered tools).

It is anticipated that construction contractors will properly maintain their fleet of vehicles/equipment so that air emissions are kept to a minimum. Air pollutants would be widely dispersed across the project area and short-term in nature. Air pollutants would be minimized by dust suppression (watering) and vehicle maintenance. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre per day would reduce Total Suspended Particles emissions as much as 50 percent (EPA 2022a).

3.9 Socio-Economic Impact Assessment/Environmental Justice

3.9.1 Affected Environment

The proposed project site is located within the City of Gering in Scotts Bluff, Nebraska in an area surrounded primarily by agricultural/undeveloped land, with the exception of an existing Wastewater Treatment Facility to the west. EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Executive Order makes clear that its provisions apply fully to programs involving Native Americans.

According to CEQ environmental justice guidance (1997), low-income populations should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

The CEQ guidance identifies a minority as Individual(s) who are members of the following population groups: American Indian or Alaskan Natives; Asian or Pacific Islanders; Black, not of Hispanic origin; or Hispanic. Minority populations should be identified where either the minority population of the affected area exceeds 50 percent, or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (1997).

The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.
As defined by the EPA, environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

There are no individuals residing adjacent to the project site. Within a one-mile radius of the project site, the population is approximately 884 with 60 percent identifying themselves as a minority and 16 percent low-income. The unemployment rate is 1% within a one-mile radius of the project site. Based upon the presence of a minority community within the area, an environmental justice community is present (Appendix D).

EO 13166 requires agencies to examine the services they provide, identify need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. The proposed project area is located in an area in which approximately two percent of the residents speak English less than very well (EPA 2020).

According to the 2016-2020 Census Data, the population of Scotts Bluff County, Nebraska is 36,084 with a median household income of $53,433 and 12.4% of the population in poverty (USCB 2020b). Approximately 16,900 people work in Scotts Bluff County. The largest industries in Scotts Bluff County are Health Care & Social Assistance (3,036 people), Retail Trade (2,054 people), and Construction (1,482 people) with the highest paying industries being Utilities ($55,234), Professional, Scientific, & Technical Services ($53,706), and Transportation & Warehousing, & Utilities ($51,726) (Data USA 2022).

For economic demographic comparisons, Table 4 compares the median household income (MHI), poverty rates, and unemployment rates between Gering, Scotts Bluff County, Nebraska, and a one-mile radius surrounding the proposed project area. According to the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages (2022), the primary employing industry sector in Scotts Bluff County for the second quarter of 2021 was service providing. Table 5 shows the number of industry establishments, number of employees, and wages by industry sector in Scotts Bluff County.

Table 4. Population, Economic and Employment Demographics

Geographic Area	Total Population	Median Household Income[1]	Poverty Rate[2]	Percent Minority Population
Proposed Project Site 1-mile Radius[3]	844	NA	N/A	60%
Gering	8,564	62,764	8.4%	27.2%
Scotts Bluff County[4]	36,084	53,433	12.4%	22.4%
Nebraska	1,961,504	63,015	10.8%	12.6%

[1]U.S. Census QuickFacts, 2020 Census Data
[2]Based on $26,500 income for family of 4 from 2020 HHS Poverty Guidelines
[3]EJSCREEN ACS Summary Report 2015-2019, accessed September 18, 2022. Source: EPA 2020.
[4]ACS 2015-2019 American Community Survey 5-Year Estimates
-Table sources included in Appendix D

Table 5. Scotts Bluff Industry Sector Employment

Industry Sector	Number of Employees in Scotts Bluff County	Percent of Employees by Industry Sector
Agriculture, Forestry, Fishing, Mining	758	4.47
Construction	1,482	8.75
Manufacturing	1,428	8.43
Wholesale Trade	524	3.09
Retail Trade	2,054	12.12
Transportation and warehousing, and utilities	1,161	6.85
Information	333	1.96
Finance and Insurance, and real estate and leasing	840	4.90
Professional, scientific, and management and administrative and waste management services	1113	6.57
Educational services, and health care and social assistance	4394	25.94

Industry Sector	Number of Employees in Scotts Bluff County	Percent of Employees by Industry Sector
Arts, entertainment, and recreation, and accommodation and food services	1079	6.37
Other services, except public administration	936	5.52
Public administration	832	4.91
Total	**16934**	
Industry Workers (Population 16 Years and Over) (USCB 2020a) https://data.census.gov/cedsci/table?q=Scotts%20Bluff%20County,%20Nebraska&tid=ACSST5Y2020.S2407		

3.9.2 Environmental Consequences

No Action Alternative

There would be no change to the current conditions, and no impact to socioeconomics/environmental justice would occur with implementation of this alternative. No impacts are anticipated.

Preferred Alternative

The Proposed Action could have a minor, short-term, temporary positive impact on the local economy as a result of construction activities via incidental spending by construction workers and the purchase of construction materials. Temporary jobs could be created for construction workers during construction activities, as well as site maintenance and groundskeeping activities. The operation of the Proposed Action could result in an economic benefit to the residents of Gering by locking-in a competitive price for electricity over 25 years, which would result in lower electricity costs. Additionally, this project will aid the Gering community's transition to renewable electricity.

The area within a one-mile radius surrounding the site has minority populations higher than 50% of the total population but has a lower population below the poverty threshold when compared to the total population of Gering, Scotts Bluff County, and the State of Nebraska. As documented in other sections of this document, the implementation of the preferred alternative would not likely lead to adverse human health or environmental effects to the general public as a whole or low income or minority populations specifically.

3.9.3 Mitigation Measures

No mitigation measures are anticipated to be required to reduce negative impacts to less than significant levels. It is expected that the Project will have short- and long-term positive impacts to the community in the affected environment.

3.10 Miscellaneous Issues

3.10.1 Noise

3.10.1.1 Affected Environment

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that interferes or disrupts normal activities. Sound is most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average Sound Level (DNL) is an average measure of sound. The DNL descriptor is accepted by federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses. EPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB DNL are "normally unacceptable" for noise-sensitive land uses such as residences, schools, or hospitals7 (EPA 2016).

The closest sensitive noise receptor is a residence located approximately 700 feet southeast of the site. The next closest noise receptor to the site consists of the existing City of Gering Wastewater Treatment Facility. Structures associated with the City of Gering Wastewater Treatment facility are approximately0.3 miles northwest of the site. The parcel with dilapidated structures adjoining the site to the south is vacant.

3.10.1.2 Environmental Consequences

No Action Alternative

Under the no action alternative, no changes to noise are anticipated.

Preferred Alternative

Increases in noise levels would occur in the immediate vicinity of the proposed project site during the construction phase. However, adherence to appropriate Occupational Safety and Health Administration (OSHA) standards would protect the workforce from excessive noise (OSHA 2022). Noise impacts during construction of the proposed project would be short-term in duration and limited to daytime hours. Equipment used for construction would involve driving steel piles into the ground. Equipment used would include mechanical pile drivers.

Pile driving may have maximum decibel levels between 95 and 115 at a 50-foot distance (WSDOT 2017). The closest sensitive noise receptor is a residential property located 700 feet southeast of the site. The exterior noise level would decrease to an approximate average of 63 dB at 700 feet from the construction site which is considered to be acceptable near the determined baseline of 64 dB under the U.S Department of Housing and Urban Development. Within the residence, with an assumed noise attenuation of 28 dB with all windows closed, the noise level within the home could be 35 dB (Locher et al. 2018). Project effects to noise levels during construction are anticipated to be short-term and limited to the duration of Project construction activities. No long-term or significant adverse effect to noise levels will occur as a result of project construction.

Sound level measurements are often reported using the 'A-weighting' scale of a sound level meter. Since the human ear does not respond equally to all frequencies (or pitches), measured sound levels are often adjusted or weighted to correspond to the frequency response of human hearing and the human perception of loudness. A-weighting slightly boosts high frequency sound, while reducing low frequency components providing a better indicator of perceived loudness at relatively modest volumes. These measurements are called A-weighted levels, (abbreviated dBA). The two main sources of sound emissions from Project operation will be the inverter strings and associated transformers. The solar panels produce DC voltage which must be converted to alternating current (AC) voltage through a series of inverters. The inverter produces 73 dBA at one meter and 67 dBA three meters. Electrical equipment associated with the solar site and transmission line will be located over 1,000 feet from any receptors. As such, no significant impacts from noise generating activities or sources are expected as a result of the proposed solar farm operations.

Potential effects to noise levels as a result of project decommissioning will be similar to those experienced during construction. Other than short-term and localized noise during decommissioning, which will occur primarily during daylight hours, no significant adverse effect to noise levels will occur as a result of project decommissioning.

Table 6. Noise Levels Associated with Typical Construction Equipment

	Noise Level (dB)					
Equipment	**At Site**	**50 feet**	**100 feet**	**200 feet**	**400 feet**	**800 feet**
Average Construction Site	91	85	79	73	67	61
Auger Drill Rig	91	85	76	70	64	58
Backhoe	86	80	74	68	62	56
Chain Saw	91	85	79	73	67	61
Compressor (Air)	86	80	74	68	62	56
Crane	91	85	79	73	67	61
Dozer	91	85	79	73	67	61
Dump Truck	90	84	78	76	70	64
Grader	91	85	79	73	67	61
Rock Drill	91	85	79	73	67	61

Source: Department of Transportation, Federal Highway Administration, Construction Equipment Noise Levels and Ranges. Highway Construction Noise Handbook, (http://www.fhwa.dot.gov/environment/noise/handbook/09.htm)

3.10.1.3 Mitigation Measures

Construction will take place during normal business hours and equipment will meet all local, state, and federal noise regulations. No mitigation or management measures are anticipated beyond OSHA mandated hearing protection for workers on site.

3.10.2 Transportation

3.10.2.1 Affected Environment

The proposed site is located within Gering, Nebraska city limits. Primary access to the project area is via an ingress/egress driveway off U Street, immediately west of the proposed site. Access for construction and maintenance traffic from the vicinity would likely occur via State Highway 71 to U Street, or via State Highway 92 to Old Highway 92, Lockwood Road, then U Street.

The Nebraska Department of Transportation (NDOT) requires permits for oversized or overweight vehicles on roadways. A permit for movement of overweight and/or over-dimensional vehicles and loads must propose dates and routes for review by the NDOT (2022). Similarly, Scotts Bluff County requires a County Road Permit for over-width loads on county roads.

3.10.2.2 Environmental Consequences

No Action Alternative

Under the no action alternative, no changes to transportation or traffic would occur.

Preferred Alternative

During construction of the Proposed Action, additional traffic is anticipated associated with construction worker commutes and equipment being brought on- and off-site. However, there are no businesses or residential areas adjacent to the project area and the blocking of businesses and residential areas in the proximity of the site would be avoided. No street closures are anticipated and areas adjacent to and in the vicinity of the proposed project should remain accessible to property owners and visitors. If applicable, the contractor would obtain an Oversize/Overweight Truck Permit from NDOT and/or Scotts Bluff County to comply with local and state transportation regulations. Post-construction, there would not be any notable increases in traffic from current conditions since the project area will not be manned. No short- or long-term significant impacts to transportation are anticipated.

3.10.2.3 Mitigation Measures

The NDOT regulates oversized and overweight vehicle movements and haul routes along federal- and state-maintained roadways, and Scotts Bluff County regulates over-width vehicle movement along county-maintained roads. Proposed haul routes should be approved by Scotts Bluff County and NDOT prior to mobilization and permits obtained if required according to vehicle load.

3.11 Human Health and Safety

3.11.1 Affected Environment

Public, media, regulatory, and scientific concern that exposure to power-frequency and EMF may cause a variety of health effects has been increasing. Consequently, attempts to locate transmission lines and substations near residential areas, schools, health facilities, and other

public facilities have created controversy in some areas of the United States. Health and safety considerations should be made prior to the development of new transmission lines.

General public health issues include emergency response and preparedness, which ensure project construction and facility operation do not pose a threat to public health and safety. Emergency services for any medical and/or fire-related incidents at the proposed site would be provided by the Gering Fire Department. The Regional West Medical Center in Scottsbluff provides emergency medical services.

Environmental Risk Management

A Phase I Environmental Site Assessment was prepared in accordance with ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process in 2022. The Phase I Environmental Site Assessment reviewed the site and adjoining properties for the potential of contaminants of concern associated with current and historic use of the site and surrounding properties. The assessment included a site visit and review of government databases and historic images/maps. The assessment concluded that no Recognized Environmental Conditions (RECs) or Controlled RECs (CREC) were identified in connection with the site by activities conducted on the site or by adjacent properties/activities (Terracon 2022). See Appendix F.

3.11.2 Environmental Consequences

No Action Alternative

Under the no action alternative, no changes to human health and safety are anticipated.

Preferred Alternative

The project will deliver its generation to a transformer on site owned by the municipal buyer of the electricity and connecting to its distribution system. Power will not be exported to the transmission system. As such, the project does not propose to add new transmission lines or distribution grid. Associated electrical equipment for the proposed solar site will be located in the central portion of the site, over 1,000 feet from any receptors. As such, EMF is not considered a concern for this project. The greatest hazard for health and safety from high-voltage transmission lines and equipment is the risk of primary electrical shock from direct contact with equipment or conductors. Therefore, electrical lines and equipment are designed and built with safe electrical clearances, security fencing and controlled access.

Before decommissioning the project, a complete waste audit and waste reduction work plan will be completed in accordance with any applicable guidance or requirements of relevant regulations in effect at the time of decommissioning.

Typical waste material and modes of disposal, recycling or reuse are listed in Table 7. As much of the facility would consist of reusable or recyclable materials, there would be a minimal residual waste for disposal as a result of the decommissioning the facility. Small amounts of registrable waste materials would be managed in accordance with state requirements or subsequent applicable legislation. Residual non-hazardous wastes would be disposed of at a licensed landfill in operation at the time of decommissioning.

No RECs or CRECs were documented on the site; therefore, no risk is anticipated.

3.11.3 Mitigation Measures

Electrical equipment developed at the site should contain appropriate clearances, security fencing and controlled access.

Table 7. Waste Material and Modes of Disposal

Material	Typical Mode of Disposal
Concrete foundations	Crush and recycle as granular material
Solar Panels	Reuse or recycle
Steel and aluminum racks and mounts	Salvage for reuse or recycle for scrap
Cabling Recycle	Recycle
Inverter step-up transformers, inverters and circuit breakers	Salvage for reuse or recycle for scrap
Granular material	Reuse or recycle as granular material
Oils/lubricants	Recycle
Geotextile material	Dispose in landfill
Miscellaneous non-recyclable materials	Dispose in landfill
Electrical major equipment. Main Transformer, Combinerbox, Inverter Stations, Switch Gear, etc.	Salvage for reuse or recycle for scrap

3.12 Climate Change/Greenhouse Gases

3.12.1 Affected Environment

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality, storm frequency, etc.) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide evidence that climate change is occurring and may accelerate in the coming decades (IPCC 2014). Strong evidence supports the idea that global climate change is driven by human activities worldwide, primarily the burning of fossil fuels and tropical deforestation. These activities release carbon dioxide and other heat-trapping gases, commonly called greenhouse gases (GHGs), into the atmosphere (IPCC 2014).

3.12.2 Environmental Consequences

No Action Alternative

Under the no action alternative, no additional contributors to climate change and GHGs are anticipated because no activities would occur. Gering's electricity would continue to be provided by non-renewable sources.

Preferred Alternative

Solar power generation is an important means by which climate change can be addressed. The operation of the Proposed Action has a potential to reduce the need for additional energy sources that generate greenhouse gases, allowing for a beneficial impact; however, not significant. The greenhouse gases associated with construction equipment may cause a temporary increase in local emissions during the construction phase. This impact is temporary and anticipated to be less than significant.

Local solar power generating facilities can provide educational opportunities to residents that will promote the conversion (over time) from non-renewable fossil fuels to forms of renewable energy.

Additionally, the equipment (including but not exclusive to the tracks, footers, and panels) constructed and operated within the project site will have the capacity to withstand the potentially increasing frequency and/or strength of storm events; therefore no impact on the project associated with resiliency.

3.12.3 Mitigation Measures

No mitigation measures are anticipated to be required to reduce impacts to less than significant levels. Implementing BMPs associated with reducing the emissions of vehicles and equipment during the construction phase of the proposed undertaking is recommended. These BMPs may include practices such as properly maintaining engines and limiting idle time.

4.0 CUMULATIVE IMPACTS

The consideration of cumulative impacts consists of an assessment of the total effect on a resource, ecosystem, or community from past, present and future actions that have altered the quantity, quality, or context of those resources within a broad geographic scope. The CEQ regulations define cumulative effects as "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7). The cumulative effects analysis considers the aggregate effects of direct and indirect impacts from federal, nonfederal, public, and private actions on the quality or quantity of a resource.

The intent of the cumulative effects analysis is to determine the magnitude and significance of cumulative effects, both beneficial and adverse, and to determine the contribution of the Proposed Action to those aggregate effects.

At the time this EA was prepared, there were no known major projects in the vicinity of the proposed project area proposed for the immediate future. The project area is zoned MH (Heavy Industrial District) and it is reasonable to assume there will be development over time consistent with zoning classifications.

4.1 Environmental Consequences

No Action Alternative

Under the no action alternative, there would be no cumulative effects as no impacts would occur.

Preferred Alternative

With the availability of additional renewable energy sources, the potential for additional commerce could occur within the Gering vicinity, allowing for a positive impact to the local economy while not contributing to negative environmental impacts. Overall, neither the No-Action Alternative nor Preferred Alternative would have long-term, negative cumulative effects on natural, cultural or human resources within the project area and surrounding vicinity.

Cumulative effects which the project will contribute to include conversion of farmland to other uses that do not produce food or fiber crops. These impacts are occurring in rural areas in Nebraska due to development unrelated to solar power development.

Wherever construction disturbs topsoil, the potential for colonization by noxious weeds exists. Noxious weed infestations reduce biodiversity, reduce crop yields and have an adverse effect on ecosystems in general.

4.2 Mitigation Measures

Foreseeable projects would be compatible with expanding capacities of existing industrial and commercial operations, including the construction of additional solar arrays. These expansions in combination with the proposed project should not lead to increased cumulative effects on the environment provided this and future projects include mitigation measures associated with losses of farmland, minimizing soil erosion and invasive weed management.

5.0 SUMMARY OF MITIGATION

Water Resources

- Implementation of a Stormwater Pollution Prevention Plan.
- Implement BMPs to ensure that during rain events, sediment and debris do not leave the site and increase sediment loading and pollutants entering existing stormwater system. BMPs to be utilized can include:

    - Planning and conducting earthwork in a manner that minimizes the duration of exposure of unprotected soils
    - Stabilizing staging areas during construction activities
    - Maintaining temporary erosion control measures, such as berms, dikes, drains, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative
    - Mulching of disturbed areas in lieu of permanent erosion controls, such as revegetation

- Design of solar array should include stormwater management such as appropriate revegetation.

Air Quality

- Dust mitigation measures will be required during construction of the proposed solar farm. Measures may include watering of disturbed areas and sweeping or other methods to control tire track-out at intersections with construction and paved areas.

- Implementation of BMPs for dust control include:

    - Spraying water on exposed surfaces to minimize dust,
    - Limiting the area of uncovered soil to the minimum needed for each activity,
    - Siting of staging areas to minimize fugitive dust,
    - Using a soil stabilizer (chemical dust suppressor),
    - Mulching,
    - Using a temporary gravel cover,
    - Limiting the number and speed of vehicles on the site,
    - Covering trucks transporting soil, sand, or other loose material off-site,

  - Limiting vehicle idling time,
  - Using low or ultra-low sulfur fuel (including biodiesel),
  - Conducting proper vehicle maintenance, and
  - Using electric-powered tools (instead of gas-powered tools).

- Contractors will properly maintain their fleet of vehicles/equipment so that air emissions are kept to a minimum.

Biological Resources

- The general BMPs below would be implemented to avoid the potential spread of invasive/exotic plant species during construction (Perron 2008):
  - Minimize soil disturbance whenever possible. Invasive plants readily colonize areas of disturbed soil. Monitor recent work sites for the emergence of invasive plants.
  - Stabilize disturbed soils as soon as possible by seeding and/or using mulch, hay, rip-rap, or gravel that is free of invasive plant material. Seeds of native species should be used whenever possible. Species on the prohibited invasive plant list should never be planted.
  - Materials such as fill, loam, mulch, hay, rip-rap, and gravel should not be brought into project areas from sites where invasive plants are known to occur. If the absence of invasive plant parts in these materials cannot be guaranteed, recent work sites should be monitored for the emergence of invasive plants.

Cultural Resources

If buried cultural resources are discovered during construction activities, construction activity should immediately cease within a 50-foot radius of the discovery and the NSHPO and RUS notified within 24 hours. Construction within the 50-foot radius of the discovery will not continue until notification from RUS is received.

Invasive Species

Reclamation vegetation species will include pollinator-friendly grasses and forbs. Increasing pollinator habitat will provide benefits to surrounding agricultural areas and will contribute to overall ecological benefits including minimizing the potential for weed infestations.

6.0 AGENCY CORRESPONDENCE

A Request for Consultation to prepare this Draft EA was provided to the following tribes, contacts, and agencies. Upon receipt, dates and responses will be recorded in Table 8 and the communication will be provided in Appendix F.

Table 8. Consulting Agencies

Agency/Tribe	Letter Date	Response Date	Type of Response
NE SHPO	May 20, 2022	June 30, 2022	Concurrence of "Finding of No Effect"
NRCS Farmland Protection	June 9, 2022	June 30, 2022	No further consideration for protection and no additional evaluation is necessary.
USFWS	August 1, 2023	August 26, 2023	USFWS concurs with "may affect, not likely to adversely affect" determinations for piping plover and whooping crane.
Apache Tribe of Oklahoma	May 6, 2022 and February 20, 2024		
Arapaho Tribe of the Wind River Reservation, Wyoming	May 6, 2022 and February 20, 2024		
Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota	May 6, 2022 and February 20, 2024		
Cheyenne and Arapaho Tribes, Oklahoma	May 6, 2022 and February 20, 2024		
Comanche Nation, Oklahoma	May 6, 2022 and February 20, 2024		
Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota	May 6, 2022 and February 20, 2024	May 24, 2022	No concerns or objections.
Lower Brule Sioux Tribe of the Lower Brule Reservation, South Dakota	May 6, 2022 and February 20, 2024		
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana	May 6, 2022 and February 20, 2024		
Oglala Sioux Tribe	May 6, 2022 and February 20, 2024		
Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota	May 6, 2022 and February 20, 2024		

Agency/Tribe	Letter Date	Response Date	Type of Response
Santee Sioux Nation, Nebraska	May 6, 2022 and February 20, 2024		
Standing Rock Sioux Tribe of North & South Dakota	May 6, 2022 and February 20, 2024	February 20, 2024	Will defer comments to tribes closer to the project.

A public notice of availability of the EA was published in the Gering Courier on June 27 and July 4, 2024. The comment period was open from June 27 through July 11, 2024. No comments were received.

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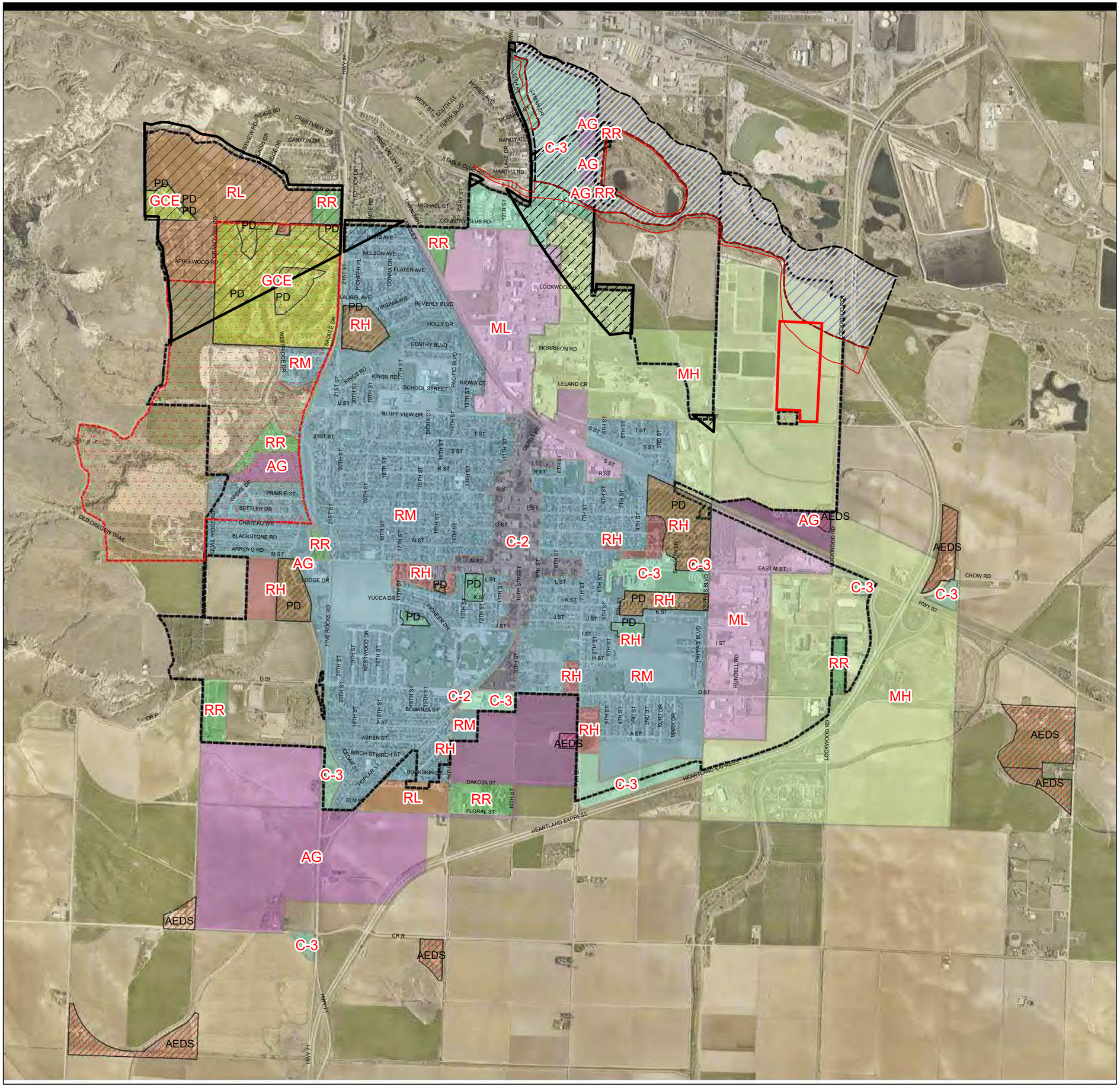
8.0 LIST OF PREPARERS

Name	Affiliation	Title	Responsibilities
Jennifer Peters	Terracon Consultants	Group Manager, Senior Associate	Senior Technical Report Review, Project Management
Jean Ramer	Terracon Consultants	NEPA Specialist	Project Management, Report Preparation
Kayla Espinoza	Terracon Consultants	Assistant Staff Scientist	Report Preparation
Shannon Skaalure	Terracon Consultants	Staff Scientist	Report Preparation
John Hall, RPA	Terracon Consultants	Senior Archaeologist	Cultural Resources Quality Assurance
Brad Oeltjenbruns	Ebenezer Mgmt, LLC	Archaeologist	Cultural Resources

APPENDIX A

RESOURCE DOCUMENTATION



LEGEND

AG	Agriculture District
RR	Rural Residentail District
RL	Residential Low-Density District
RM	Residential Medium-Density District
RH	Residential High-Density District
GCE	Golf Course Estates District
C-1	Neighborhood Commercial District
C-2	Central Business District
C-3	General Commercial District
ML	Light Industrial District
MH	Heavy Industrial District

Zoning Overlay

AEDS	Agriculture Estate Dwelling Site
PD	Planned Development

Airfield 5-23 Approach Surface (300' Hgt. Max)

Airfield 5-23 Conical Surface (400' Hgt. Max)

Special Flood Plain District (100 Year)

Historic Site District

Certificate

This is to certify that this is the official zoning district map referred to in Ordinance No. 2088 of the City of Gering, Nebraska

PASSED AND APPROVED THIS 10th day of August, 2020.

Mark A. Kaufman, Mayor

ATTEST:

Kathleen J. Weitl, City Clerk

Revised Draft 4.01.2022
S. Rodriguez

ZONING MAP

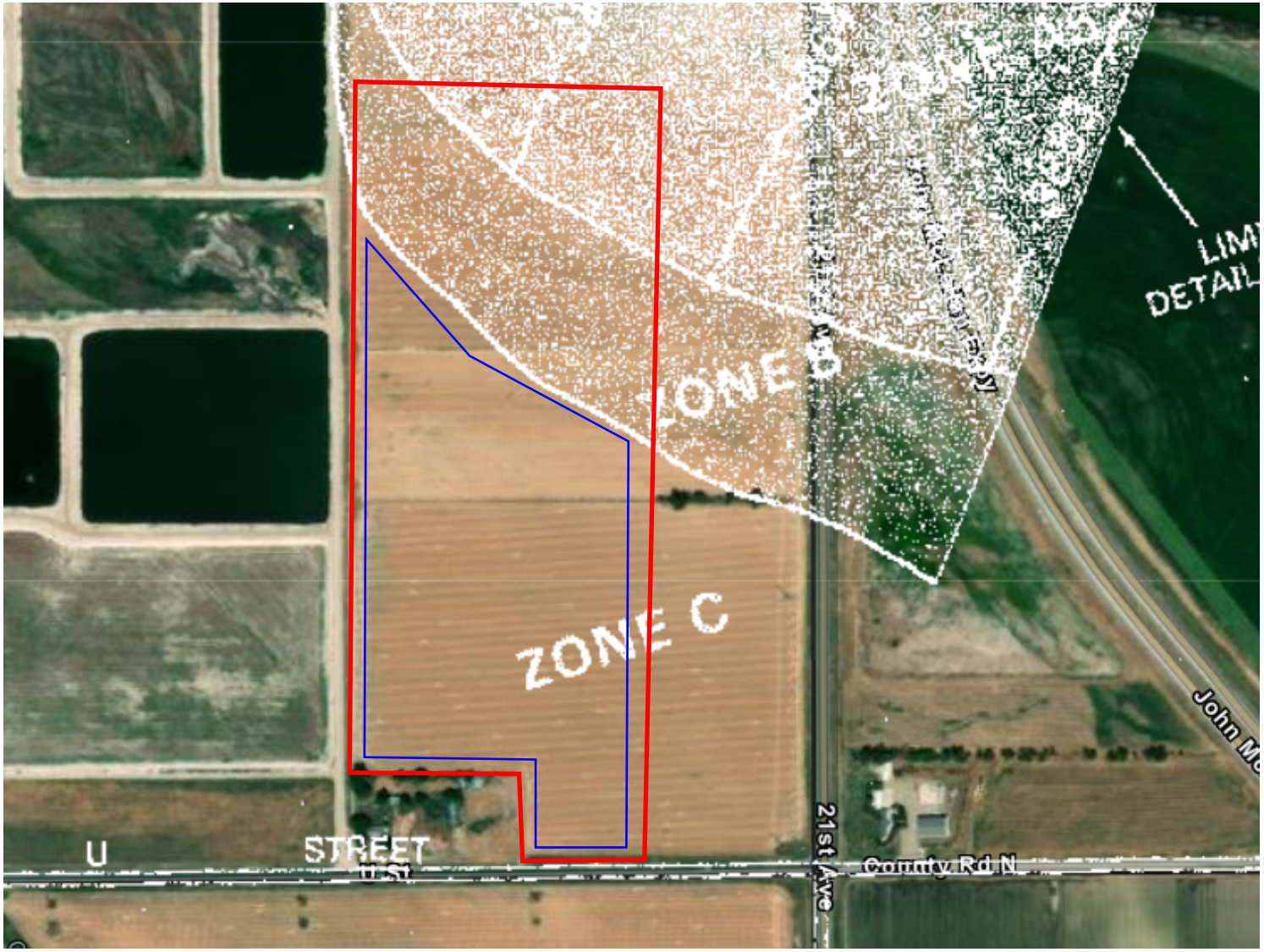
Engineering and Mapping Department — City of Gering

NORTH

LINEAR SCALE (MILES)
0 0.15 0.30

NEBRASKA
DEPT. OF NATURAL RESOURCES

Floodplain Management Interactive Map



FEMA, NeDNR | State of Nebraska, Department of Transportation

Legend

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION
DECEMBER 27, 1974

CONVERSION TO REGULAR PROGRAM
FEBRUARY 15, 1979

0 1000 2000 ft

Date Printed: 9/4/2022

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

COMMUNITY-PANEL NUMBER
310371 0005 A

EFFECTIVE DATE:
FEBRUARY 15, 1979

Legend:

- Project Boundary
- Conservation Easement
- Local Park

Feet

0 500 1,000 2,000

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

C:\Users\kespinoza\OneDrive - Terracon Consultants Inc\Desktop\Waverly 2\WAVERLY 2 GIS\Waverly2ProjectGIS.aprx

Project No.:	**Formally Classified Lands Map**
Date: Sep 2022	Sandhills Municipal Energy, LLC Gering Scotts Bluff County, Nebraska
Drawn By: KE	
Reviewed By: JTP	

Legend:

- Project Boundary
- SSA

Feet

0 325 650 1,300

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

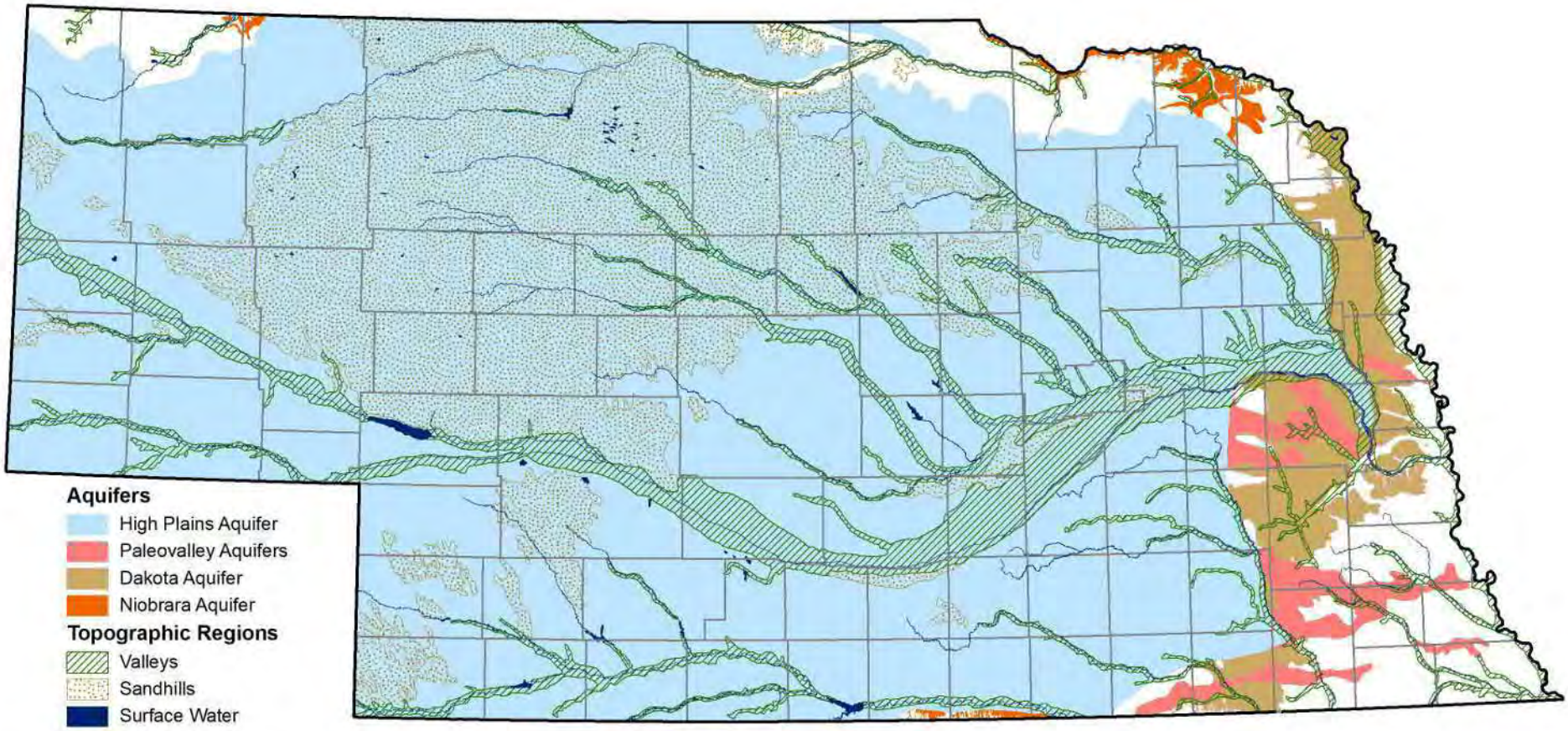
C:\Users\kespinoza\OneDrive - Terracon Consultants Inc\Desktop\Waverly 2\WAVERLY 2 GIS\Waverly2ProjectGIS.aprx

Project No.:	xxxxxxxx
Date:	Sep 2022
Drawn By:	KE
Reviewed By:	JTP

Sole Source Aquifer Map

Sandhills Municipal Energy, LLC
Gering
Scotts Bluff County, Nebraska

Important Aquifers and Topographic Regions of Nebraska



WETLAND AND WATERS OF THE U.S. DELINEATION REPORT FOR SANDHILLS MUNICIPAL ENERGY, LLC GERING, SCOTTS BLUFF COUNTY, NEBRASKA

PREPARED FOR:

SANDHILLS ENERGY
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OMAHA, NE 68102

PREPARED BY:

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Engineering Answers
10909 MILL VALLEY ROAD, SUITE 100
Omaha, Nebraska 68154
PH: 402.895.4700 FAX: 402.895.3599

E&A PROJECT #P2023.206.001

SEPTEMBER 1, 2023

INTRODUCTION

The project area was delineated for the presence of wetlands and waters of the U.S. (WOTUS) on August 22nd, 2023 by E & A Consulting Group, Inc. (E&A) in accordance with our proposal and general conditions. The scope of this investigation was to identify the presence/absence of wetlands and delineate the boundaries of potential jurisdictional wetlands within the project area that might be affected by the proposed project. In addition to wetlands, WOTUS, which include lakes, ponds, rivers, and streams, are included in the delineation. In order to be classified as a wetland, the area must have all three wetland indicators; hydric soils, hydrology, and hydrophytic vegetation. If one or more of these indicators are not present, the observation point is generally not considered a wetland.

Potential wetland areas located within the project area were identified and examined for wetland indicators using the Routine On-Site Determination Method as defined in the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Great Plains Regional Supplement*. Five (5) Wetland Delineation Data Forms were completed during the delineation. Data forms and ground-level photographs depicting existing conditions are included in the Appendix.

SITE DESCRIPTION

The site is located on approximately 39 acres of land to the northwest of the intersection of U Street and 21st Avenue northeast of Gering, Scotts Bluff County, Nebraska. The site consisted of fallow land during the field delineation. The wetland delineation area of investigation (AOI) consisted of 39 acres within the site area.

DELINEATION METHODS

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA) as:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.[1]"

[1] Environmental Laboratory. 1987 Corps of Engineers Wetlands Delineation Manual. Vicksburg, MS: U.S. Army Corps of Engineers, 1987.

Wetlands generally include swamps, marshes, bogs, and similar areas. Initially, when providing wetland delineations, preliminary information is gathered to assist in identifying potential wetland areas. A U.S. Geological Survey (USGS) topographic map was utilized to identify streams, forests, and topography that may indicate the presence of wetlands. National Wetland Inventory (NWI) maps, originally prepared by the U.S. Fisheries and Wildlife Services (USFWS), were obtained from the Department of the Interior, and sites identified on these maps were field-checked. A soils map provided by the U.S. Department of Agriculture (USDA) was used to identify the approximate location of hydric soils. Aerial photographs dating back to 1953 were also utilized to examine the site area for wetland and WOTUS signatures.

Routine Wetland Delineation Procedures in the *1987 Corps of Engineers Wetland Delineation Manual* and the *Great Plains Regional Supplement* were followed in identifying and delineating wetlands in the field. For each wetland, boundaries were determined initially through analysis of vegetation, soil profiles, and hydrologic indicators. Subsequently, the boundary was completed by following changes in topography and/or vegetation that occurred at the established wetland margin. In order to be classified as a wetland, the area must have three wetland indicators: Hydric soils, hydrology, and hydrophytic vegetation. If one or more of these indicators are not present, the observation point is not considered a wetland.

A sample plot is taken to confirm that an area is a wetland or upland. Vegetation analysis is taken from a 30-foot radius for trees and woody vines, a 15-foot radius for woody shrubs, and a 5-foot radius for the herbaceous layer. Nomenclature of plants and their indicator status were obtained from the 2020 National Wetland Plant List[2].

A soil probe is used to extract a soil profile within the sample plot, and to confirm the presence or absence of hydric soils. Soils are sampled to a minimum depth of 18 inches (unless otherwise noted) and depending on the study area can be sampled to 36 inches. The color of the soil matrix and associated redox and/or depletion features were identified according to the Munsell Color Charts (Munsell Corp., New York). The boundaries of the wetlands and WOTUS identified were determined in the field using a Trimble DA2 geographic positioning system (GPS) device and then plotted using AutoCAD Civil 3D 2022.

USGS TOPOQUAD

E&A reviewed the United States Department of the Interior Geologic Survey (USGS), 7.5-Minute Series, *Scottsbluff South, Nebraska*, Topographic Quadrangle Map to identify potential wetlands and WOTUS within the site area. The topographic map indicated the site is relatively flat, with an

[2] U.S. Army Corps of Engineers 2020. National Wetland Plant List, version 3.5. https://wetland-plants.sec.usace.army.mil/nwpl_static/v34/home/home.html

elevation ranging from 3,865 feet to 3,870 feet above sea level. No wetlands or waters were shown on the topographic map. A portion of the *Scottsbluff South, Nebraska*, Quadrangle, which includes the site and surrounding area, is shown in Exhibit 2 in the Appendix.

NATIONAL WETLAND INVENTORY MAP

The National Wetland Inventory (NWI) aerial maps identify areas that may contain potential wetlands. It should be noted that wetlands identified on the NWI map may not have been field checked by the USFWS. The NWI Map should not be used as the sole basis for wetland determinations, but as guidance to determine where wetlands may exist within the project area. The NWI Map[3] did not identify any wetlands or waters in the project area. A portion of the NWI map is shown in Exhibit 3.

It should be noted that the Federal Geographic Data Committee document Wetlands Mapping Standards[4], which is the basis for the wetland determinations used in the USFWS NWI Map, lists numerous factors affecting the accuracy of the map, including:

- Scale of imagery
- Mapping scale or base map scale
- Quality of imagery
- Season of imagery (leaf-off or leaf-on)
- Type of imagery or emulsion of imagery
- Environmental conditions when imagery was captured
- Difficulty of identifying particular types of wetlands
- Availability and quality of ancillary or collateral data sources

It should also be noted that the USFWS Wetland Mapper internet site[3] (used to locate/generate NWI maps) included the following disclaimer(s):

> The map displays at this site show wetland type and extent using a biological definition of wetlands. There is no attempt to define the limits of proprietary jurisdiction of any Federal, state, or local government, or to establish the geographical scope of the regulatory programs of government agencies.

[3] U.S. Fish and Wildlife Service. *National Wetlands Inventory Website*. U.S. Department of the Interior, Oct. 2009. Web. 17 Oct. 2013. http://www.fws.gov/wetlands/.
[4] Federal Geographic Data Committee. 2013. *Classification of Wetlands and Deepwater Habitats of the United States*. *FGDC-STD-004-2013*. http://www.fgdc.gov/standards/projects/FGDC-standards-projects/wetlands/nvcs-2013

> Base cartographic information used as part of this Wetlands Mapper has been provided through third-party products. The FWS does not maintain and is not responsible for the accuracy or completeness of the base cartographic information.

Thus, field assessment of the NWI Map data is crucial to confirm or deny wetland presence and their respective boundaries.

USDA SOIL CONSERVATION MAP

Data from the U.S. Department of Agriculture Soil Conservation Service, now known as the Natural Resource Conservation Service (NRCS) Web Soil Survey were reviewed to identify soil types, including hydric soils for the site. As previously indicated, hydric soil is one of the three essential characteristics of a wetland according to the USACE. Soil types were then compared to the National List of Hydric Soils (NRCS, March 2014). Inclusion on the Hydric Soil List indicates that the soil series or one of its components contain characteristics which may be hydric and is not an unqualified indication of hydric soil for a specific location.

Hydric soils listed on the NRCS Hydric Soil List must meet one or more of the following NRCS hydric soil criteria codes:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
    B. are poorly drained or very poorly drained and have either:
        1.) a water table at the surface (0.0 feet) during the growing season if textures area coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
        2.) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
        3.) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/her in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for a long or very long duration during the growing season.
4. Soils that are frequently flooded for a long or very long duration during the growing season.

The following soil types were identified within the project area on the soil survey map:

Soil Name (Map Unit Symbol)	Drainage Description	Depth to Water	Flooding Frequency	Ponding Frequency	Listed Hydric Soil	Hydric Unit % *
Otero-Bayard fine sandy loams, 0 to 3 percent slopes (1712)	Well drained	> 80 in.	None	None	Yes	1
Mitchell silt loam, 0 to 1 percent slopes (5834)	Well drained	> 80 in.	None	None	Yes	1
Mitchell silt loam, wet variant, 0 to 1 percent slopes (5852)	Somewhat poorly drained	18 in.	None	None	Yes	1

* This rating indicates the percentage of map units that meet the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor non-hydric components in the higher positions on the landform, and map units that are made up dominantly of non-hydric soils may have small areas of minor hydric components in the lower positions on the landform. A portion of the NRCS soil survey map for the site area is shown in Exhibit 4 in the Appendix.

AERIAL PHOTOGRAPHS

E&A reviewed aerial photographs to indicate suspected wetland areas and linear surface water features on the site. Aerial photographs between the years 1953 to 2021 are shown in the Appendix

Historical Aerial Photographs

Aerial Year	Description
1953 – 2021	The site area is depicted as agricultural cropland. No wetland signatures or waters were observed in the farmed portions of the site.

Wetlands in Agricultural Settings Review:

Using the methodology from Part 650.1903 of the Engineering Field Handbook – Supplemental data for remote sensing, 17 years of aerial photography obtained from EDR NET and Google Earth were reviewed for wetland hydrology and compared to the WETS table for Scottsbluff W B Heilig Field Airport, NE. Scottsbluff W B Heilig Field Airport, NE was chosen because it is the closest WETS station that had adequate data for review. Five of the 17 years were chosen for review (five normal years). Using Procedure 1 on page 19-24 of the Engineering Field Handbook, the five photographs were reviewed for wetland signatures as defined in section 513.30 of the USDA

National Food Security Act Manual. The following table summarizes the year, precipitation, and observed wetland signatures for each year:

Year	Precipitation	Wetland Signatures
1953	Normal	The site area is depicted as agricultural cropland. No wetland signatures or waters were observed in the farmed portions of the site.
1984	Normal	The site area is depicted as agricultural cropland. No wetland signatures or waters were observed in the farmed portions of the site.
1999	Normal	The site area is depicted as agricultural cropland. No wetland signatures or waters were observed in the farmed portions of the site.
2010	Normal	The site area is depicted as agricultural cropland. No wetland signatures or waters were observed in the farmed portions of the site.
2016	Normal	The site area is depicted as agricultural cropland. No wetland signatures or waters were observed in the farmed portions of the site.

No wetland signatures or waters were observed in the farmed portions of the site. Unfarmed portions of the site, including swales, terraces, fallow ground, riparian areas, and perimeter areas, were investigated during site visit on August 22nd, 2023. Aerial photographs between the years 1953 and 2021 are shown in the Appendix.

THREATENED AND ENDANGERED SPECIES EVALUATION

In order to expedite the review, concurrence, and Nationwide Permit (NWP) issuance process by the USACE, E&A conducted agency file searches to identify state and federally listed threatened and endangered (T&E) species in the vicinity of the site. The search included information from the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) and Nebraska Game and Parks Commission's (NGPC) Range Maps for Nebraska's Threatened and Endangered Species *White Papers, Conference Presentations, & Manuscripts 30* document accessed via http://digitalcommons.unl.edu/nebgamewhitepap/30. The USFWS and NGPC list four threatened and/or endangered species as having the potential to occur in Scotts Bluff County, Nebraska. The table below contains a brief description of the habitat conditions that are considered necessary for each species and the determination of suitable habitat for each species on site.

State and Federally Listed Threatened and Endangered Species Potentially Occurring in Scotts Bluff County, Nebraska

Common Name (Scientific Name)	Federal Status	State Status	Summarized Habitat Description	Is Suitable Habitat Present?
BIRDS				
Whooping Crane (*Grus americana)*	E	E	Nest sites are primarily located in shallow diatom ponds that contain bulrush. During migration, whooping cranes use a variety of	No

			habitat; however, wetland mosaics appear to be most suitable. For feeding, whooping cranes primarily use shallow, seasonally and Semipermanently flooded palustrine wetlands, various cropland, and emergent wetlands. In Nebraska, whooping cranes also often use riverine habitats.	
MAMMALS				
Swift Fox (*Vulpes velox*)	-	E	Swift foxes require open shortgrass prairies with few shrubs and trees. They often use prairie dog and badger dens to raise their young. Swift foxes will often den in road ditches due to the fact that coyotes do not typically inhabit this area.	No
Northern Long-Eared Bat (*Myotis septentrionalis*)	T	T	Summer roosts generally consist of cavities or bark crevices of living and dead trees. The northern long-eared bat is also known to roost in culverts with a height/diameter of greater than or equal to 4 feet and a length greater than 130 feet during the summer. In winter, the northern long-eared bat will hibernate in caves or mines.	No
Gray Wolf (*Canis lupus*)	E	E	A wide range of habitats including prairie, mountains, temperate forests, wetlands, tundra, and taiga. Wolves can survive anywhere there is plenty of food, water, shelter, and space. This is provided, however, they are also needing human acceptance.	No

As shown above, no potential habitat for any threatened and/or endangered species is located within the project area. E&A has submitted project information online via the Nebraska Conservation and Environmental Review Tool (Nebraska CERT) to obtain an opinion from the USFWS and NGPC with regards to potential T&E habitat and species at the site.

FIELD OBSERVATIONS

On August 22nd, 2023, E&A observed the site for wetlands and WOTUS and conducted the wetland delineation fieldwork. During the field observations, it was noted that the site mostly consisted of fallow land. One wetland area was identified during the wetland delineation. A summary of the wetland area is provided in the table below. The findings of the field delineation

are summarized on the Wetland Delineation Data Forms in the Appendix. Ground photographs area also included in the Appendix.

Wetland Area 1

Wetland Description	
Wetland ID	Wetland Area 1
Size	0.001 acres
Sampling Point(s)	W-3
Photo ID	Photo 7
Association w/ WOTUS	Wetland Area 1 lies in a ditch along the western boundary of the AOI. Wetland Area 1 is not associated with a WOTUS.
Jurisdictional Opinion	Not Jurisdictional
Wetland Description	Wetland Area 1 lies in a ditch along the western boundary of the AOI. Dominant hydrophytic vegetation at the data point location was *Phalaris arundinacea.*
Non-Wetland (Upland) Description	
Data Point(s)	W-2
Was there a marked difference between the wetland and upland?	Yes – The wetland plant community was defined and clearly differentiated from the upland plant community.
Was there a gradual change in vegetation between the wetland and upland creating a "transition zone"?	No – The vegetative line was strongly defined.
Was there an abrupt topographic change between the wetland and upland?	No – The topographic change was gradual leading out of the ditch.

Wetland and WOTUS Summary

This report details the procedures used to delineate wetlands on the site. In accordance with the field procedures described in this report, one wetland area was identified at the site. The following table summarizes the wetland delineated on the site.

Wetland ID	Wetland Areas on Site (acres)	Jurisdictional Opinion	Wetland Type
Wetland Area 1	0.001	Not Jurisdictional	PEM1C
Total	**0.001**		

RECOMMENDATIONS

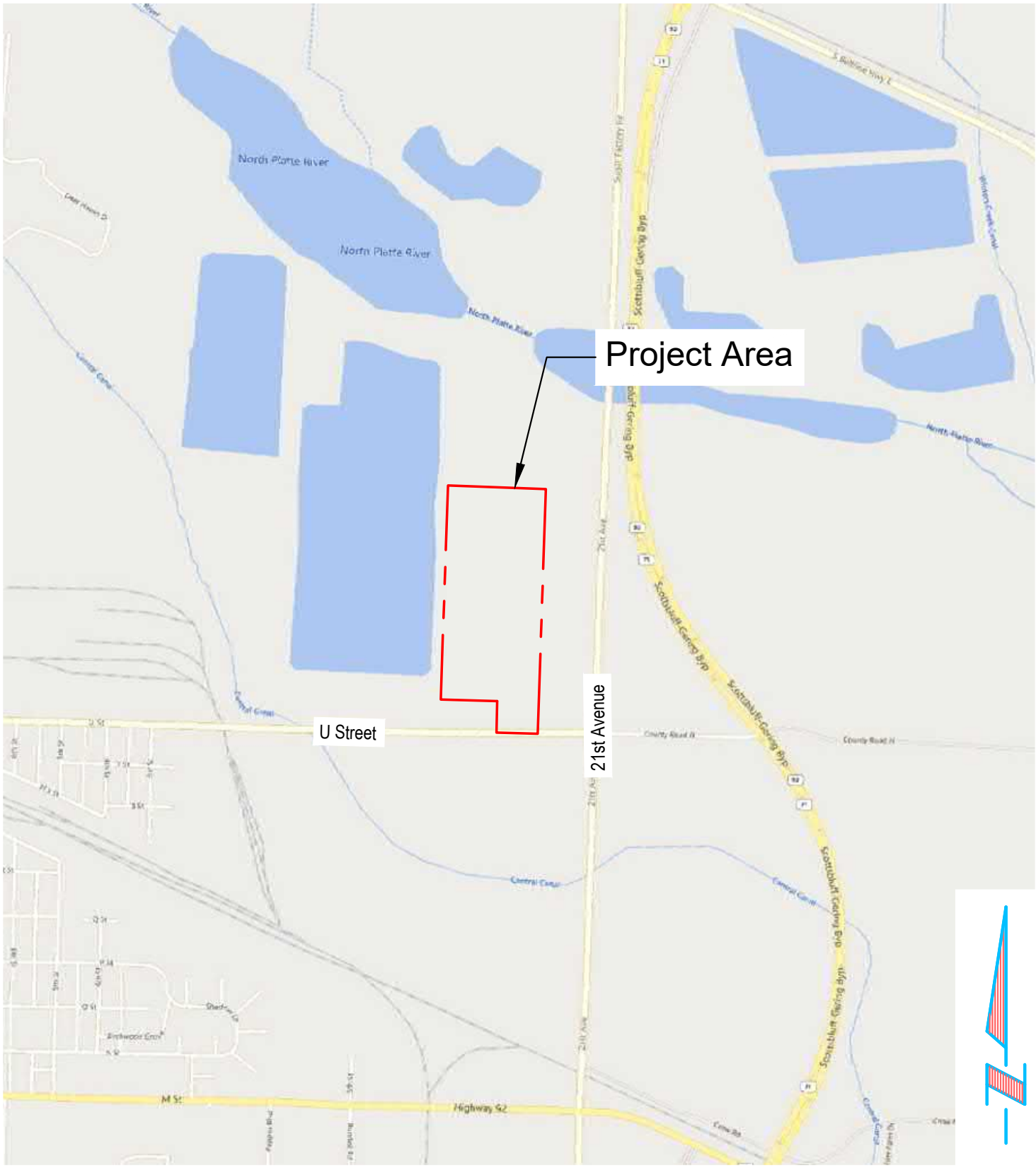
E&A has performed a Wetland Delineation in conformance with the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Great Plains Regional Supplement* of the property to the northwest of the intersection of U Street and 21st Avenue northeast of Gering, Scotts Bluff County, Nebraska. Based on the findings of the wetland field delineation, approximately 0.001 acres of wetlands are present with the AOI. Impacts to wetlands and WOTUS are not known at the time of

this report. Impacts will be determined during site design and included in the Application for Department of the Army Permit.

It is E&A's opinion that the wetland area identified would be considered not jurisdictional due to no connection to a WOTUS. However, it should be noted that only the USACE can make a final determination on the jurisdictional status of wetlands and WOTUS, and on the need for permit processing and compensatory mitigation.

GENERAL

The information and recommendations presented in this report are professional opinions based on visual observation, review of available data pertaining to the subject property, and our interpretation of available public records. The purpose of this study was to investigate the potential for jurisdictional wetlands, which would be apparent to professionals performing wetland delineations in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual*. The opinions and recommendations presented herein apply to the subject property conditions at the time of our investigation.



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Job No.: P2023.206.001		Date: 8/29/2023
Drawn by: JMM	Scale: 1" = 1,107'	Checked By: ZAJ

Exhibit 1 - Vicinity Map
Sandhills Energy - Gering, NE

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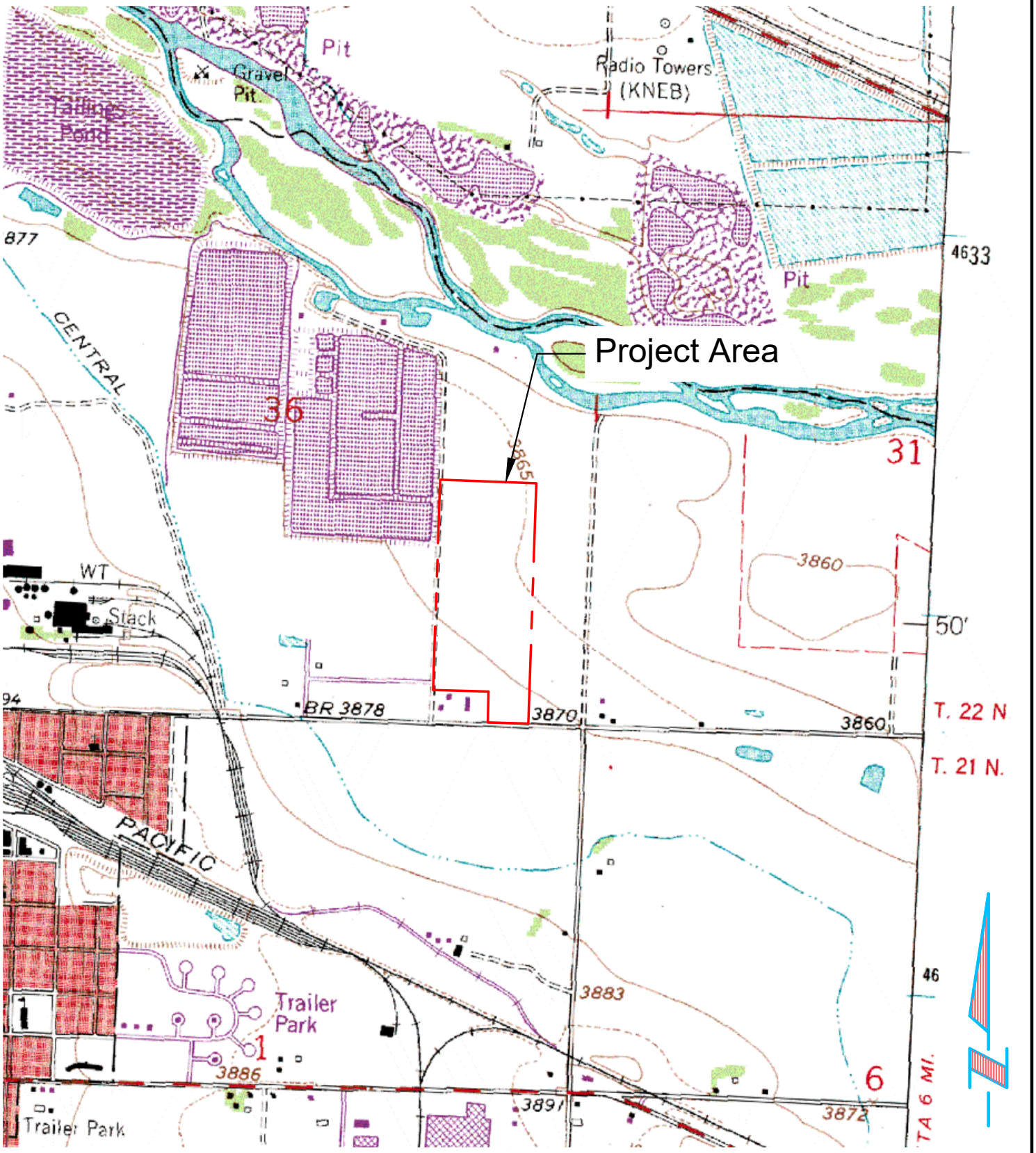

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Job No.: P2023.206.001		Date: 8/29/2023
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Exhibit 2 - Topo Map
Sandhills Energy - Gering, NE

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U.S. Fish and Wildlife Service
National Wetlands Inventory

Exhibit 3

August 25, 2023

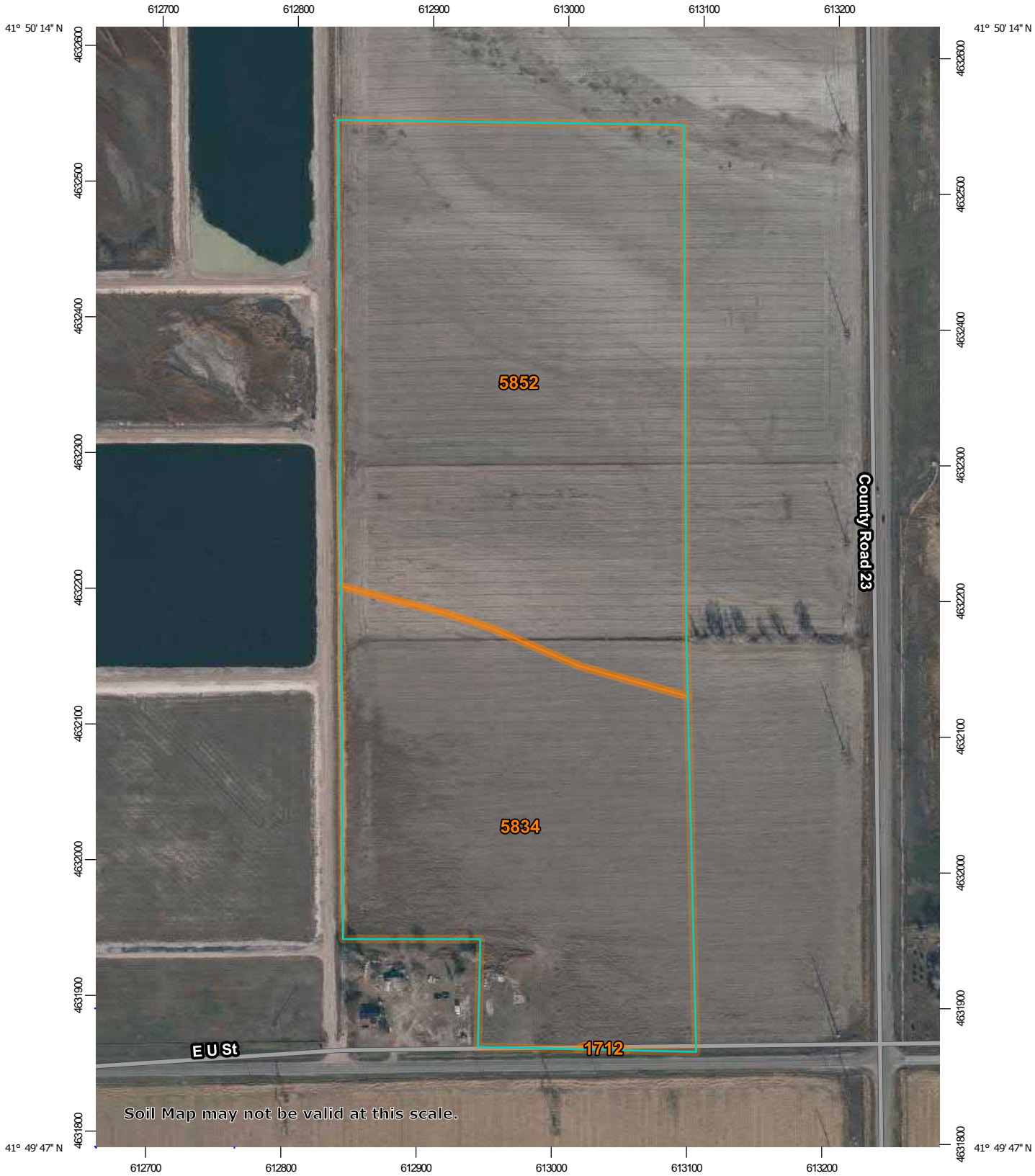
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Soil Map—Scotts Bluff County, Nebraska
(Exhibit 4)



Map Scale: 1:4,020 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N 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: Scotts Bluff County, Nebraska
Survey Area Data: Version 21, Sep 8, 2022

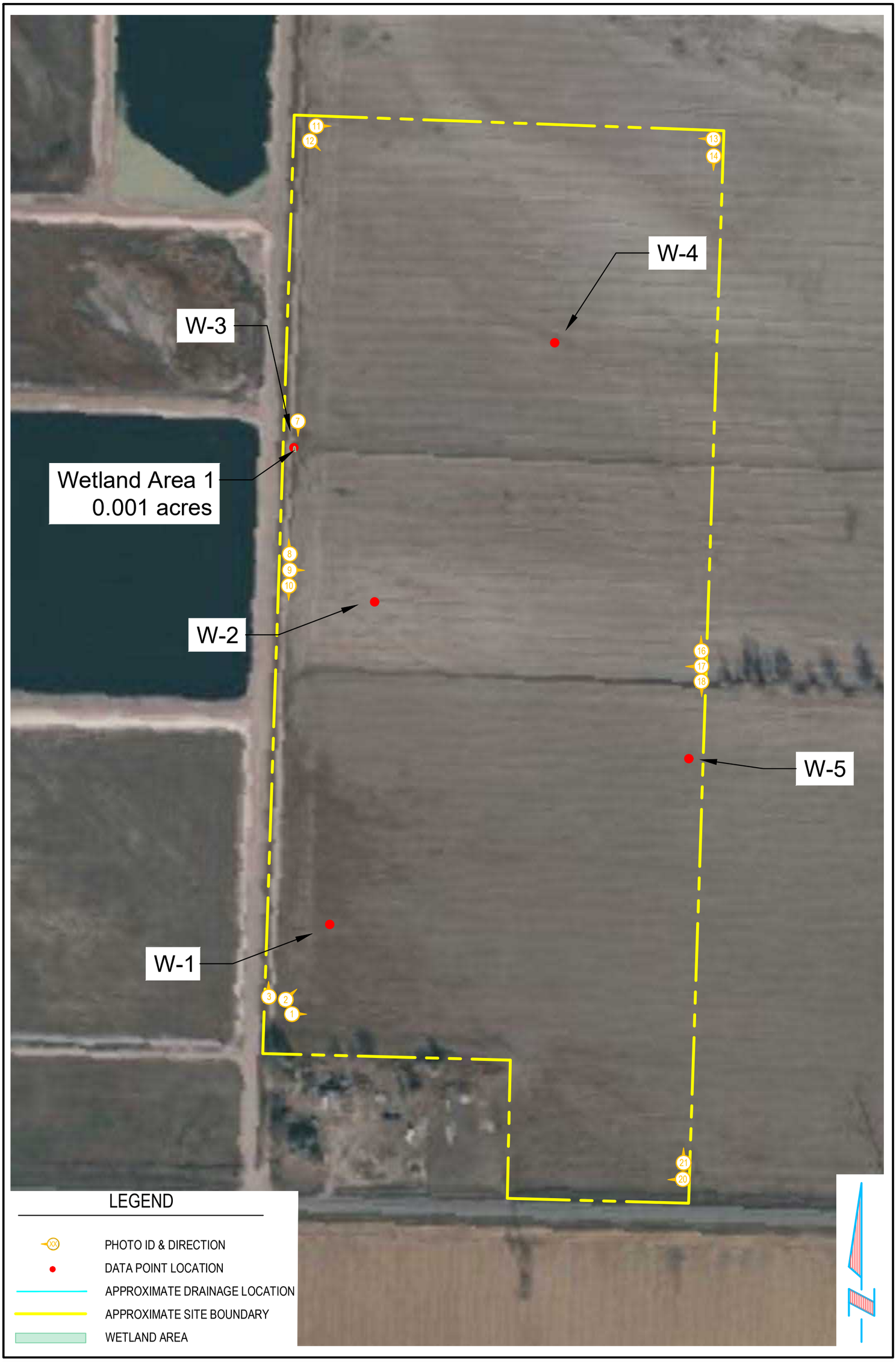
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 17, 2021—Nov 21, 2021

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
1712	Otero-Bayard fine sandy loams, 0 to 3 percent slopes	0.0	0.0%
5834	Mitchell silt loam, 0 to 1 percent slopes	17.3	41.7%
5852	Mitchell silt loam, wet variant, 0 to 1 percent slopes	24.2	58.3%
Totals for Area of Interest		**41.4**	**100.0%**



Proj No:	P2023.206.001
Date:	9/01/2023
Designed By:	JMM
Drawn By:	JMM
Scale:	1" = 180'
Sheet:	1 of 2

Revisions		
No.	Date	Description

Exhibit 5
Wetland Delineation Site Exhibit

Sandhills Energy - Gering
Scotts Bluff County,
Nebraska

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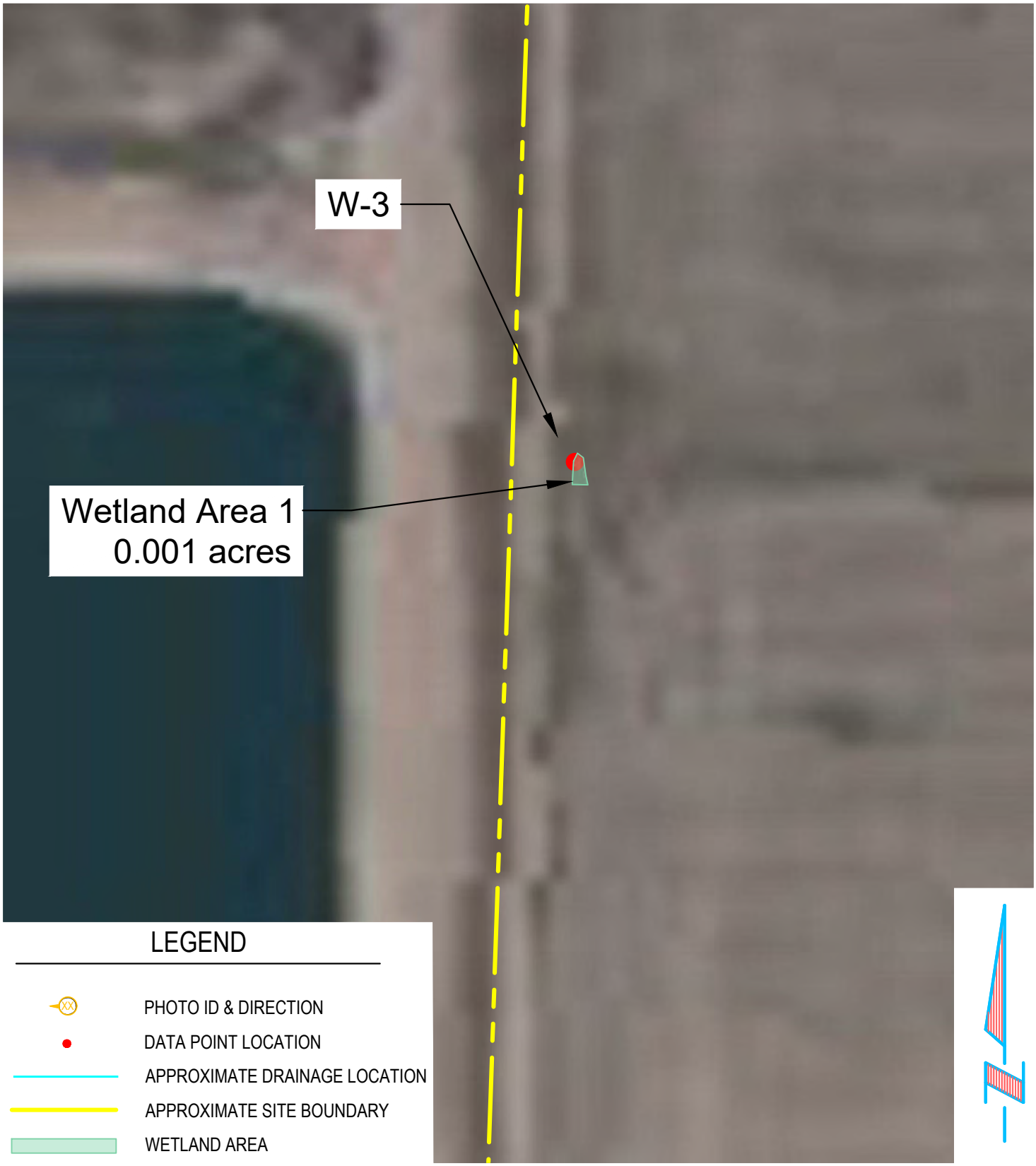

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Exhibit 5 - Wetland Area 1

Job No.: P2023.206.001		Date: 9/01/2023
Drawn by: JMM	Scale: 1" = 35'	Checked By: ZAJ

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Photograph Number: 1
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: East
Description: East facing view of the project area from the southwest corner of the area of interest (AOI).

Photograph Number: 2
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Northeast
Description: Northeast facing view of the project area from the southwest corner of the AOI.

Photograph Number: 3
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: North
Description: North facing view of the project area from the southwest corner of the AOI.

Photograph Number: 4
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Down
Description: View of the W-1 data point sample location.

Photograph Number: 5
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Down
Description: View of the W-2 data point sample location.

Photograph Number: 6
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Down
Description: View of the W-3 data point sample location.

Photograph Number: 7
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: South
Description: South facing view of Wetland Area 1.

Photograph Number: 8
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: North
Description: North facing view of the project area from the middle of the western perimeter of the AOI.

Photograph Number: 9
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: East
Description: East facing view of the project area from the middle of the western perimeter of the AOI.

Photograph Number: 10
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: South
Description: South facing view of the project area from the middle of the western perimeter of the AOI.

Photograph Number: 11
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: East
Description: East facing view of the project area from the northwest corner of the property.

Photograph Number: 12
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Southeast
Description: Southeast facing view of the project area from the northwest corner of the property.

Photograph Number: 13
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: West
Description: West facing view of the project area from the northeast corner of the property.

Photograph Number: 14
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: South
Description: South facing view of the project area from the northeast corner of the property.

Photograph Number: 15
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Down
Description: View of the W-4 data point sample location.

Photograph Number: 16
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: North
Description: North facing view of the project area from near the middle of the eastern perimeter of the AOI.

Photograph Number: 17
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: West
Description: West facing view of the project area from near the middle of the eastern perimeter of the AOI.

Photograph Number: 18
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: South
Description: South facing view of the project area from near the middle of the eastern perimeter of the AOI.

Photograph Number: 19
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: Down
Description: View of the W-5 data point sample location.

Photograph Number: 20
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: West
Description: West facing view of the project area from the southeast corner of the AOI.

Photograph Number: 21
Photographer: Joe Manning
Date: August 22, 2023
Photo Direction: North
Description: North facing view of the project area from the southeast corner of the AOI.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Sandhillls Municipal Energy, LLC (Gering) City/County: Scotts Bluff County Sampling Date: 8/22/2023

Applicant/Owner: Sandhills Energy State: Nebraska Sampling Point: W-1

Investigator(s): Joe Manning Section, Township, Range: Section 36, Township 22N, Range 55W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0 - 1

Subregion (LRR): Central High Tableland (H) Lat: 41.8320094 Long: -103.6406233 Datum: WGS 1984

Soil Map Unit Name: Mitchell silt loam, 0 to 1 percent slopes (5834) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point was taken in the southwest portion of the project area.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum	(Plot size: 707'^{2} - 15'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum	(Plot size: 78.5'^{2} - 5'R)			
1	*Bassia scoparia*	90	Y	FACU
2	*Calystegia sepium*	30	Y	FAC
3	*Lactuca serriola*	5	N	FACU
4				
5				
6				
7				
8				
9				
10				
		125	= Total Cover	
Woody vine stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
		0	= Total Cover	

% Bare Ground in Herb Stratum 5%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	95	x 4 =	380	
UPL species	0	x 5 =	0	
Column totals	125	(A)	470	(B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed within the data point location.

SOIL

Sampling Point: W-1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0 - 4	10YR 4/3	100					Silt Loam	Dry

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

***Indicators for Problematic Hydric Soils:**

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Compaction

Depth (inches): 4"

Hydric soil present? N

Remarks:

Hydric soils were not observed at the data point sample location.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertabrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches): ___		
Water table present?	Yes ___	No X	Depth (inches): ___		
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___		

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Sandhillls Municipal Energy, LLC (Gering) City/County: Scotts Bluff County Sampling Date: 8/22/2023

Applicant/Owner: Sandhills Energy State: Nebraska Sampling Point: W-2

Investigator(s): Joe Manning Section, Township, Range: Section 36, Township 22N, Range 55W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0 - 1

Subregion (LRR): Central High Tableland (H) Lat: 41.8337270 Long: -103.6404022 Datum: WGS 1984

Soil Map Unit Name: Mitchell silt loam, wet variant, 0 to 1 percent slopes (5852) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point was taken in the middle, western portion of the project area.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: 2,827'^{2} - 30'R)				
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum (Plot size: 707'^{2} - 15'R)				
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum (Plot size: 78.5'^{2} - 5'R)				
1	*Bassia scoparia*	99	Y	FACU
2	*Abutilon theophrasti*	4	N	FACU
3	*Xanthium strumarium*	4	N	FAC
4				
5				
6				
7				
8				
9				
10				
		107	= Total Cover	
Woody vine stratum (Plot size: 2,827'^{2} - 30'R)				
1				
2				
		0	= Total Cover	

% Bare Ground in Herb Stratum 3%

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	4	x 3 =	12	
FACU species	103	x 4 =	412	
UPL species	0	x 5 =	0	
Column totals	107	(A)	424	(B)

Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed within the data point location.

SOIL

Sampling Point: W-2

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0 - 16	10YR 6/3	100					Silt Loam	Dry

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

***Indicators for Problematic Hydric Soils:**

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soils were not observed at the data point sample location.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertabrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches): ___		
Water table present?	Yes ___	No X	Depth (inches): ___		
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___		

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Sandhillls Municipal Energy, LLC (Gering) City/County: Scotts Bluff County Sampling Date: 8/22/2023

Applicant/Owner: Sandhills Energy State: Nebraska Sampling Point: W-3

Investigator(s): Joe Manning Section, Township, Range: Section 36, Township 22N, Range 55W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): None Slope (%): 1 - 2

Subregion (LRR): Central High Tableland (H) Lat: 41.8345254 Long: -103.6410201 Datum: WGS 1984

Soil Map Unit Name: Mitchell silt loam, wet variant, 0 to 1 percent slopes (5852) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 1

Remarks: (Explain alternative procedures here or in a separate report.)

Data point was taken along the western boundary of the project area.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum	(Plot size: 707'^{2} - 15'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum	(Plot size: 78.5'^{2} - 5'R)			
1	*Phalaris arundinacea*	50	Y	FACW
2	*Cirsium arvense*	10	N	FACU
3	*Calystegia sepium*	10	N	FAC
4				
5				
6				
7				
8				
9				
10				
		70	= Total Cover	
Woody vine stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
		0	= Total Cover	

% Bare Ground in Herb Stratum 3%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	70 (A)		170 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed within the data point location.

SOIL

Sampling Point: W-3

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0 - 8	10YR 6/2	100					Silt Loam	Dry

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

***Indicators for Problematic Hydric Soils:**

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Compaction

Depth (inches): 8"

Hydric soil present? Y

Remarks:

Hydric soils were observed at the data point sample location.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertabrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Two secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Sandhillls Municipal Energy, LLC (Gering) City/County: Scotts Bluff County Sampling Date: 8/22/2023

Applicant/Owner: Sandhills Energy State: Nebraska Sampling Point: W-4

Investigator(s): Joe Manning Section, Township, Range: Section 36, Township 22N, Range 55W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0 - 1

Subregion (LRR): Central High Tableland (H) Lat: 41.8351399 Long: -103.6392050 Datum: WGS 1984

Soil Map Unit Name: Mitchell silt loam, wet variant, 0 to 1 percent slopes (5852) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point was taken in the northern portion of the project area.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum	(Plot size: 707'^{2} - 15'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum	(Plot size: 78.5'^{2} - 5'R)			
1	*Bassia scoparia*	90	Y	FACU
2	*Cirsium arvense*	30	Y	FACU
3	*Hordeum jubatum*	4	N	FAC
4				
5				
6				
7				
8				
9				
10				
		124	= Total Cover	
Woody vine stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
		0	= Total Cover	

% Bare Ground in Herb Stratum 10%

Dominance Test Worksheet

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

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	4	x 3 =	12	
FACU species	120	x 4 =	480	
UPL species	0	x 5 =	0	
Column totals	124	(A)	492	(B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed within the data point location.

SOIL

Sampling Point: W-4

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0 - 4	10YR 4/2	100					Silt Loam	Dry

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

***Indicators for Problematic Hydric Soils:**

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Compaction

Depth (inches): 4"

Hydric soil present? N

Remarks:

Hydric soils were not observed at the data point sample location.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertabrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Sandhillls Municipal Energy, LLC (Gering) City/County: Scotts Bluff County Sampling Date: 8/22/2023

Applicant/Owner: Sandhills Energy State: Nebraska Sampling Point: W-5

Investigator(s): Joe Manning Section, Township, Range: Section 36, Township 22N, Range 55W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0 - 1

Subregion (LRR): Central High Tableland (H) Lat: 41.8329668 Long: -103.6381309 Datum: WGS 1984

Soil Map Unit Name: Mitchell silt loam, wet variant, 0 to 1 percent slopes (5852) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point was taken in the eastern portion of the project area.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum	(Plot size: 707'^{2} - 15'R)			
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum	(Plot size: 78.5'^{2} - 5'R)			
1	*Bassia scoparia*	95	Y	FACU
2	*Lactuca serriola*	2	N	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		97	= Total Cover	
Woody vine stratum	(Plot size: 2,827'^{2} - 30'R)			
1				
2				
		0	= Total Cover	

% Bare Ground in Herb Stratum 10%

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	97	x 4 =	388	
UPL species	0	x 5 =	0	
Column totals	97	(A)	388	(B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed within the data point location.

SOIL

Sampling Point: W-5

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0 - 4	10YR 4/2	100					Silt Loam	Dry

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

***Indicators for Problematic Hydric Soils:**

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Compaction

Depth (inches): 4"

Hydric soil present? N

Remarks:

Hydric soils were not observed at the data point sample location.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertabrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology were observed within the data point location.

Environmental Review Report

Project Information

Report Generation Date:	9/1/2023 11:00:43 AM
Project Title:	Sandhills Energy - Gering
User Project Number(s):	
System Project ID:	NE-CERT-010610
Project Type:	Development (ex: construction, housing, land development, CSW/ISW Permits, etc.; Does NOT include Mining), New construction within existing municipality - previously disturbed habitat
Project Activities:	None Selected
Project Size:	38.30 acres
County(s):	Scotts Bluff
Watershed(s):	North Platte
Watershed(s) HUC 8:	Middle North Platte-Scotts Bluff
Watershed(s) HUC 12:	Fairfield Seep-North Platte River
Biologically Unique Landscape(s):	North Platte River
Township/Range and/or Section(s):	T22R55WS36
Latitude/Longitude:	41.833627 / -103.639483

Contact Information

Organization:	E & A Consulting Group, Inc.
Contact Name:	Joe Manning
Contact Phone:	402-895-4700
Contact Email:	jmanning@eacg.com
Contact Address:	10909 Mill Valley Road, Suite 100 Omaha NE 68154
Prepared By:	
Submitted On Behalf Of:	

Project Description

Completing Wetland Delineation in association with NEPA process

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.

- It is unlikely this project will negatively impact listed species or their designated critical habitat. Please review all the information provided in this document. Then, sign and date the "Certification" section and upload the signed document as "Final" in CERT. No additional correspondence with the Nebraska Game and Parks Commission is required unless otherwise indicated in the "Additional Information" section below. If the project involves a federal permit, action or funding, the lead federal agency should review the information provided in this report and make an "effect determination" pursuant to their obligations under ESA. Depending on the determination made by the lead federal agency, further consultation with the U.S. Fish and Wildlife Service may or may not be 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.

9/01/2023

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

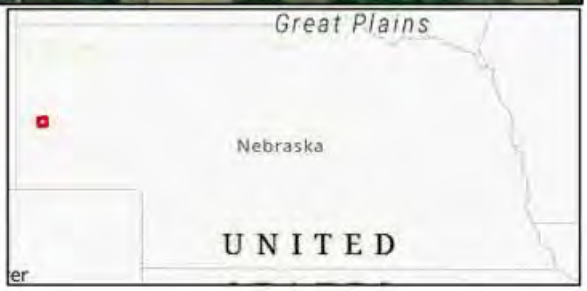
Sandhills Energy - Gering

Aerial Image Basemap With Locator Map

3-mile Information Buffer Boundary

Project Review Boundary

Project Boundary



Project Size (acres): 38.30

Lat/Long (DD): 41.8336 / -103.6395

County(s): Scotts Bluff

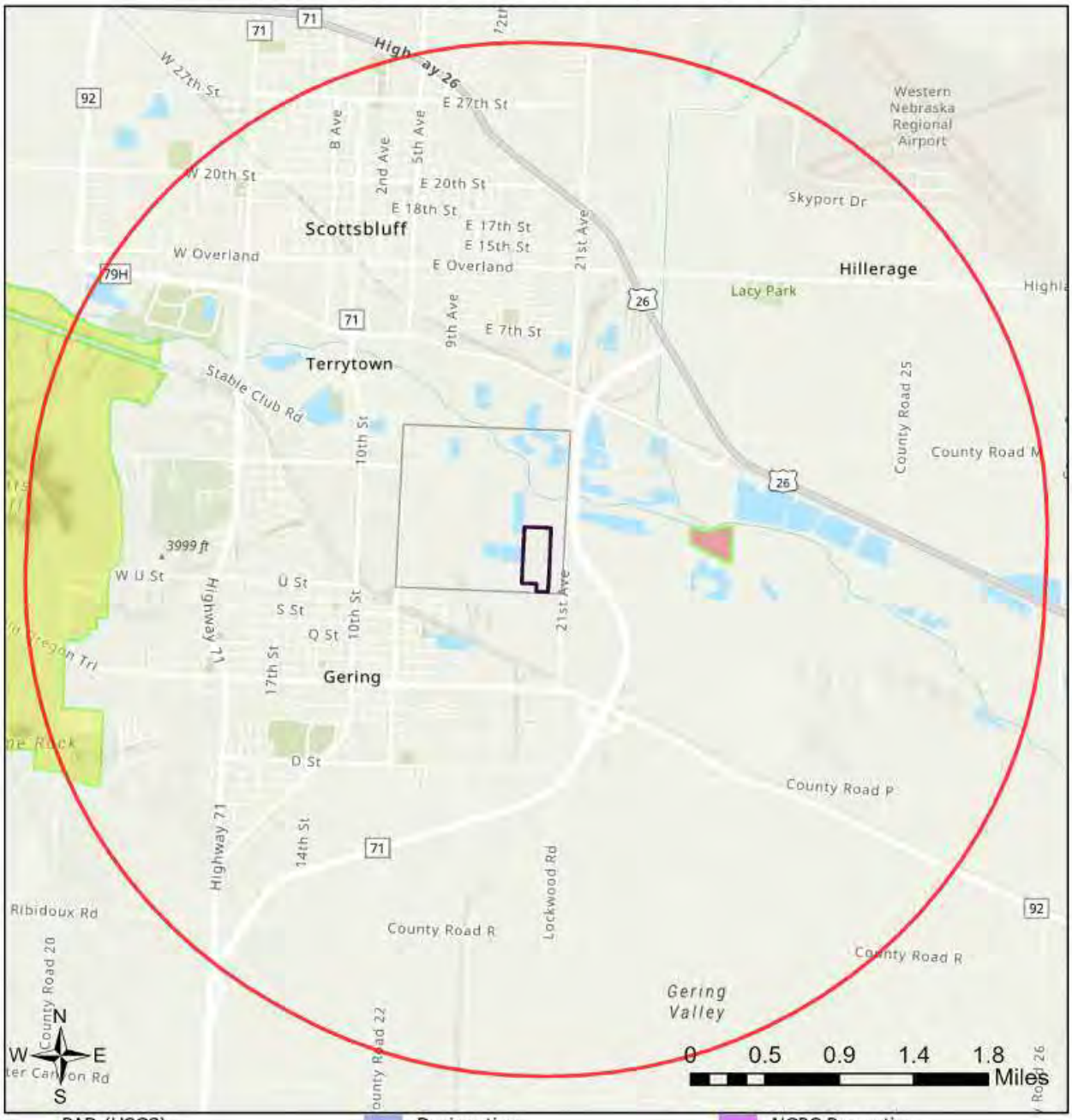
BUL(s): North Platte River

Township/Range/Section(s): T22R55WS36

Earthstar Geographics
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA
Esri, USGS

Sandhills Energy - Gering

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

Esri, NASA, NGA, USGS
Nebraska Game & Parks Commission, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Sandhills Energy - Gering

Web Map As Submitted By User

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

Name	Other Information	SRank	GRank
North Platte River Biologically Unique Landscape	Link to BUL document		

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
Aeronautes saxatalis	White-throated Swift			Tier 2	S3	G5	Vertebrate Animal - Birds
Astragalus kentrophyta var. kentrophyta	Nuttall's Kentrophyta				S3S4	G5T4	Vascular Plant - Dicots
Astragalus pectinatus	Tine-leaf Milk-vetch			Tier 2	S1	G5	Vascular Plant - Dicots
Athene cunicularia	Burrowing Owl			Tier 1	S2	G4	Vertebrate Animal - Birds
Brickellia grandiflora	Tassel-flower				S2S4	G5	Vascular Plant - Dicots
Catostomus catostomus	Longnose Sucker			Tier 2	S2	G5	Vertebrate Animal - Fishes
Ericameria parryi var. howardii	Parry's Rabbit-brush				S2S3	G5T5	Vascular Plant - Dicots
Falco mexicanus	Prairie Falcon			Tier 2	S2	G5	Vertebrate Animal - Birds
Fritillaria atropurpurea	Leopard-lily			Tier 2	S2	G5	Vascular Plant - Monocots
Fundulus sciadicus	Plains Topminnow			Tier 1	S3	G4	Vertebrate Animal - Fishes
Hybognathus placitus	Plains Minnow			Tier 1	S2	G4	Vertebrate Animal - Fishes
Ipomopsis congesta	Ball-head Ipomopsis				S2S4	G5	Vascular Plant - Dicots
Lappula fremontii	Fremont's Stickseed				S2S4	GNR	Vascular Plant - Dicots
Linanthus caespitosus	Matted Prickly-phlox			Tier 1	S1	G4	Vascular Plant - Dicots
Lomatium nuttallii	Dog-parsley			Tier 1	S2	G3	Vascular Plant - Dicots
Luxilus cornutus	Common Shiner			Tier 2	S2	G5	Vertebrate Animal - Fishes
Neotoma cinerea	Bushy-tailed Woodrat			Tier 2	S3	G5	Vertebrate Animal - Mammals
Phacelia hastata var. hastata	Scorpion-weed			Tier 2	S2S3	G5T5	Vascular Plant - Dicots

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
Physaria brassicoides	Great Plains Twinpod			Tier 2	S1	G5	Vascular Plant - Dicots
Physaria montana	Mountain Bladder-pod			Tier 2	S2	G5	Vascular Plant - Dicots
Platygobio gracilis	Flathead Chub			Tier 1	S2	G5	Vertebrate Animal - Fishes
Stephanomeria runcinata	Wire-lettuce			Tier 2	S2	G5	Vascular Plant - Dicots
Thelypodium integrifolium	Entire-leaf Thelypody				S2S4	G5	Vascular Plant - Dicots

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
Asio flammeus	Short-eared Owl	Range			Tier 1	S2	G5	Vertebrate Animal - Birds
Athene cunicularia	Burrowing Owl	Range			Tier 1	S2	G4	Vertebrate Animal - Birds
Boloria selene sabulocollis	Kohler's Fritillary	Range			Tier 1	S1S2	G5T3	Invertebrate Animal - Butterflies and Skippers
Cicindela limbata limbata	Sandy Tiger Beetle	Range			Tier 1	S4	G5T3T4	Invertebrate Animal - Beetles
Coccinella novemnotata	Nine-spotted Ladybird Beetle	Range			Tier 1	S1	G5	Invertebrate Animal - Beetles
Dalea cylindriceps	Large-spike Prairie-clover	Range			Tier 1	S2	G3	Vascular Plant - Flowering Plants
Danaus plexippus	Monarch	Range			Tier 1	S2	G4	Invertebrate Animal - Butterflies and Skippers
Ellipsoptera lepida	Ghost Tiger Beetle	Range			Tier 1	S2	G3G4	Invertebrate Animal - Beetles
Euphyes bimacula illinois	Two-spotted Skipper	Range			Tier 1	S3	G4T1T2	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
Hybognathus placitus	Plains Minnow	Range			Tier 1	S2	G4	Vertebrate Animal - Fishes
Lanius ludovicianus	Loggerhead Shrike	Range			Tier 1	S3	G4	Vertebrate Animal - Birds
Lasionycteris noctivagans	Silver-haired Bat	Range			Tier 1	S3	G3G4	Vertebrate Animal - Mammals

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
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
Lomatium nuttallii	Dog-parsley	Range			Tier 1	S2	G3	Vascular Plant - Flowering Plants
Myotis lucifugus	Little Brown Myotis	Range			Tier 1	SNR	G3	Vertebrate Animal - Mammals
Myotis thysanodes pahasapensis	Fringed Myotis	Range			Tier 1	S1	G4T3	Vertebrate Animal - Mammals
Perimyotis subflavus	Tricolored Bat	Range			Tier 1	S3	G2G3	Vertebrate Animal - Mammals
Pica hudsonia	Black-billed Magpie	Range			Tier 1	S2	G5	Vertebrate Animal - Birds
Platygobio gracilis	Flathead Chub	Range			Tier 1	S2	G5	Vertebrate Animal - Fishes
Speyeria idalia	Regal Fritillary	Range			Tier 1	S3	G3?	Invertebrate Animal - Butterflies and Skippers
Trimerotropis saxatilis	Lichen Grasshopper	Range			Tier 1	S1	G3	Invertebrate Animal - Grasshoppers
Vulpes velox	Swift Fox	Range		E	Tier 1	S2	G3	Vertebrate Animal - Mammals

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 Scotts Bluff County, Nebraska

Gering Solar Project

February 15, 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.

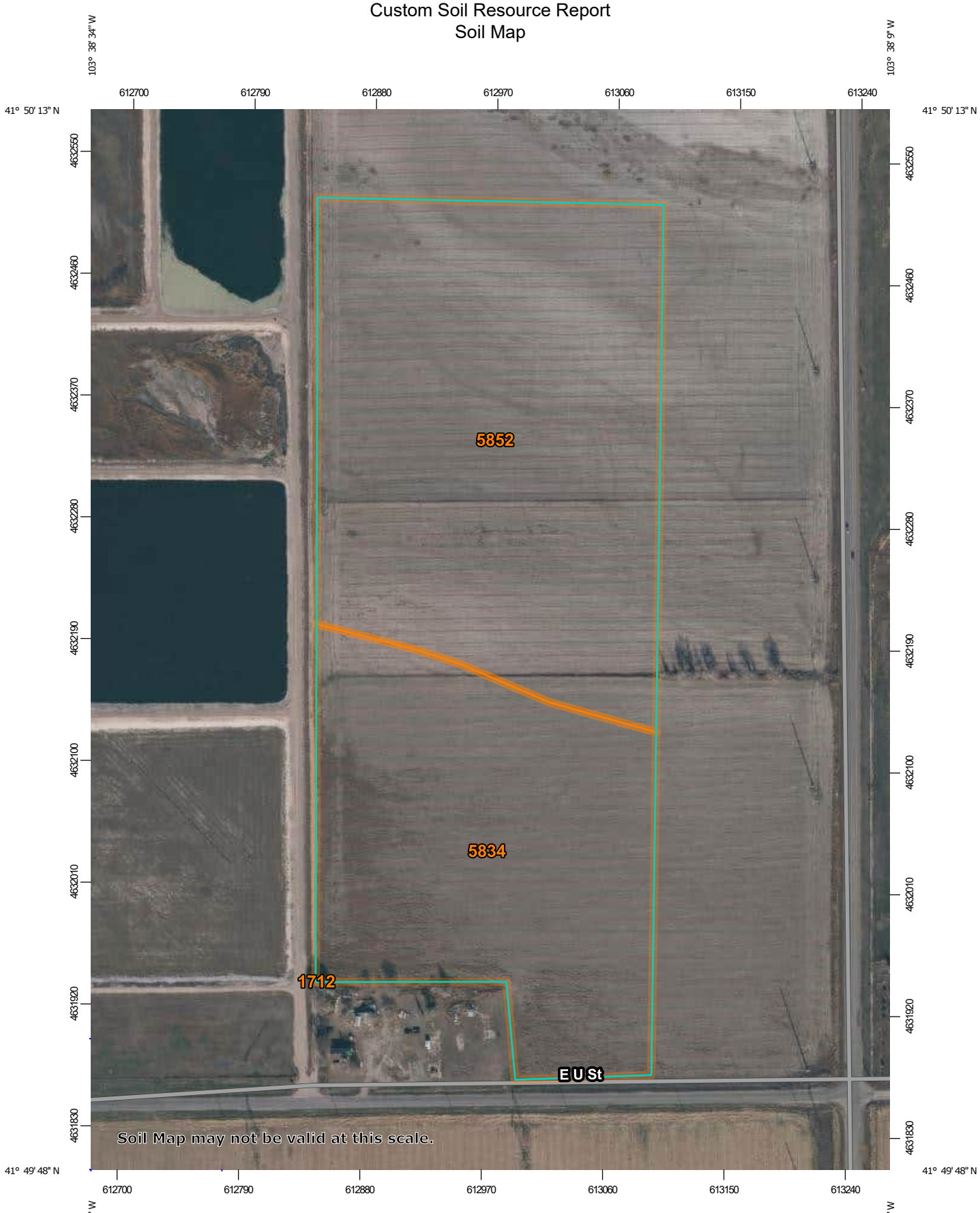
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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: 1:3,820 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N 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: Scotts Bluff 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: Oct 17, 2021—Nov 21, 2021

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
1712	Otero-Bayard fine sandy loams, 0 to 3 percent slopes	0.0	0.0%
5834	Mitchell silt loam, 0 to 1 percent slopes	15.9	41.7%
5852	Mitchell silt loam, wet variant, 0 to 1 percent slopes	22.2	58.3%
Totals for Area of Interest		**38.1**	**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.

Scotts Bluff County, Nebraska

1712—Otero-Bayard fine sandy loams, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1shwj
Elevation: 3,000 to 5,500 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Otero and similar soils: 80 percent
Bayard and similar soils: 19 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Otero

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H1 - 4 to 20 inches: fine sandy loam
H3 - 20 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R067AY150WY - Sandy (Sy)
Other vegetative classification: Sandy - Veg. zone 1 (067XY011NE_1)
Hydric soil rating: No

Description of Bayard

Setting

Parent material: Colluvial-alluvial sediments from calcareous sandstone

Typical profile

H1 - 0 to 18 inches: fine sandy loam
H2 - 18 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R067AY150WY - Sandy (Sy)
Other vegetative classification: Sandy - Veg. zone 1 (067XY011NE_1)
Hydric soil rating: No

Minor Components

Wt at 0-1 foot

Percent of map unit: 1 percent
Landform: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

5834—Mitchell silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1shw9
Elevation: 4,100 to 5,000 feet
Mean annual precipitation: 14 to 28 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Mitchell and similar soils: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mitchell

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from siltstone

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 1 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 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: 15 percent
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R067AY120WY - Limy Upland (LiU)
Hydric soil rating: No

Minor Components

Perched wt

Percent of map unit: 1 percent
Landform: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

5852—Mitchell silt loam, wet variant, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1shtd
Elevation: 3,200 to 5,500 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Mitchell variant and similar soils: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mitchell Variant

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium derived from calcareous siltstone

Typical profile

H1 - 0 to 20 inches: silt loam
H2 - 20 to 60 inches: 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 to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 36 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: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: R067AY174WY - Subirrigated (Sb)
Hydric soil rating: No

Minor Components

Wt at 0-1 foot

Percent of map unit: 1 percent
Landform: Swales
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report
Map—Farmland Classification

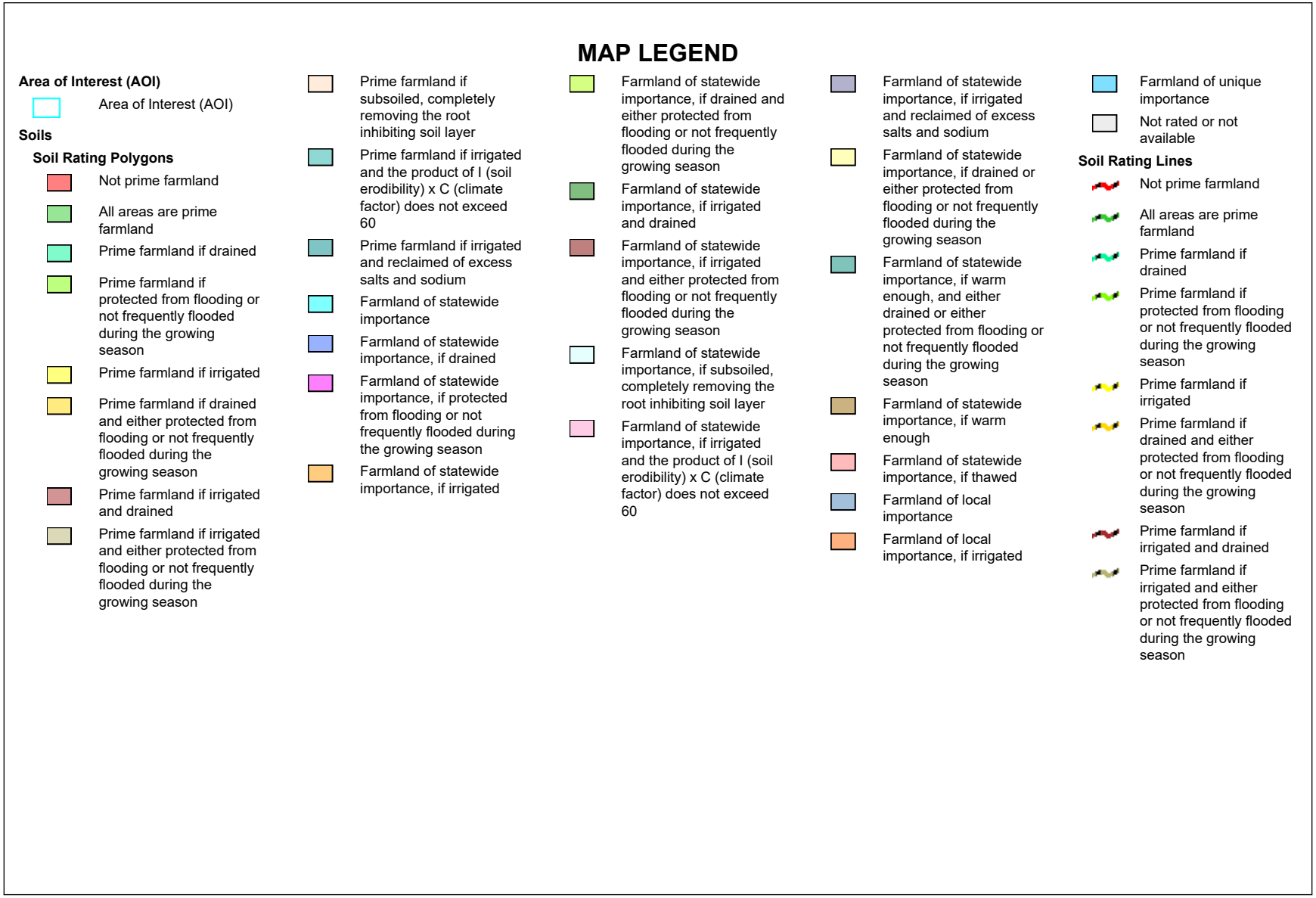
Map Scale: 1:3,820 if printed on A portrait (8.5" x 11") sheet.

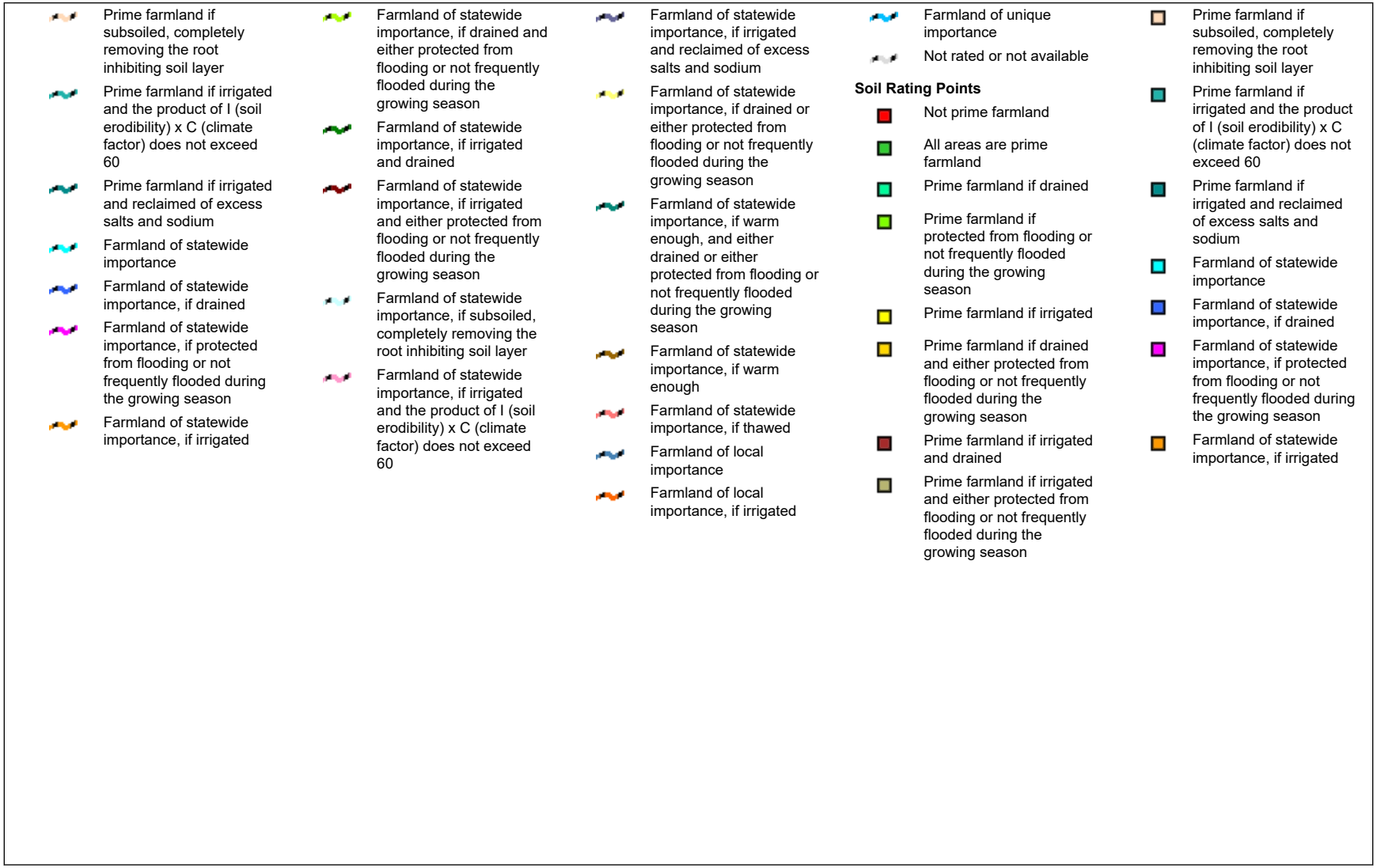
N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84


MAP LEGEND
Area of Interest (AOI)
Area of Interest (AOI)
Soils
Soil Rating Polygons
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Lines
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

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: Scotts Bluff 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: Oct 17, 2021—Nov 21, 2021

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.

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1712	Otero-Bayard fine sandy loams, 0 to 3 percent slopes	Prime farmland if irrigated	0.0	0.0%
5834	Mitchell silt loam, 0 to 1 percent slopes	Prime farmland if irrigated	15.9	41.7%
5852	Mitchell silt loam, wet variant, 0 to 1 percent slopes	Prime farmland if irrigated	22.2	58.3%
Totals for Area of Interest			**38.1**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit

Map Scale: 1:3,820 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

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: Scotts Bluff 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: Oct 17, 2021—Nov 21, 2021

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.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1712	Otero-Bayard fine sandy loams, 0 to 3 percent slopes	1	0.0	0.0%
5834	Mitchell silt loam, 0 to 1 percent slopes	1	15.9	41.7%
5852	Mitchell silt loam, wet variant, 0 to 1 percent slopes	1	22.2	58.3%
Totals for Area of Interest			**38.1**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

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Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

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Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

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United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

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SE Municipal Solar - Gering

NW Corner of County Road N & Lockwood Road 23

Gering, NE 69341

Inquiry Number: 6985975.36

May 20, 2022

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/20/22

Site Name:

SE Municipal Solar - Gering
NW Corner of County Road N &
Gering, NE 69341
EDR Inquiry # 6985975.36

Client Name:

Terracon
15080 A Circle
Omaha, NE 68144
Contact: Andrew Herman

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1999	1"=500'	Acquisition Date: January 01, 1999	USGS/DOQQ
1993	1"=500'	Acquisition Date: May 03, 1993	USGS/DOQQ
1984	1"=500'	Flight Date: May 23, 1984	USDA
1976	1"=500'	Flight Date: May 27, 1976	USGS
1963	1"=500'	Flight Date: June 27, 1963	USGS
1953	1"=500'	Flight Date: September 26, 1953	USGS

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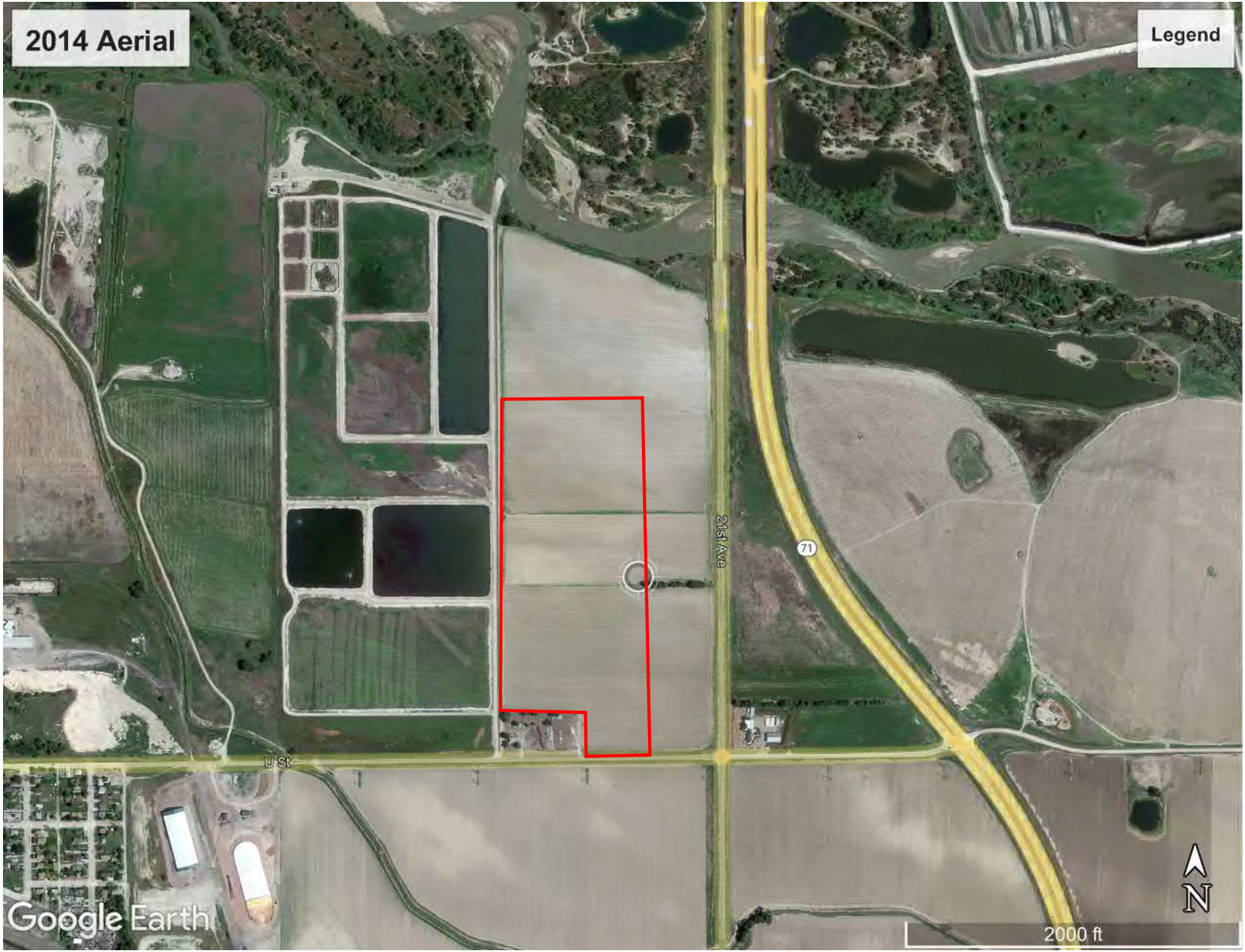
2021 Aerial
Legend
North Platte River
21st Ave
Gering/Scottsbluff Certified Industrial Park
71
Reed Farms Dr
U St
County Rd N
Center
Cooperative Association
Google Earth
Image © 2023 CNES / Airbus
N
2000 ft


2019 Aerial
Legend
21st Ave
71
U St
Google Earth
N
2000 ft

0 Feet 500 1000 2000

Project Manager:	Project No:	Terracon	2016 AERIAL PHOTOGRAPH
Drawn By:	Scale:		
Checked By:	File Name:		
Approved By:	Date: 2016		


2014 Aerial
Legend
21St Ave
71
U St
Google Earth
2000 ft
N

0 Feet 500 1000 2000

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Drawn By:	Scale:		
Checked By:	File Name:		
Approved By:	Date: 2012		


2011 Aerial
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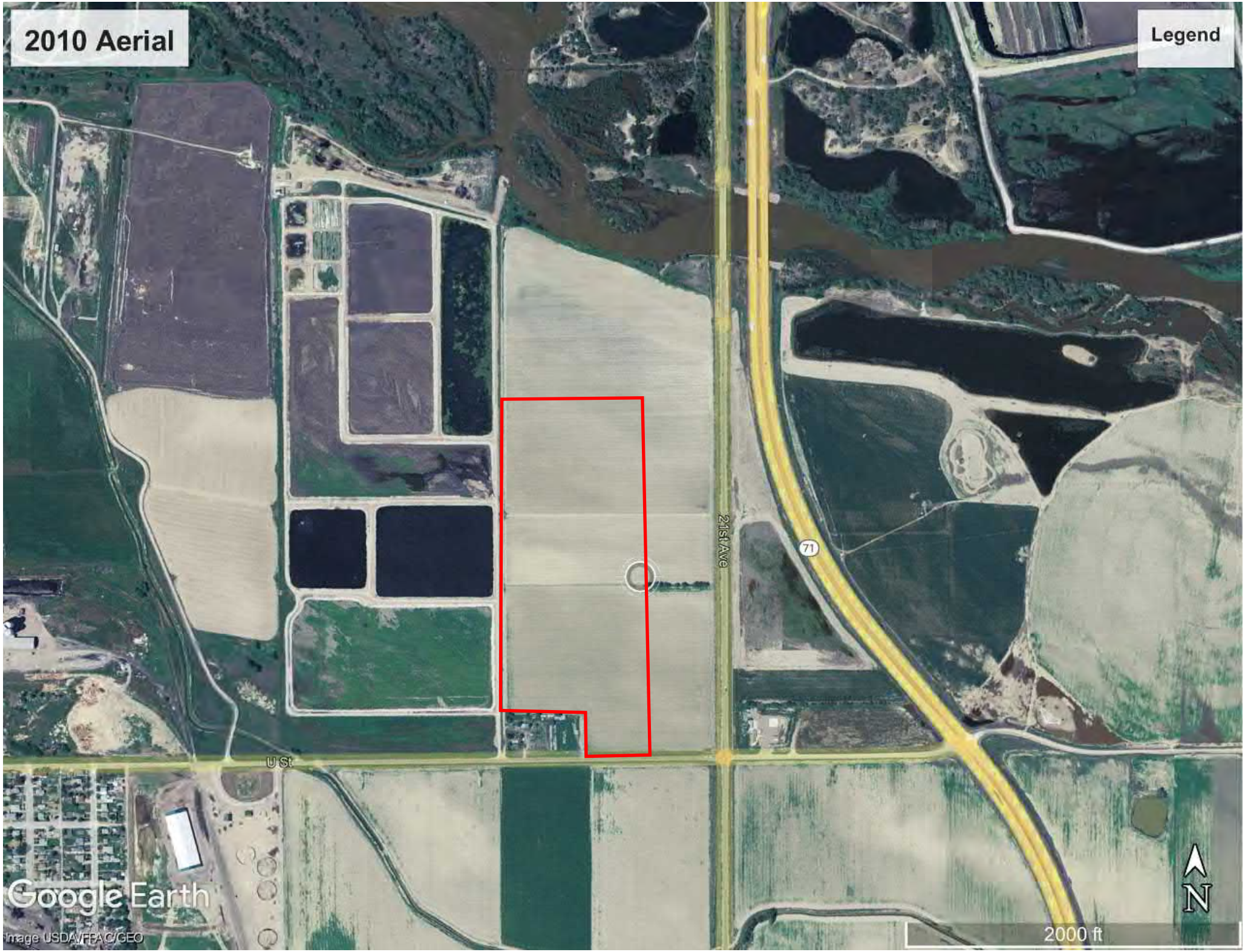
21St Ave
71
U St
Google Earth
N
2000 ft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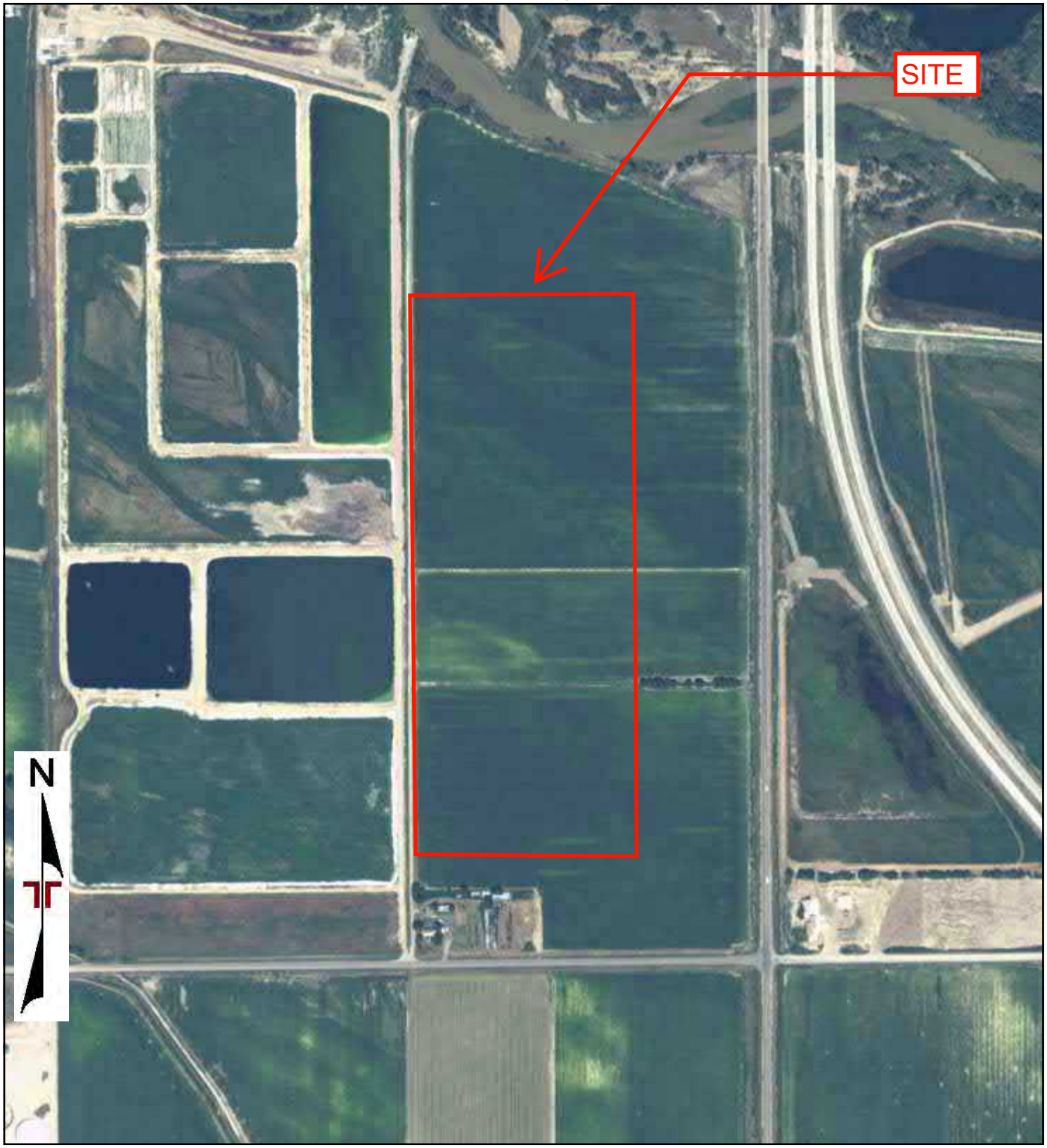
71
U St
Google Earth
Image USDA/FPAC/GEO
N
2000 ft



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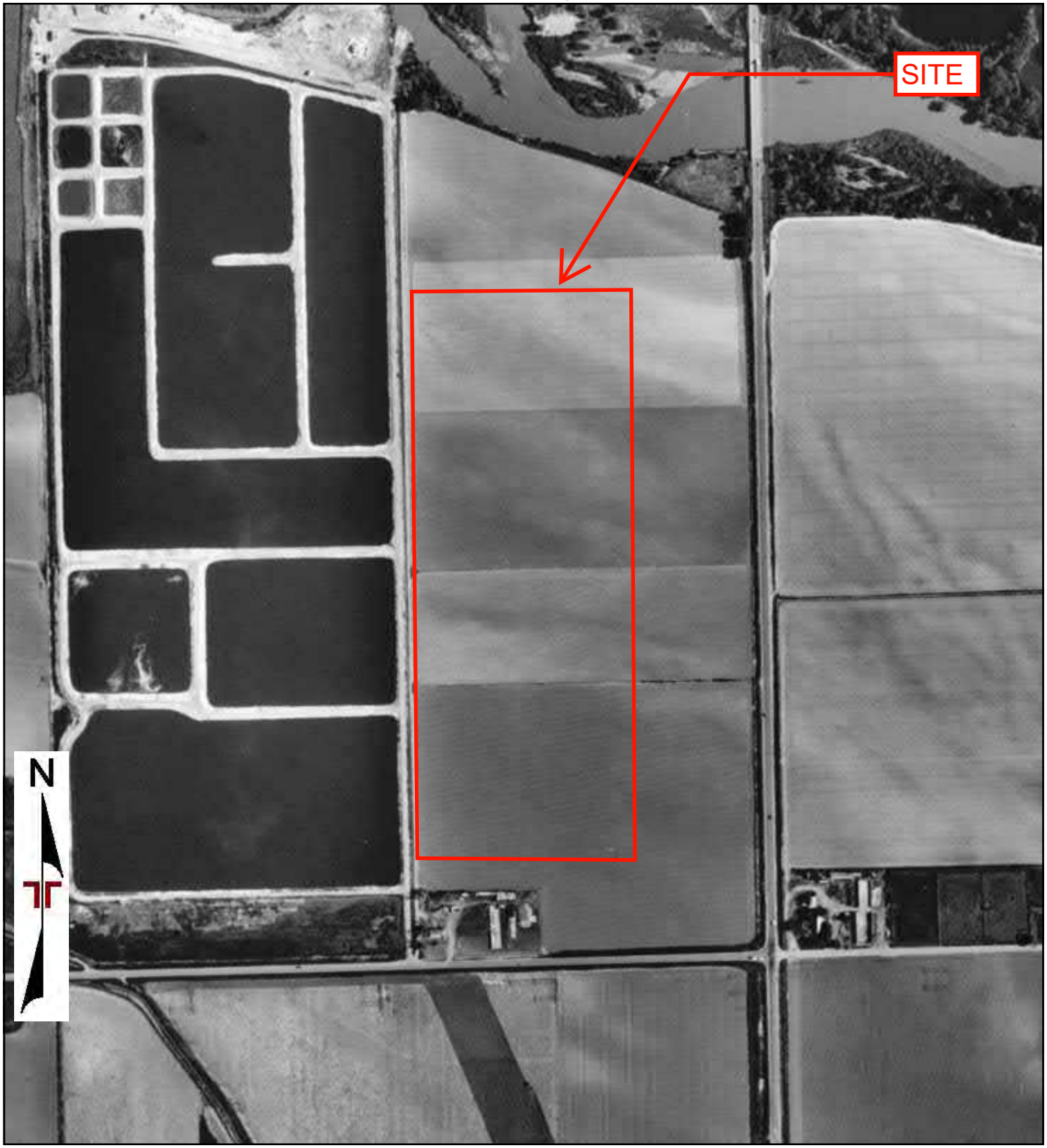
Checked By:	File Name:		
Approved By:	Date: 2009		

0 Feet 500 1000 2000

Project Manager:	Project No:	Terracon	2006 AERIAL PHOTOGRAPH
Drawn By:	Scale:		
Checked By:	File Name:		
Approved By:	Date: 2006		


2005 Aerial
Legend
21st Ave
71
U St
Google Earth
Image USDA/FPAC/GEO
N
2000 ft


2003 Aerial
Legend
21st Ave
71
U St
Google Earth
N
2000 ft



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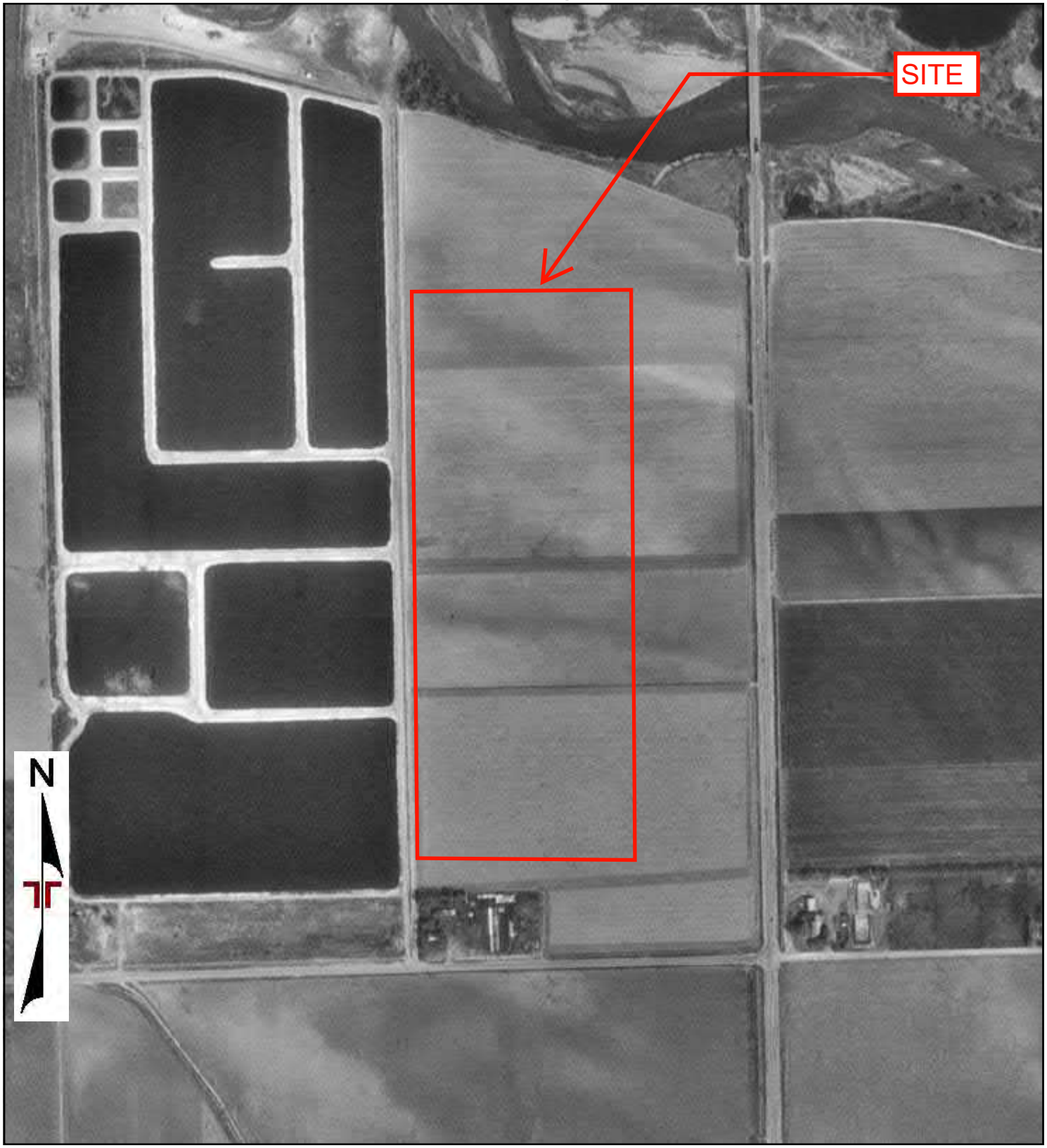
Approved By:	Date: 1999		



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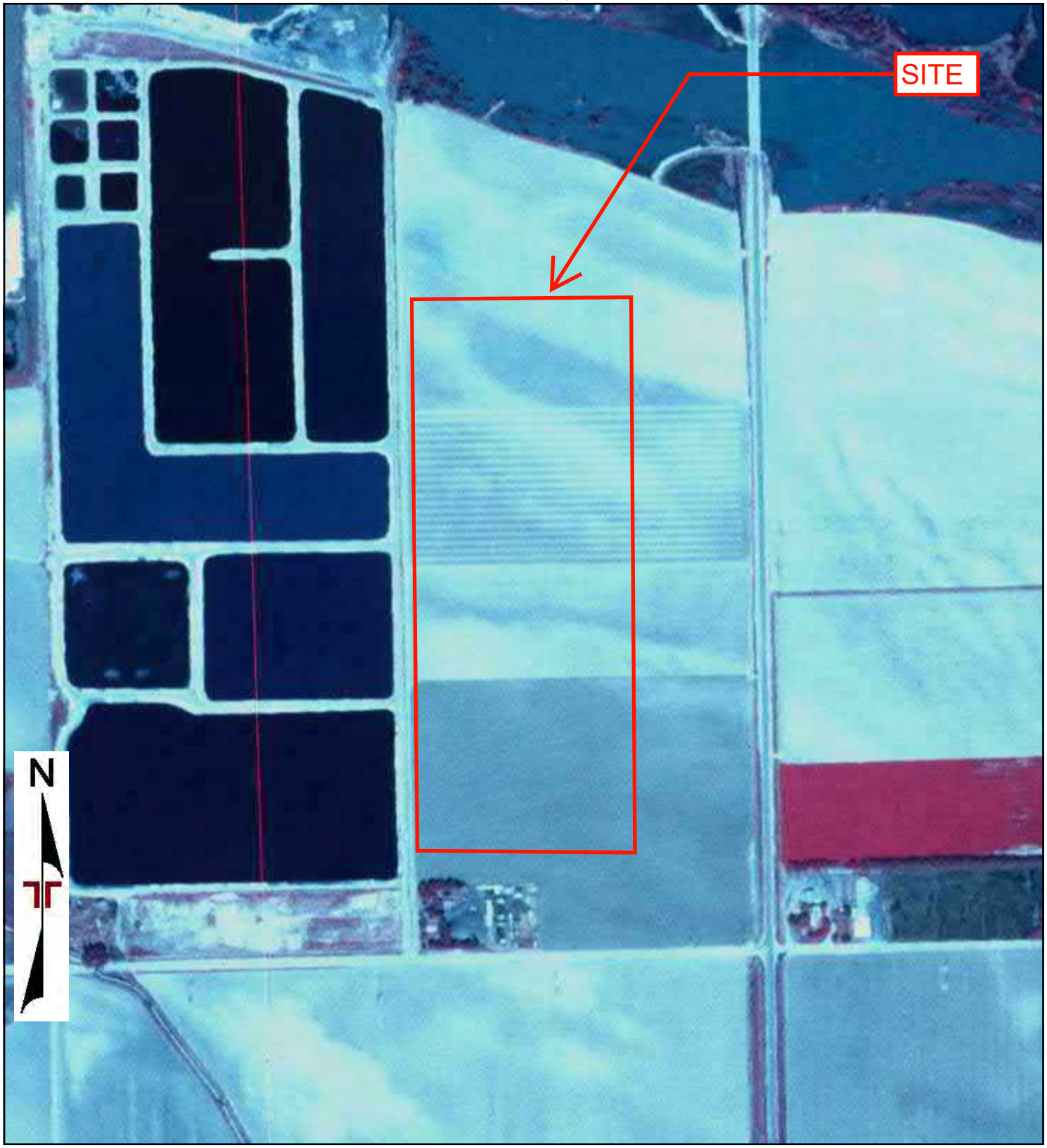
Approved By:	Date: 1993		



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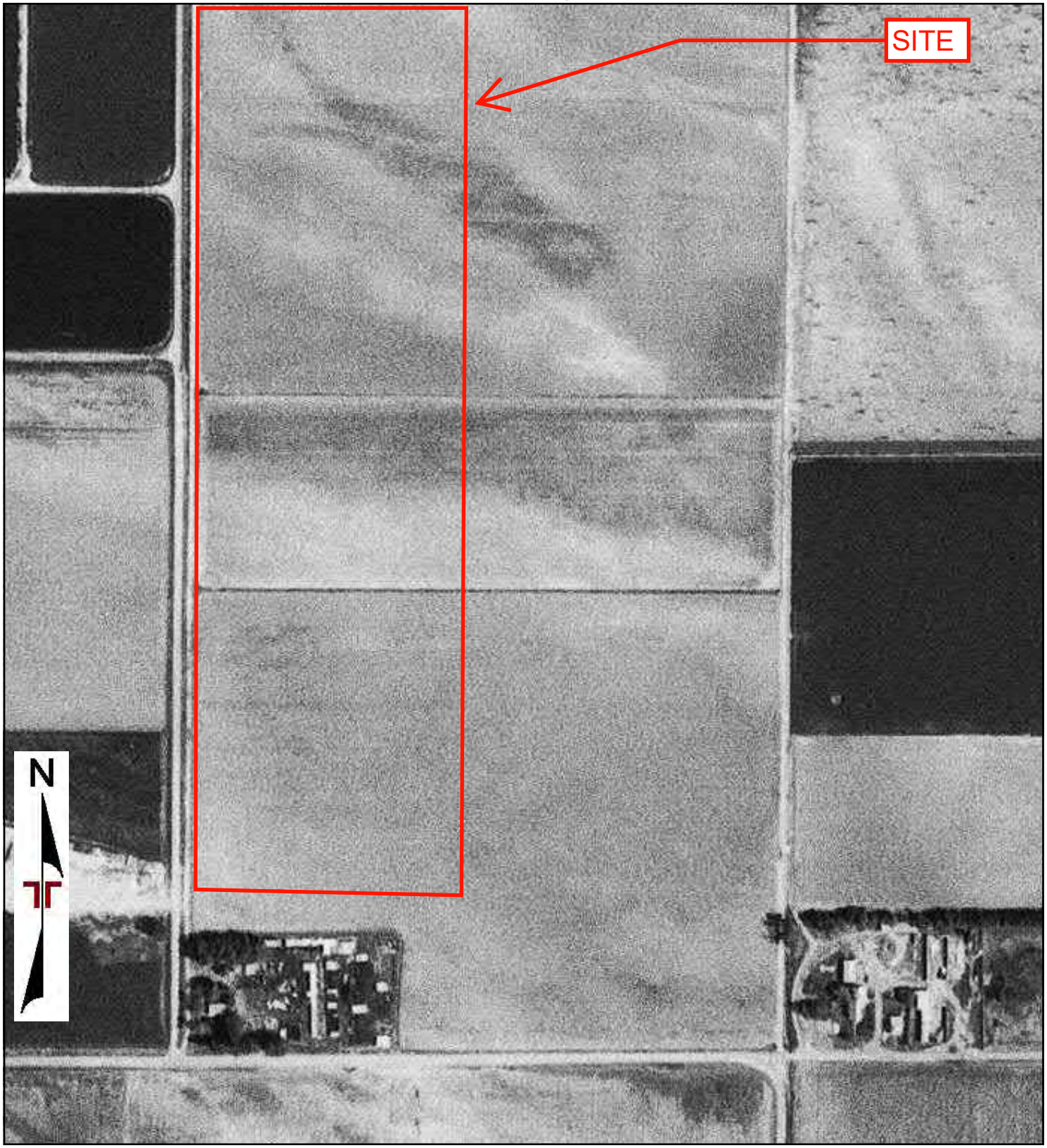
Checked By:	File Name:		
Approved By:	Date: 1984		



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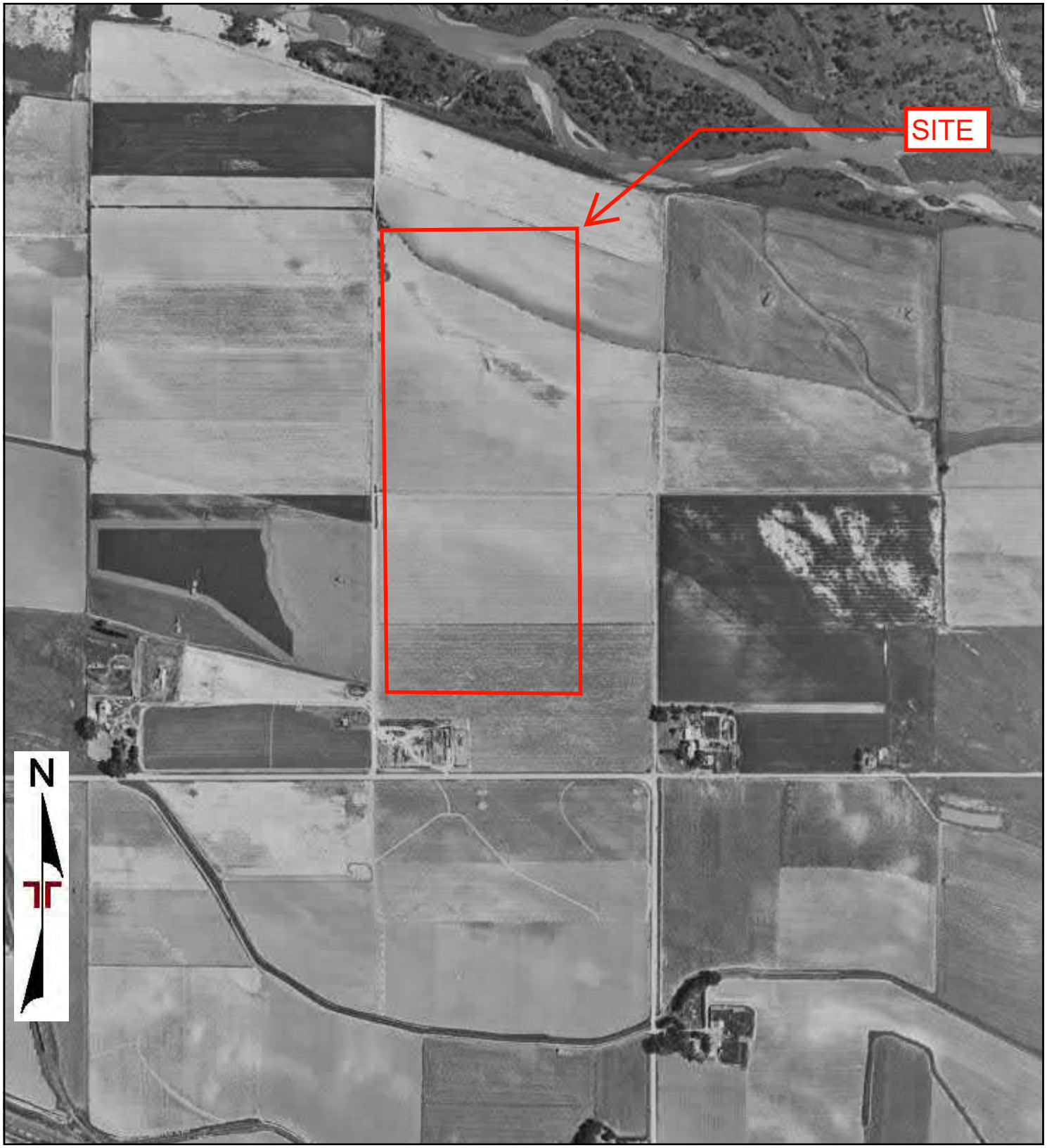
Drawn By:	Scale:		
Checked By:	File Name:		
Approved By:	Date: 1976		



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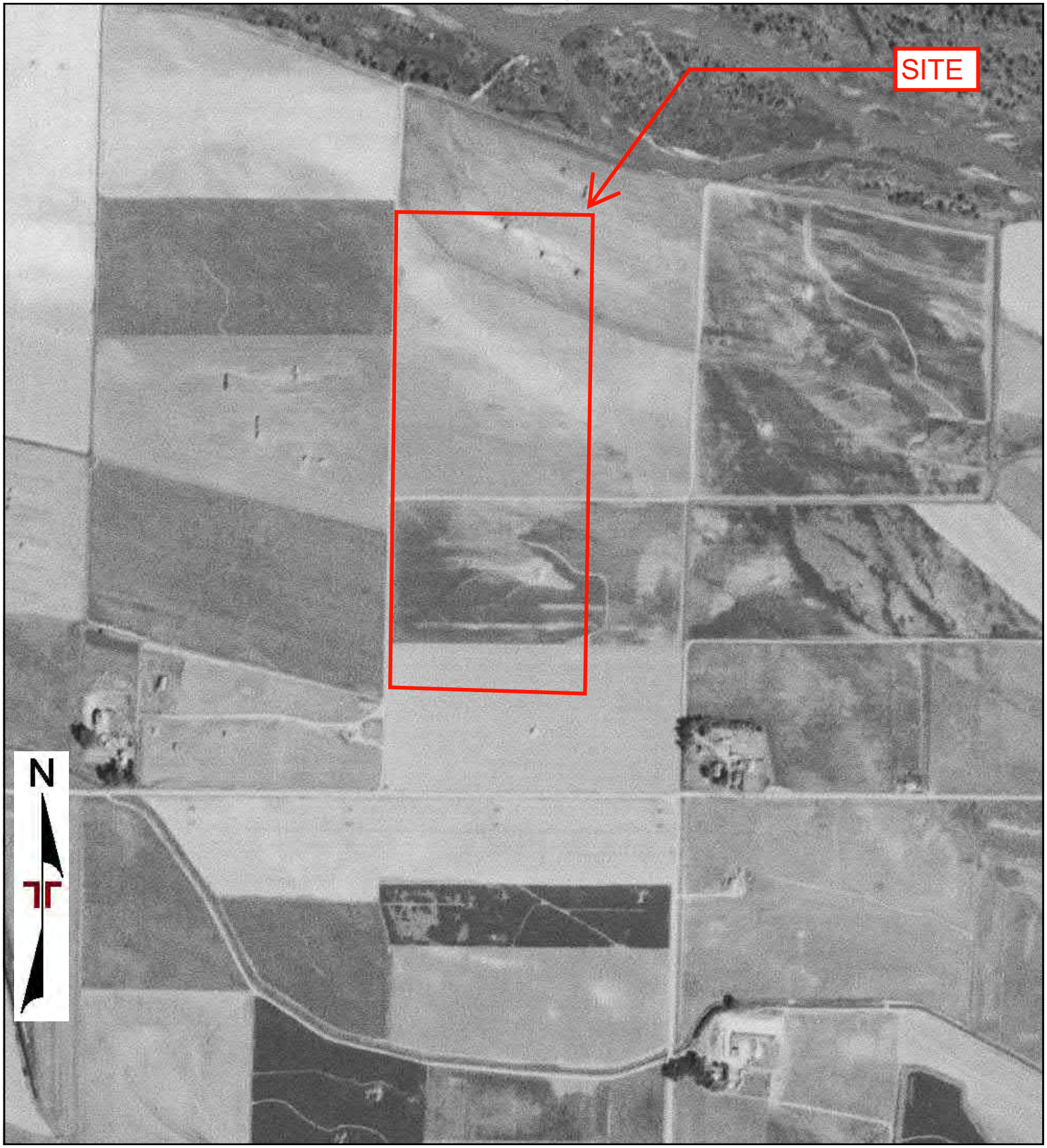
Project Manager:	Project No:	Terracon	1963 AERIAL PHOTOGRAPH
Drawn By:	Scale:		
Checked By:	File Name:		
Approved By:	Date: 1963		



0 Feet 500 1000 2000

Project Manager:	Project No:	Terracon	1953 AERIAL PHOTOGRAPH
Drawn By:	Scale:		
Checked By:	File Name:		
Approved By:	Date: 1953		

WETS Table

WETS Station: SCOTTSBLUFF W B HEILIG FIELD AP, NE

Requested years: 1953 - 2023

Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	39.5	13.1	26.3	0.44	0.20	0.52	1	6.0
Feb	43.4	16.3	29.9	0.50	0.25	0.60	2	6.6
Mar	51.8	23.6	37.7	1.04	0.58	1.26	3	8.0
Apr	61.2	32.2	46.7	1.65	1.02	1.99	4	5.2
May	71.1	43.2	57.2	2.84	1.65	3.45	6	0.8
Jun	82.7	53.2	68.0	2.68	1.64	3.25	6	0.0
Jul	89.9	59.3	74.6	1.86	1.02	2.27	4	0.0
Aug	87.7	56.7	72.2	1.11	0.48	1.34	3	0.0
Sep	78.5	46.2	62.3	1.11	0.48	1.34	3	0.3
Oct	65.1	33.6	49.3	0.97	0.46	1.18	3	2.9
Nov	50.6	22.2	36.4	0.59	0.28	0.73	2	5.1
Dec	40.5	13.7	27.1	0.53	0.29	0.64	2	7.2
Annual:					12.75	17.12		
Average	63.5	34.4	49.0	-	-	-	-	-
Total	-	-	-	15.31			38	42.2

GROWING SEASON DATES

Years with missing data:	24 deg = 1	28 deg = 1	32 deg = 1
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 70	28 deg = 70	32 deg = 70
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	4/18 to 10/19: 184 days	4/27 to 10/9: 165 days	5/7 to 9/30: 146 days
70 percent *	4/13 to 10/24: 194 days	4/24 to 10/13: 172 days	5/3 to 10/4: 154 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1893	0.25	0.45	M0.32	M0.32	M0.40	1.89	1.01	M2.29	0.05	0.52	M0.17	M1.33	9.00
1894	M0.29	M0.39	M0.53	1.68	0.16	3.19	2.67	0.70	0.90	0.14	0.49	M0.40	11.54
1895	0.75	0.21	0.63	0.43	4.34	4.43	M1.47	M0.11	M0.02	M0.16	0.61	0.09	13.25
1896	M1.65	M0.36	1.49	M0.66	2.42	2.47	1.90	1.31	1.94	0.33	M0.18	T	14.71
1897	M0.24	M0.28	1.08	M1.40	1.79	0.67	2.76	1.96	0.30	0.10	M6.68	0.40	17.66
1898	0.90	T	M0.30	1.80	M3.99	1.38	1.65	0.60	M0.34	0.57	M1.20	0.35	13.08
1899	0.80	2.84	M1.52	M0.41	7.72	1.77	1.90	2.24	0.19	1.19	0.10	0.13	20.81
1900	T	M0.72	0.26	4.20	0.27	0.55	4.14	0.67	M1.22	1.01	0.08	0.37	13.49
1901	T	0.75	0.76	2.31	1.75	4.01	1.20	1.64	2.	M0.	0.00	1.54	17.

									32	72			00
1902	M0.15	M0.74	1.26	1.29	2.44	M2.63	1.71	1.00	4.12	0.66	M0.12	1.13	17.25
1903	0.30	0.89	0.48	1.42	1.71	1.95	1.48	3.15	1.23		0.11	0.05	12.77
1904	0.18	0.25	0.32	1.38	2.61	2.42	2.15	0.54	0.90	0.73	0.01	0.11	11.60
1905	M1.17	0.65	0.69	4.41	4.57	4.53	2.87	1.62	1.63	1.22	0.14	T	23.50
1906	0.00	0.12	M1.33	2.80	3.95	3.33	1.42	1.42	0.98	2.50	0.55	0.20	18.60
1907	0.80	0.62	0.05	M0.35	3.04	2.62	2.77	1.39	1.04	0.04	0.35	0.23	13.30
1908	0.36	T	0.31	1.78	4.15	1.92	2.40	2.19	0.09	2.79	0.23	0.81	17.03
1909	0.73	1.47	0.70	0.74	4.06	4.56	2.53	0.25	1.77	0.97	0.72	0.70	19.20
1910	0.16	0.16	0.33	1.18	1.93	3.05	1.15	0.24	1.15	0.17	0.03	0.36	9.91
1911	0.57	0.20	0.01	4.40	1.30	2.71	1.53	1.04	0.98	1.96	0.03	0.54	15.27
1912	0.56	0.98	1.38	1.63	1.13	1.65	5.33	3.73	2.93	1.46	0.67	0.15	21.60
1913	0.20	0.77	1.18	0.34	3.12	M2.39	2.52	2.03	1.27	0.44	0.13	2.22	16.61
1914	0.12	0.66	0.23	4.35	0.72	1.24	0.63	0.55	0.71	0.81	0.08	0.29	10.39
1915	0.17	0.98	2.48	3.28	3.04	2.89	3.55	5.66	3.65	1.01	0.13	0.64	27.48
1916	M0.42	0.38	0.48	M1.08	2.71	1.07	2.44	1.75	M0.29	1.26	M0.49	0.57	12.94
1917	M0.32	0.10	1.23	2.18	M7.72	1.53	0.23	1.24	1.79	M0.27	0.02	0.57	17.20
1918	M0.61	0.20	0.33	M2.72	5.40	2.01	2.80	1.63	3.82	0.54	0.69	1.75	22.50
1919	0.03	0.96	0.58	0.83	0.89	1.99	1.16	0.08	2.91	1.16	1.32	0.42	12.33
1920	0.43	0.54	1.70	4.01	3.23	1.29	1.81	2.62	0.72	1.18	0.34	0.39	18.26
1921	0.94	0.19	0.14	0.51	2.01	1.47	0.97	1.91	1.49	1.14	0.79	1.06	12.62
1922	0.27	0.27	0.23	4.26	3.54	1.90	2.70	0.41	0.13	0.07	2.86	0.31	16.95
1923	0.07	0.41	0.36	1.28	3.25	3.84	3.16	3.39	0.96	2.55	0.55	0.48	20.30
1924	0.19	0.34	1.31	0.77	1.96	0.66	0.49	0.44	2.79	1.61	0.12	M0.59	11.27
1925	0.05	0.06	0.77	0.98	2.52	4.07	1.84	0.80	1.15	2.27	0.59	1.39	16.49
1926	0.77	0.36	0.62	0.80	M2.07	3.65	1.93	0.85	0.63	1.29	0.61	M0.62	14.20
1927	0.19	0.78	2.99	4.36	2.59	3.96	1.29	2.40	1.36	0.87	0.18	0.22	21.19
1928	0.33	M1.05	0.71	0.19	2.37	3.70	3.43	0.69	0.14	1.80	0.83	0.17	15.41
1929	0.18	0.51	1.70	3.12	1.20	2.60	1.79	0.77	3.25	1.63	M0.92	T	17.67
1930	0.67	0.22	0.22	1.73	4.04	1.28	0.47	3.95	1.81	1.89	0.81	0.17	17.26
1931	0.03	0.50	0.89	1.34	1.51	0.72	0.11	0.36	1.24	1.38	0.51	0.88	9.47
1932	0.11	0.76	1.24	3.23	2.27	1.88	1.84	1.32	0.44	0.89	0.23	0.30	14.51
1933	T	0.04	1.22	3.69	3.91	0.32	0.89	2.84	0.88	T	0.16	0.69	14.64
1934	0.22	0.81	0.48	0.90	0.89	4.25	0.47	1.22	1.26	T	0.33	0.29	11.12
1935	0.17	0.32	1.48	M4.15	7.52	2.26	1.34	0.30	0.	0.	0.22	0.15	18.

									94	04			89
1936	0.30	0.53	1.03	2.19	2.39	2.35	0.53	1.12	0.27	0.57	0.86	0.98	13.12
1937	0.52	0.15	0.70	0.87	2.22	2.07	0.48	1.21	1.59	1.10	0.73	0.44	12.08
1938	0.24	0.20	1.15	2.67	3.92	3.51	2.54	0.69	3.17	0.27	0.94	0.17	19.47
1939	M0.50	1.10	0.79	0.35	0.84	3.37	0.44	1.11	0.31	0.68	0.00	0.37	9.86
1940	M1.09	0.67	0.68	3.11	0.66	1.11	M1.38	0.47	1.68	1.33	MT	0.25	12.43
1941	0.17	0.23	1.01	M2.50	1.07	5.54	0.94	1.45	1.40	0.37	0.42	0.81	15.91
1942	0.34	0.30	1.23	6.13	4.28	M2.58	M1.39	0.40	1.43	1.29	0.98	0.29	20.64
1943	0.24	0.24	0.64	2.05	2.22	2.36	0.22	0.38	0.31	1.15	T	0.22	10.03
1944	0.63	0.71	0.87	1.62	1.61	2.08	1.99	1.37	0.39	0.17	1.34	0.23	13.01
1945	0.31	0.65	0.76	1.63	1.18	4.77	1.84	1.92	1.30	0.05	0.08	0.52	15.01
1946	0.11	0.28	1.15	0.53	4.01	0.84	0.07	1.08	2.04	1.63	0.17	0.14	12.05
1947	0.17	0.18	0.17	1.63	2.78	8.33	0.71	0.36	1.37	1.50	0.78	0.45	18.43
1948	0.11	0.24	0.69	0.90	3.38	3.91	3.17	1.19	1.70	1.18	0.51	0.49	17.47
1949	0.75	0.02	0.88	1.15	4.30	3.33	2.54	1.61	0.75	1.51	0.05	0.09	16.98
1950	0.16	0.21	0.49	0.91	2.62	0.59	2.66	0.57	2.64	0.17	0.39	0.13	11.54
1951	0.36	0.12	0.25	1.70	2.44	4.82	1.85	1.08	3.82	1.01	0.06	0.45	17.96
1952	0.23	0.49	1.09	0.82	2.28	3.44	0.19	0.70	0.27	0.44	0.71	0.10	10.76
1953	0.24	0.63	0.23	1.67	0.66	5.36	2.22	1.11	T	0.13	0.26	0.34	12.85
1954	0.02	T	2.20	0.34	2.73	4.13	2.42	1.33	0.70	0.32	0.30	0.21	14.70
1955	0.65	0.62	0.39	1.16	4.16	3.18	1.06	2.04	2.29	0.24	1.06	0.88	17.73
1956	0.27	0.25	0.29	1.54	2.75	1.30	2.08	0.29	0.05	0.04	1.02	0.14	10.02
1957	0.19	0.05	0.79	2.33	6.25	4.23	4.54	1.17	0.30	1.49	0.39	0.18	21.91
1958	0.01	0.72	1.18	1.30	1.69	5.07	2.56	0.27	0.38	0.07	0.39	1.09	14.73
1959	0.26	0.31	1.33	0.74	2.52	4.14	0.56	0.21	2.77	1.14	0.12	0.24	14.34
1960	0.26	0.50	0.35	0.96	2.04	1.21	0.55	1.20	0.65	0.63	0.53	0.52	9.40
1961	T	0.32	2.62	0.92	4.02	0.70	2.55	0.23	1.90	0.24	0.50	0.18	14.18
1962	0.37	0.70	0.34	0.29	6.28	4.23	3.65	0.28	0.05	1.12	0.20	0.40	17.91
1963	1.14	0.14	0.66	1.02	3.13	3.56	1.60	0.99	1.36	1.07	0.11	0.31	15.09
1964	0.04	0.25	0.38	2.40	1.45	1.47	0.69	0.19	0.09	0.08	0.01	0.65	7.70
1965	0.46	0.44	0.20	0.71	3.30	6.53	2.06	0.52	3.15	0.98	0.09	0.65	19.09
1966	0.46	0.21	0.17	1.11	0.27	2.09	3.34	1.86	1.59	0.81	0.20	0.17	12.28
1967	0.18	0.04	0.29	2.42	4.42	4.22	2.29	0.99	0.53	0.17	0.17	0.82	16.54
1968	0.15	0.23	0.64	1.76	2.69	2.29	1.17	2.08	0.25	0.86	0.19	0.55	12.86
1969	0.72	0.52	0.51	1.08	2.44	2.01	0.72	1.26	0.	3.	0.40	0.32	13.

									79	02			79
1970	0.57	0.18	0.93	2.26	1.38	2.49	1.10	0.40	0.34	1.57	0.38	0.39	11.99
1971	0.23	0.44	1.31	1.71	4.73	2.47	1.46	1.47	2.09	0.69	0.33	0.13	17.06
1972	0.35	0.25	0.69	2.91	1.54	4.43	3.77	1.71	1.64	0.79	1.75	0.77	20.60
1973	0.58	0.43	1.97	2.24	0.80	0.88	3.69	0.09	4.22	0.74	1.36	1.24	18.24
1974	0.57	0.10	1.99	0.35	0.79	0.98	0.66	1.58	0.94	0.48	0.42	0.18	9.04
1975	0.32	0.46	1.73	1.78	2.25	1.47	1.60	0.47	0.26	0.74	0.45	1.18	12.71
1976	0.96	0.29	0.36	2.48	2.27	1.31	0.25	0.78	0.22	0.35	0.35	0.10	9.72
1977	0.52	0.02	2.04	2.12	2.07	4.06	1.22	0.63	0.39	0.13	0.91	0.82	14.93
1978	1.26	1.17	0.68	1.24	4.37	2.41	4.82	1.25	0.09	0.74	0.62	1.54	20.19
1979	0.74	0.10	1.22	0.90	1.33	2.59	3.17	2.51	0.74	1.66	1.60	0.49	17.05
1980	1.21	0.99	2.16	0.57	2.82	0.79	1.07	0.47	0.47	0.76	0.57	0.15	12.03
1981	0.69	0.14	0.59	1.47	2.75	2.54	3.54	1.10	0.39	0.34	0.26	0.19	14.00
1982	0.32	0.20	0.46	0.50	2.93	6.63	4.78	1.66	1.78	1.22	0.80	0.57	21.85
1983	0.29	0.04	1.94	2.33	4.20	1.81	0.69	1.23	0.13	0.68	1.75	0.60	15.69
1984	0.44	0.50	1.47	3.89	1.23	1.23	1.80	0.57	0.45	0.88	0.28	0.50	13.24
1985	0.64	0.20	0.37	1.23	0.86	1.76	0.80	0.18	2.71	1.01	1.28	1.17	12.21
1986	0.07	1.93	0.83	2.49	1.51	5.55	4.00	1.01	1.86	1.42	0.81	0.26	21.74
1987	0.34	1.88	1.70	0.44	7.25	4.13	1.14	3.42	0.90	0.08	0.95	1.01	23.24
1988	0.80	0.11	1.11	2.27	5.19	2.29	0.85	0.80	0.97	0.11	0.46	0.40	15.36
1989	T	1.03	0.77	0.65	1.89	1.15	0.32	1.13	1.63	0.70	0.07	0.65	9.99
1990	0.59	0.72	2.64	1.75	2.94	1.14	3.10	1.23	0.97	0.99	1.25	0.36	17.68
1991	0.46	0.39	0.50	1.16	4.35	4.00	0.56	0.11	0.90	1.17	0.72	0.02	14.34
1992	0.81	0.86	1.22	0.34	2.03	3.00	2.96	1.65	0.17	1.15	0.98	0.66	15.83
1993	0.45	1.64	1.36	1.95	0.98	5.55	3.10	2.53	2.17	2.35	2.15	0.59	24.82
1994	0.59	0.77	0.73	1.96	1.10	2.80	2.56	0.45	0.66	2.76	0.64	0.95	15.97
1995	1.07	0.60	0.37	2.41	4.59	3.52	0.87	0.08	1.36	0.84	0.50	0.55	16.76
1996	0.83	T	1.03	0.91	4.48	1.02	2.06	2.24	2.44	0.42	0.89	0.22	16.54
1997	0.26	0.36	0.18	3.89	5.34	3.40	2.28	1.46	0.93	1.83	0.11	0.31	20.35
1998	0.20	0.64	1.30	1.53	1.46	2.32	3.38	1.19	0.41	2.76	1.20	0.86	17.25
1999	0.07	0.22	1.03	3.47	1.45	3.70	1.71	2.34	2.40	0.06	0.24	0.13	16.82
2000	0.48	0.89	1.04	2.80	1.48	0.68	1.70	0.33	2.31	2.47	0.37	0.24	14.79
2001	0.28	0.29	0.42	3.03	2.22	1.70	2.79	0.04	1.01	0.94	0.30	T	13.02
2002	0.05	0.03	0.66	0.44	0.73	0.59	0.08	3.48	0.69	0.87	0.15	T	7.77
2003	0.12	0.77	1.79	1.42	1.27	1.63	0.47	0.59	0.	0.	0.71	0.44	10.

									94	31			46
2004	0.13	0.73	0.14	0.90	0.57	1.70	2.24	0.21	2.81	1.20	1.35	0.06	12.04
2005	0.66	0.25	1.22	2.62	2.39	5.58	1.67	1.91	0.76	2.18	0.26	0.14	19.64
2006	0.49	0.84	1.36	0.84	1.12	3.59	0.04	1.34	0.63	0.53	0.06	1.19	12.03
2007	0.08	0.38	1.66	1.34	1.09	0.25	0.69	1.40	0.41	0.71	0.05	1.30	9.36
2008	0.01	0.33	0.84	1.26	2.24	2.17	1.37	3.10	1.69	0.86	0.20	0.20	14.27
2009	0.92	0.25	0.80	2.98	1.40	5.96	1.91	0.95	0.70	3.16	0.30	0.72	20.05
2010	0.03	0.95	0.46	2.43	3.25	3.89	1.37	1.29	0.04	0.76	0.66	1.00	16.13
2011	0.46	0.37	1.18	2.85	5.87	3.74	1.76	0.22	0.22	1.46	0.38	0.34	18.85
2012	0.16	0.69	0.00	0.98	0.35	1.74	0.93	T	0.79	0.87	0.29	0.19	6.99
2013	0.26	0.28	0.21	2.43	1.46	1.54	0.88	0.79	2.37	1.67	0.85	0.63	13.37
2014	0.46	1.14	0.85	0.62	4.08	1.73	1.50	1.66	4.26	0.59	0.91	1.47	19.27
2015	0.45	0.39	0.27	3.10	7.95	2.24	3.83	1.26	1.07	1.47	0.82	0.71	23.56
2016	0.21	0.56	2.60	4.13	1.62	1.08	1.26	1.86	1.40	0.30	0.17	0.61	15.80
2017	1.02	0.90	1.78	1.36	3.45	1.23	0.71	1.32	1.31	0.95	0.53	1.09	15.65
2018	0.32	0.56	1.15	1.59	7.51	2.99	2.50	0.32	0.13	0.67	0.99	0.22	18.95
2019	0.27	0.39	2.61	2.08	4.58	1.65	1.96	2.92	1.10	0.98	1.10	0.35	19.99
2020	0.09	0.29	1.07	0.75	2.95	1.19	0.67	0.01	0.53	0.48	0.35	0.40	8.78
2021	0.17	0.83	3.23	0.96	1.78	0.91	1.32	0.31	0.50	1.86	0.17	0.28	12.32
2022	0.70	0.50	0.76	0.42	2.93	0.91	1.03	0.04	0.85	0.49	0.55	0.65	9.83
2023	1.56	0.37	0.42	0.54	7.33	4.75	2.15	1.58					18.70

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2023-09-01


SCOTTSBLUFF-GERING-TERRYTOWN
SCOTTS BLUFF COUNTY
NEBRASKA
POPULATION SCOTTSBLUFF 14,823 - GERING 7751 - TERRYTOWN 646 (2000 CENSUS)
1983
SCOTTS BLUFF COUNTY AIRPORT
CORNET HEIGHTS
TERRYTOWN
POPULATION 646 (2000 CENSUS)
GERING
POPULATION 7751 (2000 CENSUS)
RIVERSIDE PARK
SCOTTS BLUFF NATIONAL MONUMENT
NORTH PLATTE RIVER
2001 AVERAGE DAILY TRAFFIC
FROM PORTABLE COUNTS
STATE HIGHWAYS
Gravel or Crushed Rock
Asphalt/Bituminous Surface
Concrete/Brick Surface
CITY STREETS AND COUNTY ROADS
Primitive or Unimproved
Gravel or Crushed Rock
Non-Rigid Pavement (BM or ACSC)
Rigid Pavement (PCC, ACSC or Brick)
Interstate Numbered Routes
U.S. Numbered Routes
State Numbered Routes
State Numbered Spurs
State Numbered Links
In 116 Inventoried Numbered Routes
Ma 1480 Major Collector Routes
Mi 7100 Minor Collector Routes
Ur 5092 Urban Routes
RD 767 911 NAMED/Numbered Routes
City Center
Corporate Limits
CORPORATE LIMITS AS OF 2002
STATE HIGHWAYS CORRECTED TO 1995
SCALE IN FEET
T 22 N

APPENDIX B

SITE PLANS

E
NCRETE LIGHT POLE BASE
SIGN
/ERT GRATE
)

E (1' ABOVE GROUND)

(3.5' ABOVE GROUND)
E CORNER OF A CONCRETE HEADWALL
F A POWER POLE (1.5' ABOVE GROUND)
)

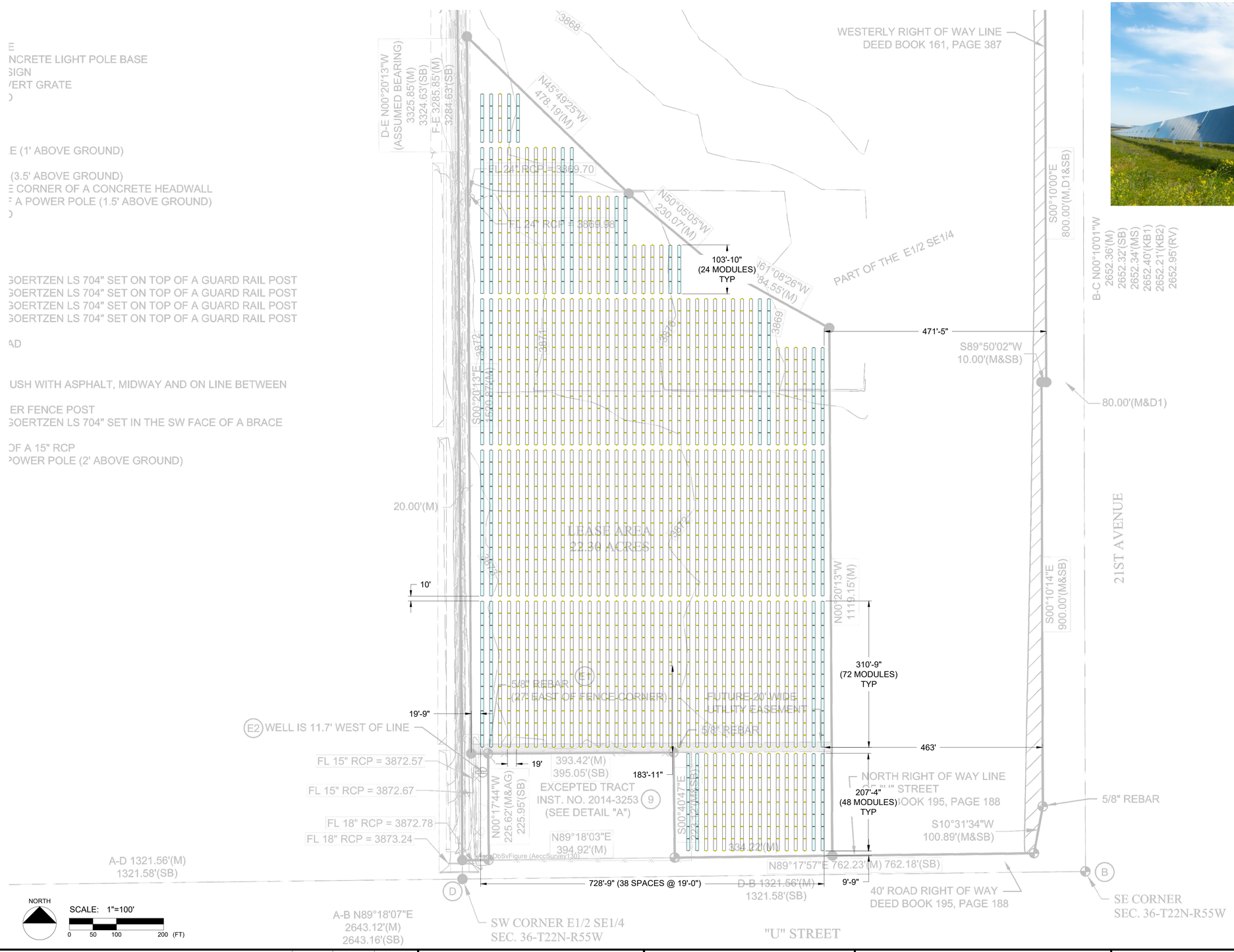
GOERTZEN LS 704" SET ON TOP OF A GUARD RAIL POST
GOERTZEN LS 704" SET ON TOP OF A GUARD RAIL POST
GOERTZEN LS 704" SET ON TOP OF A GUARD RAIL POST
GOERTZEN LS 704" SET ON TOP OF A GUARD RAIL POST

AD

USH WITH ASPHALT, MIDWAY AND ON LINE BETWEEN

ER FENCE POST
GOERTZEN LS 704" SET IN THE SW FACE OF A BRACE

OF A 15" RCP
POWER POLE (2' ABOVE GROUND)



GENERAL NOTES:

1. THESE DRAWINGS SHOW THE REQUIRED LOCATION OF VALMONT TRJ COMPONENTS FOR THIS PROJECT. THE LAYOUT IS BASED ON EXISTING CONDITION INFORMATION PROVIDED TO VALMONT BY THE CUSTOMER AND HAS NOT BEEN VERIFIED BY VALMONT. VERIFY KEY DIMENSIONS AND EXISTING CONDITIONS IN THE FIELD PRIOR TO BEGINNING INSTALLATION.
2. OBTAIN VALMONT APPROVAL BEFORE MODIFYING THE LAYOUT SHOWN, OR RELOCATING, OMITTING, OR MODIFYING ANY VALMONT COMPONENT.
3. THE VALMONT TRACKER CAN FOLLOW A MAXIMUM ALLOWABLE GRADE OF 7% IN N-S DIRECTION. SLOPES GREATER THAN 7% MUST BE GRADED TO 7% MAXIMUM.

PROJECT SPECIFICATIONS	
SYSTEM SIZE MW DC	4.78032
MODULE	FIRST SOLAR SERIES 6 460W
MODULE QTY	10392
MODULES/STRING	24
ROW SPACING	19'-0"
GCR	35%
MODULES PER TRACKER	24, 48, 72
QTY 24 MODULE TABLES	11
QTY 48 MODULE TABLES	28
QTY 72 MODULE TABLES	122

Issue		Date	Drawn By	Checked By
PR-1	PRELIMINARY LAYOUT	10/11/22	SS	-
PR-2	PRELIMINARY LAYOUT	10/12/22	CL	
PR-3	ADD GRADE ANALYSIS SHEET	11/16/22	SS	
PR-4	PRELIMINARY LAYOUT - FULL SITE	11/16/22	CL	
PR-5	PRELIMINARY LAYOUT - FULL SITE V2	11/17/22	CL	
PR-6	PRELIMINARY LAYOUT - FULL SITE V3 (4.78 MW)	11/22/22	CL	

Engineer's Stamp

PRELIMINARY - NOT FOR CONSTRUCTION

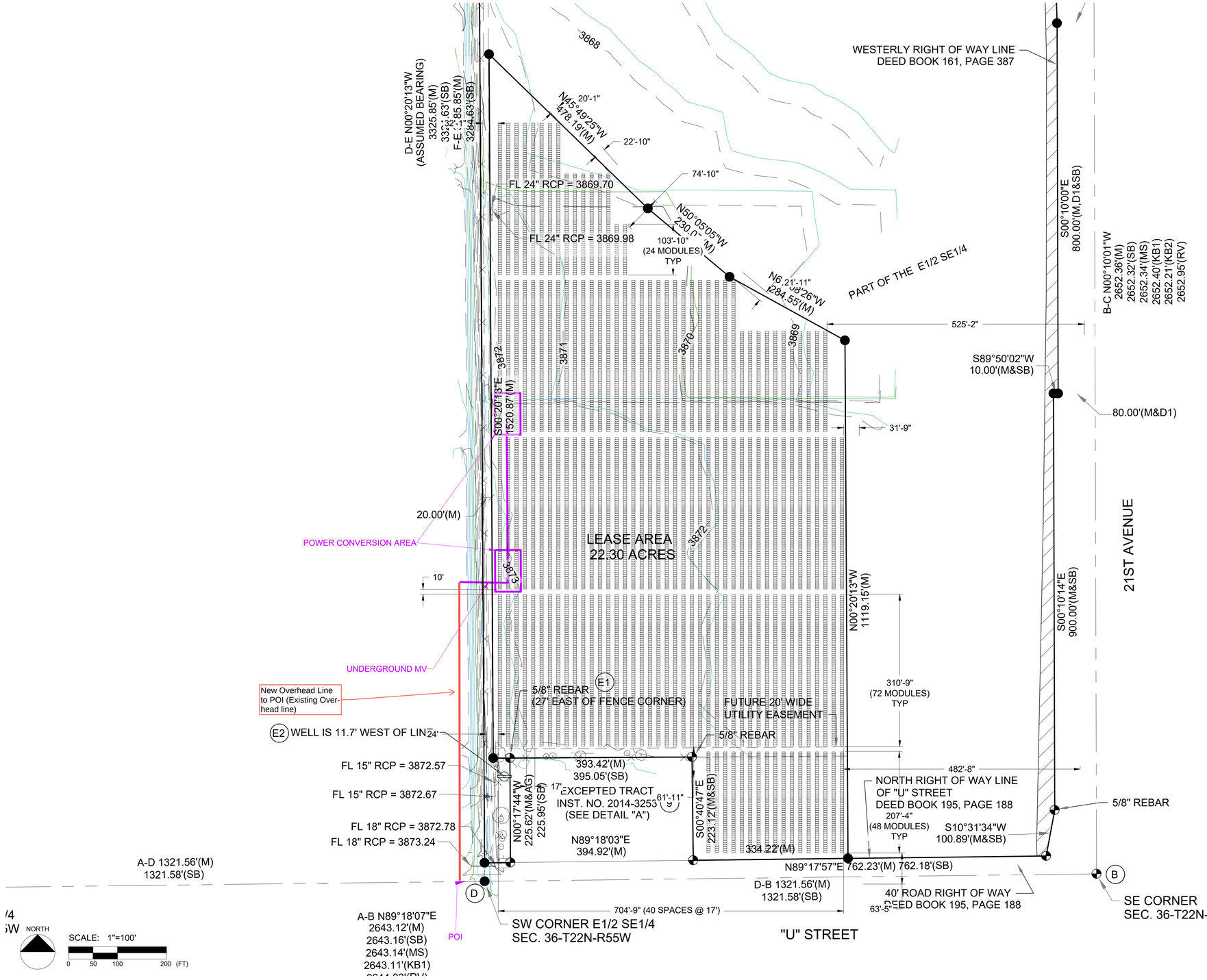
valmont SOLAR
VALMONT CORPORATION
28800 Ida Street
Valley, NE 68064
(T) 402-963-1000
www.valmont.com

Customer	SANDHILL
Project	GERING SOLAR
Location	U STREET AND 21ST AVENUE GERING, NE

Sheet Title
PROPOSAL LAYOUT

Issue
PR-6

Sheet Number
REF 1



GENERAL NOTES:

1. THESE DRAWINGS SHOW THE REQUIRED LOCATION OF VALMONT TRJ COMPONENTS FOR THIS PROJECT. THE LAYOUT IS BASED ON EXISTING CONDITION INFORMATION PROVIDED TO VALMONT BY THE CUSTOMER AND HAS NOT BEEN VERIFIED BY VALMONT. VERIFY KEY DIMENSIONS AND EXISTING CONDITIONS IN THE FIELD PRIOR TO BEGINNING INSTALLATION.
2. OBTAIN VALMONT APPROVAL BEFORE MODIFYING THE LAYOUT SHOWN, OR RELOCATING, OMITTING, OR MODIFYING ANY VALMONT COMPONENT.
3. THE VALMONT TRACKER CAN FOLLOW A MAXIMUM ALLOWABLE GRADE OF 7% IN N-S DIRECTION. SLOPES GREATER THAN 7% MUST BE GRADED TO 7% MAXIMUM.

PROJECT SPECIFICATIONS	
SYSTEM SIZE MW DC	4.78032
MODULE	FIRST SOLAR SERIES 6 460W
MODULE QTY	10392
MODULES/STRING	24
ROW SPACING	17'-0"
GCR	39.0%
MODULES PER TRACKER	24, 48, 72
QTY 24 MODULE TABLES	2
QTY 48 MODULE TABLES	34
QTY 72 MODULE TABLES	121

PROPOSAL LAYOUT

REF 1

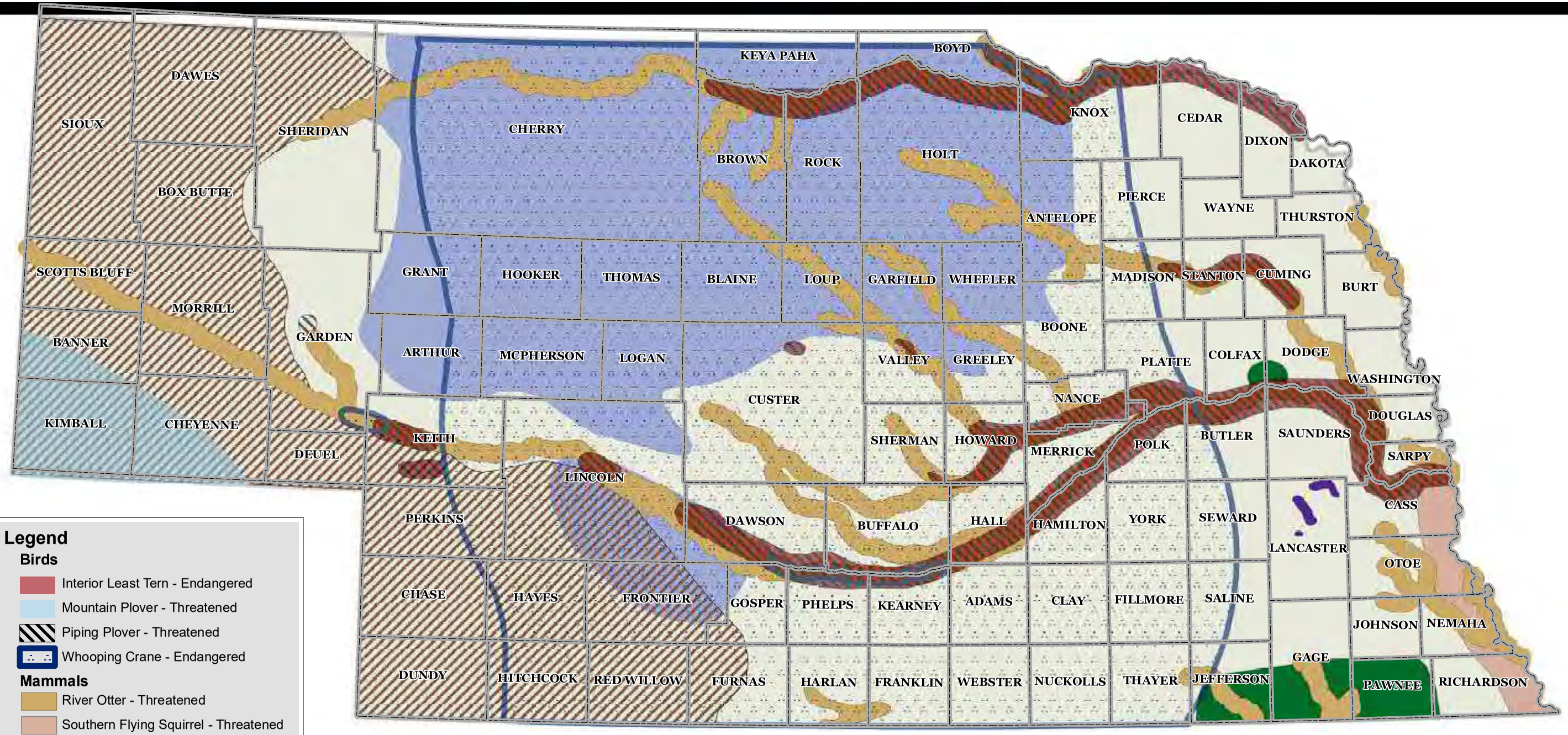
Xref ..\TB 24x36-Sandhill Gering.dwg

APPENDIX C

BIOLOGICAL RESOURCES

THREATENED AND ENDANGERED ANIMALS IN NEBRASKA

ESTIMATED RANGES



Legend

Birds
- Interior Least Tern - Endangered
- Mountain Plover - Threatened
- Piping Plover - Threatened
- Whooping Crane - Endangered

Mammals
- River Otter - Threatened
- Southern Flying Squirrel - Threatened
- Swift Fox - Endangered

Reptiles
- Massasauga - Threatened

Insects
- American Burying Beetle - Endangered
- Salt Creek Tiger Beetle - Endangered

- State
- County Boundary

The threatened and endangered species on this map represent Nebraska state classifications. The map shows the estimated current habitat ranges of the endangered species in Nebraska. The area denoted as whooping crane habitat is primarily flyway; however, a section of the Platte River in Dawson, Buffalo, Gosper, Phelps, and Kearney counties is considered 'critical habitat' for the whooping crane. A 'critical habitat' is a geograpic area that contains biological, landscape, and climate features considered imparative for a species to thrive.

The ranges specified for the other species, as identified by the Nebraska Natural Heritage Program, do not include a specified 'critical habitat'.

Map Created by Casey Dunn
Sources: Nebraska Game and Parks Commission (2011), U.S. Census Bureau
14 April 2015

NEBRASKA ENDANGERED AND THREATENED SPECIES

	Common Name	Scientific Name	State Status	Federal Status
BIRDS	Eskimo Curlew*	*Numenius borealis*	Endangered	Endangered
	Whooping Crane	*Grus americana*	Endangered	Endangered
	Interior Least Tern	*Sternula antillarum athalassos*	Endangered[α]	
	Eastern Black Rail ^	*Laterallus jamaicensis jamaicensis*	Threatened	Threatened
	Piping Plover	*Charadrius melodus*	Threatened	Threatened
	Rufa Red Knot ^	*Calidris canutus rufa*	Threatened	Threatened
	Thick-Billed Longspur	*Rhynchophanes mccownii*	Threatened	
	Mountain Plover	*Charadrius montanus*	Threatened	
MAMMALS	Black-footed Ferret*	*Mustela nigripes*	Endangered	Endangered
	Swift Fox	*Vulpes velox*	Endangered	
	Gray Wolf ^	*Canis lupus*	Endangered	Endangered
	Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Threatened 4(d) rule
	Southern Flying Squirrel	*Glaucomys volans*	Threatened	
FISH	Pallid Sturgeon	*Scaphirhynchus albus*	Endangered	Endangered
	Topeka Shiner	*Notropis topeka*	Endangered	Endangered
	Sturgeon Chub	*Macrhybopsis gelida*	Endangered	
	Blacknose Shiner	*Notropis heterolepis*	Endangered	
	Lake Sturgeon	*Acipenser fulvescens*	Threatened	
	Northern Redbelly Dace	*Chrosomus eos*	Threatened	
	Finescale Dace	*Chrosomus neogaeus*	Threatened	
INSECTS	American Burying Beetle	*Nicrophorus americanus*	Threatened	Threatened 4(d) rule
	Salt Creek Tiger Beetle	*Cicindela nevadica lincolniana*	Endangered	Endangered
REPTILES	Timber Rattlesnake	*Crotalus horridus*	Threatened	
	Western Massasauga	*Sistrurus tergeminus*	Threatened	
MUSSELS	Scaleshell Mussel	*Leptodea leptodon*	Endangered	Endangered
PLANTS	Blowout Penstemon	*Penstemon haydenii*	Endangered	Endangered
	Colorado Butterfly Plant	*Gaura neomexicana* ssp. *coloradensis*	Endangered	
	Saltwort	*Salicornia rubra*	Endangered	
	Western Prairie Fringed Orchid	*Platanthera praeclara*	Threatened	Threatened
	Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened	Threatened
	American Ginseng	*Panax quinquefolius*	Threatened	
	Small White Lady's Slipper	*Cypripedium candidum*	Threatened	

* There are historical records of these species in Nebraska, but no known recent records or extant populations in Nebraska.

[α] Status in Nebraska is under review.

^ There are recent (not historical) records of these species in Nebraska. However, there are no known breeding populations and/or Nebraska does not provide an important stopover or migratory path for these species.

32 State-listed Species: 9 State & Federal Listed Endangered; 6 State-listed Endangered; 7 State & Federal Listed Threatened; 10 State-listed Threatened

Updated February 2022

Estimated Current Ranges of Threatened and Endangered Species: List of Species by County
Nebraska Natural Heritage Program
Nebraska Game and Parks Commission
Version: December 2017

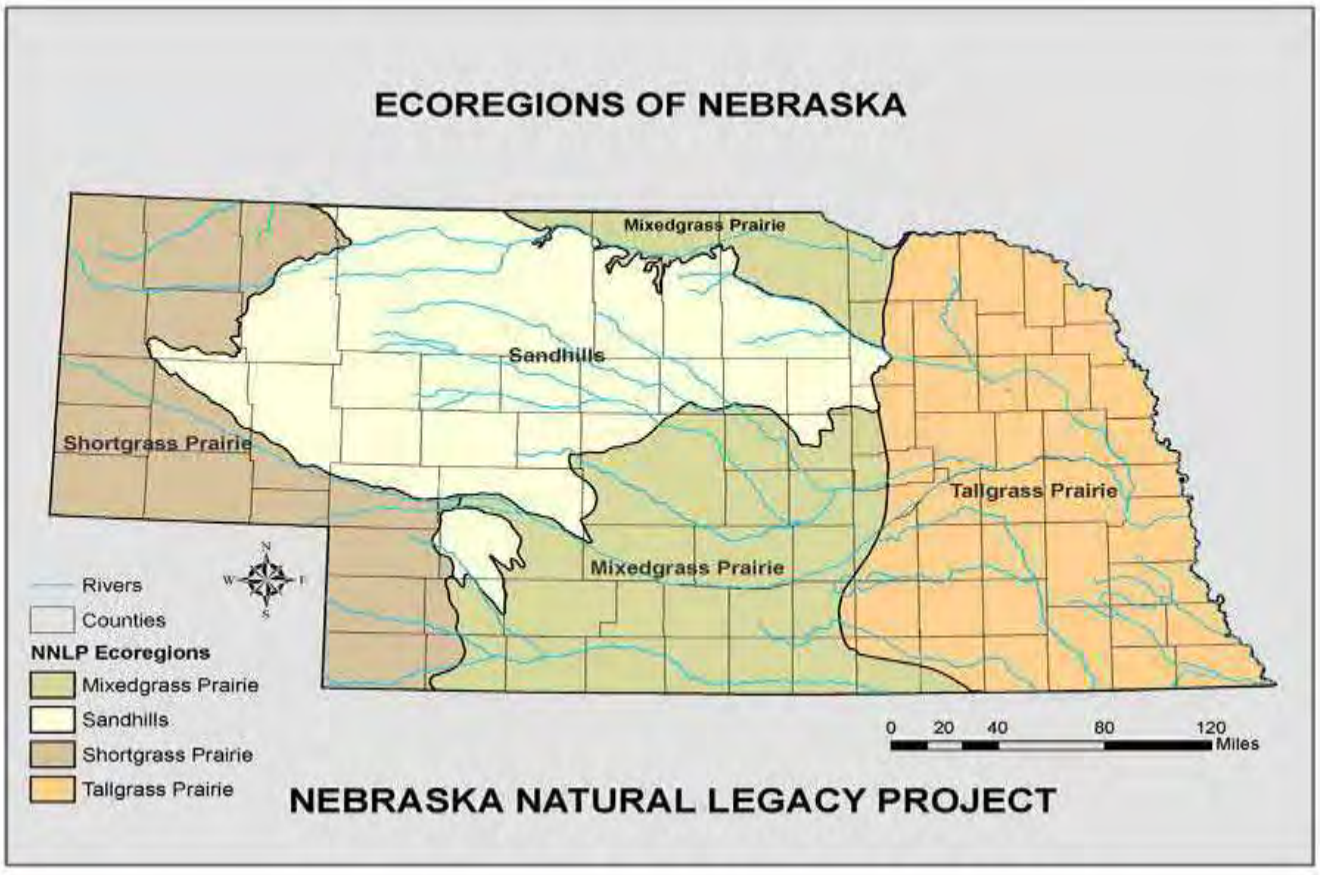
This table of species by county is based on the data product "Range maps for listed species in Nebraska, compiled and edited by the Nebraska Natural Heritage Program, December 2017." The map product was based on documented occurrences of listed species and expert knowledge about the distribution of species and suitable habitat. This information is subject to change. For a given county-species combination, the range of the given species covers some portion of the county (from all to very little). The individual species range map would need to be reviewed to determine if a particular location within the county is within the species's range. Because range maps are by their nature approximate, a given county-species combination was excluded from this table if the area covered was very small (less than 20 square kilometers). Included in the list are all federal and state listed species. Species Status: FE=Federal Endangered, FT=Federal Threatened, SE=State Endangered, ST=State Threatened.

County	Common Name	Scientific Name	Status
Adams	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	River Otter	Lontra canadensis	ST
	Whooping Crane	Grus americana	FE, SE
Antelope	American Burying Beetle	Nicrophorus americanus	FE, SE
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	River Otter	Lontra canadensis	ST
	Small White Lady's Slipper	Cypripedium candidum	ST
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
	Whooping Crane	Grus americana	FE, SE
Arthur	American Burying Beetle	Nicrophorus americanus	FE, SE
	Whooping Crane	Grus americana	FE, SE
Banner	Mountain Plover	Charadrius montanus	ST
	Swift Fox	Vulpes velox	SE
Blaine	American Burying Beetle	Nicrophorus americanus	FE, SE
	Blowout Penstemon	Penstemon haydenii	FE, SE
	Finescale Dace	Phoxinus neogaeus	ST
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Northern Redbelly Dace	Phoxinus eos	ST
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
	Whooping Crane	Grus americana	FE, SE
Boone	American Burying Beetle	Nicrophorus americanus	FE, SE
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	River Otter	Lontra canadensis	ST
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
	Whooping Crane	Grus americana	FE, SE
Box Butte	Blacknose Shiner	Notropis heterolepis	SE
	Blowout Penstemon	Penstemon haydenii	FE, SE
	Finescale Dace	Phoxinus neogaeus	ST

Richardson	American Ginseng	Panax quinquefolium	ST
	Lake Sturgeon	Acipenser fulvescens	ST
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Pallid Sturgeon	Scaphirhynchus albus	FE, SE
	River Otter	Lontra canadensis	ST
	Southern Flying Squirrel	Glaucomys volans	ST
	Sturgeon Chub	Macrhybopsis gelida	SE
	Western Massasauga	Sistrurus tergeminus	ST
Rock	American Burying Beetle	Nicrophorus americanus	FE, SE
	Blowout Penstemon	Penstemon haydenii	FE, SE
	Finescale Dace	Phoxinus neogaeus	ST
	Interior Least Tern	Sternula antillarum athalassos	FE, SE
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Northern Redbelly Dace	Phoxinus eos	ST
	Piping Plover	Charadrius melodus	FT, ST
	River Otter	Lontra canadensis	ST
	Small White Lady's Slipper	Cypripedium candidum	ST
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
	Whooping Crane	Grus americana	FE, SE
Saline	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
	Whooping Crane	Grus americana	FE, SE
Sarpy	American Ginseng	Panax quinquefolium	ST
	Interior Least Tern	Sternula antillarum athalassos	FE, SE
	Lake Sturgeon	Acipenser fulvescens	ST
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Pallid Sturgeon	Scaphirhynchus albus	FE, SE
	Piping Plover	Charadrius melodus	FT, ST
	River Otter	Lontra canadensis	ST
	Sturgeon Chub	Macrhybopsis gelida	SE
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
Saunders	Interior Least Tern	Sternula antillarum athalassos	FE, SE
	Lake Sturgeon	Acipenser fulvescens	ST
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Pallid Sturgeon	Scaphirhynchus albus	FE, SE
	Piping Plover	Charadrius melodus	FT, ST
	River Otter	Lontra canadensis	ST
	Salt Creek Tiger Beetle	Cicindela nevadica lincolniana	FE, SE
	Saltwort	Salicornia rubra	SE
	Sturgeon Chub	Macrhybopsis gelida	SE
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
Scotts Bluff	River Otter	Lontra canadensis	ST
	Swift Fox	Vulpes velox	SE
	Whooping Crane	Grus americana	FE, SE
Seward	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Western Prairie Fringed Orchid	Platanthera praeclara	FT, ST
	Whooping Crane	Grus americana	FE, SE
Sheridan	American Burying Beetle	Nicrophorus americanus	FE, SE
	Blowout Penstemon	Penstemon haydenii	FE, SE
	Finescale Dace	Phoxinus neogaeus	ST
	Northern Long-eared Bat	Myotis septentrionalis	FT, ST
	Northern Redbelly Dace	Phoxinus eos	ST
	River Otter	Lontra canadensis	ST
	Swift Fox	Vulpes velox	SE
	Whooping Crane	Grus americana	FE, SE

Invasive Plants Watch List: 2022

The purpose of the weed watch list is to collect data on the distribution of invasive plants found in various Nebraska counties. Counties were divided up into 'ecoregions' based on the Nebraska Game & Parks Commission's Legacy Plan (map of regions below). The plants in the watch list have been identified based on their invasiveness in surrounding states and their increasing range in Nebraska. Data collected on watch list plant species distribution has been used to support the listing or delisting of noxious weeds. Plant species in the weed watch list are categorized based on early detection and rapid response potential. These Categories are: **Category 1 plants** - species not known to exist in each ecoregion, but pose a significant risk if introduced; **Category 2 plants** – species are top priority for eradication of new and existing populations; and **Category 3 plants**-species established and prevention of spread to new areas is a priority. An asterisk (*) denotes a plant that is listed as a county noxious weed in one or more counties in an ecoregion. New plant species added in 2022 are highlighted in yellow. Complete lists of invasive plants and noxious weeds can be accessed at the Nebraska Invasive Species Program website: https://neinvasives.com/plants.



Shortgrass Prairie Ecoregion: Weed Watch List

Banner, Box Butte, Chase, Cheyenne, Dawes, Deuel, Dundy, Keith, Kimball, Morrill, Perkins, Scotts Bluff and Sioux counties

Terrestrial Plant Species	
Scientific Name	**Common Name(s)**
Category 1: Future Invasive Species	
Arundo donax L.	Giant Reed
Bromus diandrus	Ripgut Brome
Butomus umbellatus	Flowering Rush
Celastrus orbiculatus	Oriental Bittersweet
Taeniatherum caput-medusae	Medusahead
Ventenata dubia	Ventenata
Category 2: Priority Species	
Acroptilon repens	Russian Knapweed
Artemisia absinthium L.	Absinth Wormwood
Bothriochloa bladhii and ischaemum	Caucasian and Yellow Bluestem
*Cynoglossum officinale**	Houndstongue
Hyoscyamus niger	Henbane
Iris pseudacorus	Yellow Flag Iris
Linaria dalmatica	Dalmatian Toadflax
Rhamnus cathartica	Common Buckthorn, European Buckthorn
Floating Aquatic Plant Species	
Category 1: Future Invasive Species	
Egeria densa	Brazilian Elodea
Eichhornia crassipes	Water Hyacinth
Hydrilla verticillata	Hydrilla
Ludwigia peploides	Creeping Water Primrose, Floating Primrose-Willow
Myriophyllum aquaticum	Parrot's Feather
Nitellopsis obtusa	Starry Stonewort
Nymphiodes peltata	Yellow Floating Heart
Pistia stratiotes	Water Lettuce
Salvinia molesta	Giant Salvinia
Category 2: Priority Invasive Species	
Myriophyllum spicatum	Eurasian Watermilfoil
Najas minor	Brittle Naiad
Category 3: Established Invasive Species	
Potamogeton crispus	Curly-Leaf Pondweed

APPENDIX D
CENSUS INFORMATION

Save as PDF

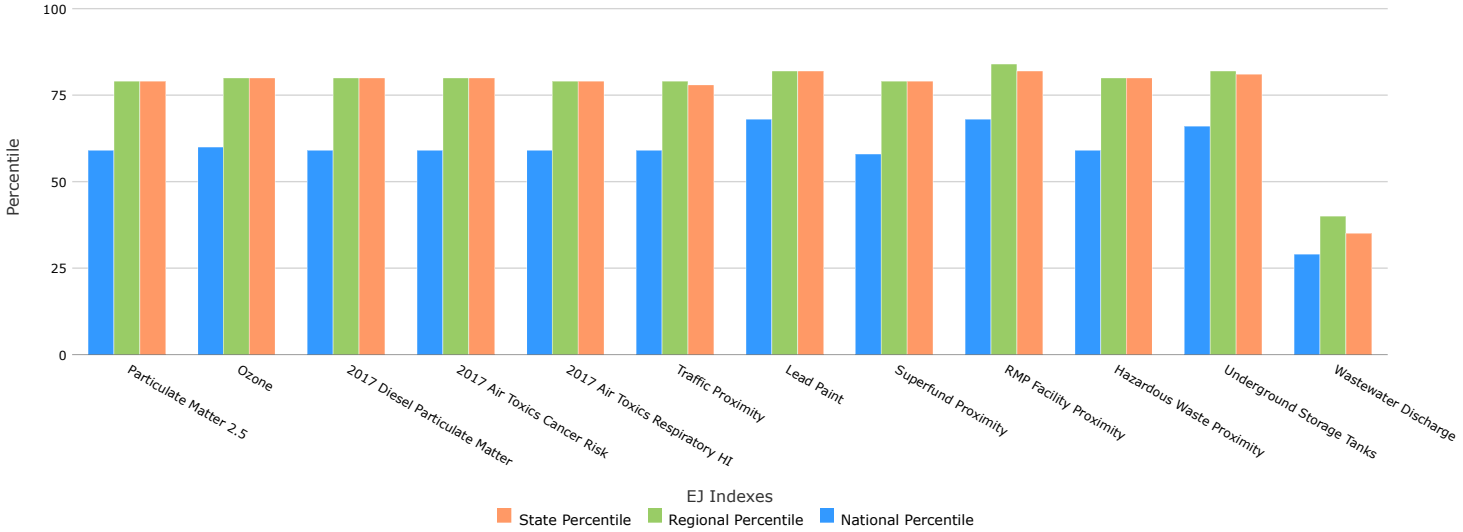
EJScreen Report (Version 2.0)

1 mile Ring Centered at 41.833950,-103.639140
NEBRASKA, EPA Region 7
Approximate Population: 844
Input Area (sq. miles): 3.14

Gering Solar Facility

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
Environmental Justice Indexes			
EJ Index for Particulate Matter 2.5	79	79	59
EJ Index for Ozone	80	80	60
EJ Index for 2017 Diesel Particulate Matter*	80	80	59
EJ Index for 2017 Air Toxics Cancer Risk*	80	80	59
EJ Index for 2017 Air Toxics Respiratory HI*	79	79	59
EJ Index for Traffic Proximity	78	79	59
EJ Index for Lead Paint	82	82	68
EJ Index for Superfund Proximity	79	79	58
EJ Index for RMP Facility Proximity	82	84	68
EJ Index for Hazardous Waste Proximity	80	80	59
EJ Index for Underground Storage Tanks	81	82	66
EJ Index for Wastewater Discharge	35	40	29

EJ Index for the Selected Area Compared to All People's Blockgroups in the State/Region/US



This report shows the values for environmental and demographic indicators and EJScreen indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports.

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

Selected Variables	Value	State		EPA Region		USA	
		Avg.	%tile	Avg.	%tile	Avg.	%tile
Pollution and Sources							
Particulate Matter 2.5 (µg/m^3)	5.07	7.77	3	8.26	0	8.74	0
Ozone (ppb)	47.7	41.9	99	44.1	91	42.6	85
2017 Diesel Particulate Matter* (µg/m^3)	0.172	0.18	43	0.221	<50th	0.295	<50th
2017 Air Toxics Cancer Risk* (lifetime risk per million)	20	22	75	26	<50th	29	<50th
2017 Air Toxics Respiratory HI*	0.2	0.26	40	0.33	<50th	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	80	720	26	410	36	710	30
Lead Paint (% Pre-1960 Housing)	0.39	0.35	56	0.33	62	0.28	70
Superfund Proximity (site count/km distance)	0.0079	0.13	4	0.1	0	0.13	2
RMP Facility Proximity (facility count/km distance)	2.3	1.5	77	0.95	88	0.75	92
Hazardous Waste Proximity (facility count/km distance)	0.15	0.73	33	1	33	2.2	24
Underground Storage Tanks (count/km^2)	1.4	4.8	50	2.5	60	3.9	51
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0045	0.17	70	2.9	62	12	63
Socioeconomic Indicators							
Demographic Index	38%	25%	79	25%	80	36%	60
People of Color	60%	21%	92	20%	92	40%	72
Low Income	16%	28%	27	30%	25	31%	26
Unemployment Rate	1%	3%	36	4%	27	5%	18
Linguistically Isolated	2%	3%	69	2%	75	5%	54
Less Than High School Education	19%	9%	87	9%	88	12%	78
Under Age 5	11%	7%	87	6%	90	6%	90
Over Age 64	14%	15%	47	16%	41	16%	47

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's 2017 Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update. (https://www.epa.gov/haps/air-toxics-data-update)

For additional information, see: www.epa.gov/environmentaljustice (https://www.epa.gov/environmentaljustice)

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

EJSCREEN ACS Summary Report

Location: User-specified point center at 41.833950, -103.639140
Ring (buffer): 1-miles radius
Description: Gering Solar Facility

Summary of ACS Estimates	2015 - 2019
Population	844
Population Density (per sq. mile)	225
People of Color Population	504
% People of Color Population	60%
Households	229
Housing Units	253
Housing Units Built Before 1950	87
Per Capita Income	24,540
Land Area (sq. miles) (Source: SF1)	3.75
% Land Area	98%
Water Area (sq. miles) (Source: SF1)	0.08
% Water Area	2%

	2015 - 2019 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	844	100%	390
Population Reporting One Race	820	97%	640
White	733	87%	402
Black	13	2%	25
American Indian	11	1%	53
Asian	10	1%	22
Pacific Islander	35	4%	64
Some Other Race	18	2%	74
Population Reporting Two or More Races	24	3%	81
Total Hispanic Population	450	53%	377
Total Non-Hispanic Population	393		
White Alone	339	40%	298
Black Alone	13	2%	25
American Indian Alone	7	1%	51
Non-Hispanic Asian Alone	10	1%	22
Pacific Islander Alone	0	0%	10
Other Race Alone	0	0%	10
Two or More Races Alone	24	3%	42
Population by Sex			
Male	492	58%	263
Female	352	42%	275
Population by Age			
Age 0-4	94	11%	103
Age 0-17	189	22%	156
Age 18+	654	78%	241
Age 65+	116	14%	99

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2015 - 2019 .

EJSCREEN ACS Summary Report

Location: User-specified point center at 41.833950, -103.639140
Ring (buffer): 1-miles radius
Description: Gering Solar Facility

	2015 - 2019 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	597	100%	249
Less than 9th Grade	61	10%	142
9th - 12th Grade, No Diploma	53	9%	61
High School Graduate	221	37%	134
Some College, No Degree	159	27%	126
Associate Degree	76	13%	63
Bachelor's Degree or more	26	4%	99
Population Age 5+ Years by Ability to Speak English			
Total	750	100%	363
Speak only English	428	57%	260
Non-English at Home[1+2+3+4]	322	43%	236
[1]Speak English "very well"	302	40%	233
[2]Speak English "well"	5	1%	156
[3]Speak English "not well"	6	1%	127
[4]Speak English "not at all"	9	1%	17
[3+4]Speak English "less than well"	15	2%	127
[2+3+4]Speak English "less than very well"	20	3%	201
Linguistically Isolated Households*			
Total	4	100%	98
Speak Spanish	0	0%	81
Speak Other Indo-European Languages	0	0%	55
Speak Asian-Pacific Island Languages	4	100%	10
Speak Other Languages	0	0%	10
Households by Household Income			
Household Income Base	229	100%	136
< $15,000	24	10%	89
$15,000 - $25,000	45	20%	92
$25,000 - $50,000	46	20%	100
$50,000 - $75,000	43	19%	85
$75,000 +	72	31%	110
Occupied Housing Units by Tenure			
Total	229	100%	136
Owner Occupied	143	62%	118
Renter Occupied	86	38%	121
Employed Population Age 16+ Years			
Total	660	100%	268
In Labor Force	301	46%	212
Civilian Unemployed in Labor Force	4	1%	87
Not In Labor Force	358	54%	182

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of anyrace.
N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified point center at 41.833950, -103.639140
Ring (buffer): 1-miles radius
Description: Gering Solar Facility

	2015 - 2019 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	833	100%	288
English	708	85%	336
Spanish	113	14%	224
French	0	0%	15
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	6	1%	44
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	2	0%	15
Chinese	3	0%	22
Japanese	N/A	N/A	N/A
Korean	0	0%	10
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	0	0%	10
Other Asian	0	0%	10
Tagalog	0	0%	10
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	0	0%	10
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	1	0%	8
Total Non-English	124	15%	443

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A meansnot available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2015 - 2019.
*Population by Language Spoken at Home is available at the census tract summary level and up.

EJSCREEN Census 2010 Summary Report

Location: User-specified point center at 41.833950, -103.639140
Ring (buffer): 1-miles radius
Description: Gering Solar Facility

Summary	Census 2010
Population	757
Population Density (per sq. mile)	202
People of Color Population	300
% People of Color Population	40%
Households	290
Housing Units	315
Land Area (sq. miles)	3.75
% Land Area	98%
Water Area (sq. miles)	0.08
% Water Area	2%

Population by Race	Number	Percent
Total	757	-------
Population Reporting One Race	731	97%
White	604	80%
Black	6	1%
American Indian	19	3%
Asian	2	0%
Pacific Islander	2	0%
Some Other Race	97	13%
Population Reporting Two or More Races	26	3%
Total Hispanic Population	272	36%
Total Non-Hispanic Population	485	64%
White Alone	457	60%
Black Alone	4	1%
American Indian Alone	14	2%
Non-Hispanic Asian Alone	2	0%
Pacific Islander Alone	1	0%
Other Race Alone	0	0%
Two or More Races Alone	7	1%

Population by Sex	Number	Percent
Male	395	52%
Female	362	48%

Population by Age	Number	Percent
Age 0-4	60	8%
Age 0-17	162	21%
Age 18+	595	79%
Age 65+	103	14%

Households by Tenure	Number	Percent
Total	290	
Owner Occupied	190	65%
Renter Occupied	100	35%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, Census 2010 Summary File 1.

United States Census Bureau

QuickFacts

Nebraska; Gering city, Nebraska; Scotts Bluff County, Nebraska

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

All Topics	Nebraska	Gering city, Nebraska	Scotts Bluff County, Nebraska
Population Estimates, July 1 2021, (V2021)	**1,963,692**	**8,435**	**35,745**
PEOPLE			
Population			
Population Estimates, July 1 2021, (V2021)	**1,963,692**	**8,435**	**35,745**
Population estimates base, April 1, 2020, (V2021)	1,961,504	8,518	36,084
Population, percent change - April 1, 2020 (estimates base) to July 1, 2021, (V2021)	0.1%	-1.0%	-0.9%
Population, Census, April 1, 2020	1,961,504	8,564	36,084
Population, Census, April 1, 2010	1,826,341	8,500	36,970
Age and Sex			
Persons under 5 years, percent	6.4%	7.6%	6.3%
Persons under 18 years, percent	24.6%	25.3%	24.8%
Persons 65 years and over, percent	16.4%	18.8%	19.7%
Female persons, percent	49.7%	50.6%	51.0%
Race and Hispanic Origin			
White alone, percent	87.7%	90.3%	92.3%
Black or African American alone, percent (a)	5.3%	0.6%	1.2%
American Indian and Alaska Native alone, percent (a)	1.6%	0.8%	3.9%
Asian alone, percent (a)	2.8%	0.6%	0.9%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%	0.5%	0.1%
Two or More Races, percent	2.4%	5.7%	1.6%
Hispanic or Latino, percent (b)	12.0%	24.4%	25.2%
White alone, not Hispanic or Latino, percent	77.4%	72.8%	70.6%
Population Characteristics			
Veterans, 2016-2020	113,567	459	2,110
Foreign born persons, percent, 2016-2020	7.4%	2.7%	3.7%
Housing			
Housing units, July 1, 2021, (V2021)	854,328	X	16,479
Owner-occupied housing unit rate, 2016-2020	66.2%	73.0%	66.7%
Median value of owner-occupied housing units, 2016-2020	$164,000	$139,600	$130,400
Median selected monthly owner costs -with a mortgage, 2016-2020	$1,412	$1,306	$1,250
Median selected monthly owner costs -without a mortgage, 2016-2020	$539	$496	$493
Median gross rent, 2016-2020	$857	$821	$805
Building permits, 2021	10,723	X	9
Families & Living Arrangements			
Households, 2016-2020	766,663	3,089	14,657
Persons per household, 2016-2020	2.44	2.53	2.39
Living in same house 1 year ago, percent of persons age 1 year+, 2016-2020	84.7%	83.9%	84.8%
Language other than English spoken at home, percent of persons age 5 years+, 2016-2020	11.8%	12.4%	12.3%
Computer and Internet Use			
Households with a computer, percent, 2016-2020	91.5%	90.0%	87.9%
Households with a broadband Internet subscription, percent, 2016-2020	85.6%	87.4%	78.8%
Education			
High school graduate or higher, percent of persons age 25 years+, 2016-2020	91.6%	92.6%	88.7%
Bachelor's degree or higher, percent of persons age 25 years+, 2016-2020	32.5%	26.5%	23.1%

Health			
With a disability, under age 65 years, percent, 2016-2020	7.7%	7.8%	9.6%
Persons without health insurance, under age 65 years, percent	⚠ 8.3%	⚠ 12.4%	⚠ 13.1%
Economy			
In civilian labor force, total, percent of population age 16 years+, 2016-2020	69.0%	64.8%	63.6%
In civilian labor force, female, percent of population age 16 years+, 2016-2020	64.6%	65.9%	58.5%
Total accommodation and food services sales, 2017 ($1,000) (c)	3,957,818	13,772	72,754
Total health care and social assistance receipts/revenue, 2017 ($1,000) (c)	16,060,437	27,211	385,662
Total transportation and warehousing receipts/revenue, 2017 ($1,000) (c)	7,483,576	D	69,365
Total retail sales, 2017 ($1,000) (c)	31,214,697	32,324	571,311
Total retail sales per capita, 2017 (c)	$16,283	$3,913	$15,793
Transportation			
Mean travel time to work (minutes), workers age 16 years+, 2016-2020	18.9	14.1	13.5
Income & Poverty			
Median household income (in 2020 dollars), 2016-2020	$63,015	$62,764	$53,433
Per capita income in past 12 months (in 2020 dollars), 2016-2020	$33,205	$31,029	$28,770
Persons in poverty, percent	⚠ 10.8%	⚠ 8.4%	⚠ 12.4%
BUSINESSES			
Businesses			
Total employer establishments, 2020	54,791	X	1,044
Total employment, 2020	866,139	X	12,468
Total annual payroll, 2020 ($1,000)	41,198,526	X	485,703
Total employment, percent change, 2019-2020	1.2%	X	2.1%
Total nonemployer establishments, 2019	140,567	X	2,522
All employer firms, Reference year 2017	43,344	131	817
Men-owned employer firms, Reference year 2017	23,470	55	402
Women-owned employer firms, Reference year 2017	6,340	27	102
Minority-owned employer firms, Reference year 2017	2,101	S	38
Nonminority-owned employer firms, Reference year 2017	37,399	98	632
Veteran-owned employer firms, Reference year 2017	2,656	S	35
Nonveteran-owned employer firms, Reference year 2017	35,247	105	610
GEOGRAPHY			
Geography			
Population per square mile, 2020	25.5	1,693.8	48.8
Population per square mile, 2010	23.8	1,977.3	50.0
Land area in square miles, 2020	76,817.87	5.06	739.61
Land area in square miles, 2010	76,824.17	4.30	739.40
FIPS Code	31	3118580	31157

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info ⓘ icon to th row in TABLE view to learn about sampling error.

The vintage year (e.g., V2021) refers to the final year of the series (2020 thru 2021). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2016-2020 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2020 5-year ACS Comparison Guidance page.

Fact Notes

(a) Includes persons reporting only one race
(c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b) Hispanics may be of any race, so also are included in applicable race categories

Value Flags

- Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in open ended distribution.
F Fewer than 25 firms
D Suppressed to avoid disclosure of confidential information
N Data for this geographic area cannot be displayed because the number of sample cases is too small.
FN Footnote on this item in place of data
X Not applicable
S Suppressed; does not meet publication standards
NA Not available
Z Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and P Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.