Campbell County Wind Farm 2

Draft Environmental Assessment

Campbell County, South Dakota

Western Area Power Administration

DOE/EA-2062

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WAPA has determined that this Draft Environmental Assessment meets the policies of the National Environmental Policy Act of 1969 (As Amended Through P.L. 118-5, Enacted June 3, 2023), the Council on Environmental Quality's National Environmental Policy Act Implementing Regulations (40 C.F.R. Part 1500), and the Department of Energy's National Environmental Policy Act Implementing Procedures (10 C.F.R. Part 1021).

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List of Abbreviations

Acronym or Abbreviation	Definition
2015 PEIS	2015 *Upper Great Plains Wind Energy Programmatic Environmental Impact Statement*
ac	acre
ADLS	Aircraft Detection Lighting System
Analysis Area	Proposed Project Area and 2-mile buffer, collectively
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
AU	avian use
AWBP	Aransas/Wood Buffalo whooping crane population
BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
Campbell County Wind Farm 1	Existing facility west of the Proposed Project Area
CCWF2	Campbell County Wind Farm 2, LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
collector lines	underground system of electrical collection cables
CWA	Clean Water Act

dBA	A-weighted decibels
DOE	Department of Energy
EA	Environmental Assessment
ECPG	*Eagle Conservation Plan Guidance*
EMF	electric and magnetic field
EO	Executive Order
ESA	Endangered Species Act of 1973
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
fiber cables	fiber optic cables
FMP	Fall Migration Period
FPPA	Farmland Protection Policy Act
FSA	Farm Service Agency
ft	foot
G	Gauss
gen-tie line	230-kilovolt overhead transmission line
GHGs	Greenhouse Gases
GIA	Generator Interconnection Agreement
HAP	hazardous air pollutant
HF	high frequency
ICNIRP	International Commission on Non-ionizing Radiation Protection

IEEE	Institute of Electrical and Electronics Engineers
IPaC	Information for Planning and Consultation
KOP	key observation point
kV	kilovolt
LF	low frequency
m/s	meters per second
MET	meteorological
mG	milligauss
mi	mile
mph	miles per hour
MW	megawatt
MWh	megawatt hour
NAAQS	National Ambient Air Qualité Standards
NCA	National Climate Assessment
NEPA	National Environmental Policy Act of 1969
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NLCD	National Land Cover Database
NLEB	Northern Long-eared bat
No Action Alternative	The alternative where WAPA, SPP, and the Proposed Project would not enter a GIA

NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWP	Nationwide Permit
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
POI	point of interconnection
prairie grouse	greater prairie-chicken and sharp-tailed grouse, collectively
Proposed Action Alternative	The alternative where WAPA grants the Proposed Project's interconnection request and enters a GIA with the Proposed Project, and modifies an existing bay at the WAPA-owned Campbell County Substation to accommodate the interconnection
Proposed Project	WAPA's proposed federal action and the connected action: construction and operation of Campbell County Wind Farm 2
Proposed Project Area	The area being considered for development of the Campbell County Wind Farm 2 Project, located within a roughly 19,000-acre area
PSD	Prevention of Significant Deterioration
RWE	RWE Clean Energy
SC-GHG	Social cost of greenhouse gas emissions
SCADA	supervisory control and data acquisition
SDBWG	South Dakota Bat Working Group
SDDANR	South Dakota Department of Agricultural and Natural Resources
SDDOT	South Dakota Department of Transportation
SDGFP	South Dakota Game, Fish and Parks

SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SPCC Plan	Spill Prevention, Control and Countermeasure Plan
SPP	Southwest Power Pool
SWPPP	Storm Water Pollution Prevention Plan
Tariff	Open Access Transmission Service Tariff
TCP	traditional cultural property
tpy	tons per year
Tribes	Tribes consulted for the Proposed Project, collectively
UGP	Upper Great Plains
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WAPA	Western Area Power Administration
WCS	Wildlife Conservation Strategy
WEI	Wind Erodibility Index
WEG	*Land-based Wind Energy Guidelines*
WEST	Western EcoSystems Technology, Inc.

WOTUS	Waters of the U.S.
WQC	Water Quality Certification

1.0 Introduction

Western Area Power Administration (WAPA) is one of four power-marketing administrations within the U.S. Department of Energy (DOE). WAPA's mission is to "safely provide reliable, cost-based hydropower and transmission to our customers and the communities we serve." WAPA's customers include federal and state agencies, cities and towns, rural electric cooperatives, public utility districts, irrigation districts and Native American tribes. WAPA's customers, in turn, provide retail electric service to millions of consumers in the west.

Transmission capacity above the amount WAPA requires for the delivery of long-term firm capacity and energy to current contractual electrical service customers of the federal government is offered in accordance with its Open Access Transmission Service Tariff (Tariff). Since October 2015, WAPA's Upper Great Plains (UGP) Region has been a transmission owner member of the Southwest Power Pool (SPP), and its qualifying facilities are under the functional control of SPP. Excess transmission capacity on and interconnection to WAPA-UGP's facilities must be done in accordance with the SPP Tariff.

Campbell County Wind Farm 2, LLC (CCWF2), a subsidiary of RWE Clean Energy (RWE), proposes to construct Campbell County Wind Farm 2, a 98.6-megawatt (MW) wind farm. The Proposed Project would be located within a roughly 12,000-acre (ac) area (Proposed Project Area) where CCWF2 has entered into agreements with local landowners interested in participating in Campbell County Wind Farm 2 (Figure 1.1-1). The area under consideration for the wind farm is located southwest of the town of Herreid in Campbell County, South Dakota, and five miles (mi) east of the Missouri River. As described further in Section 2.1 (*Proposed Action Alternative*), the location of facilities within this Proposed Project Area have been further refined based on a variety of considerations. CCWF2 submitted an interconnection request to SPP to connect the Proposed Project to WAPA-UGP's transmission system at the Bismarck to Glenham 230-kilovolt (kV) transmission line at the existing Campbell County Substation.

As part of its mission to provide transmission service to customers and communities, WAPA must also consider several mandates in which wind energy development is likely a major component, including but not limited to:

- Executive Order (EO) 13212, "Actions to Expedite Energy-Related Projects," directing Federal agencies to expedite their review of permits or to take other actions that will increase the production, transmission, or conservation of energy while maintaining safety, public health, and environmental protections.
- The Energy Policy Act of 2005, directing the DOE, among other objectives, to conduct programs to both promote the diversity of the energy supply and decrease the environmental impact of energy-related activities.
- Goals and objectives of the *President's Climate Action,* issued in June 2013, including reducing domestic carbon emissions.

- Objectives 4.1 and 4.2 of the DOE's 2020 to 2025 Strategic Plan, which includes reducing Greenhouse Gas (GHG) emissions and promoting the development of renewable energy projects.
- All States in the UGP Region have developed renewable portfolio standards that require electricity providers to obtain a minimum percentage of their power from renewable energy resources by a certain date or have identified nonbinding goals for adoption of renewable energy.

1.1 National Environmental Policy Act

WAPA's decision whether to enter into an Interconnection Agreement with CCWF2 is a discretionary federal action by WAPA and, thus, is subject to the National Environmental Policy Act of 1969 (NEPA). NEPA requires federal agencies to consider the potential effects of its proposed actions and any alternatives on the human environment, and to take action to protect, restore, and enhance the environment during and after construction.

WAPA considers and acts upon requests for interconnection to WAPA's transmission facilities, but does not directly authorize or permit developer projects, including wind energy development projects. As part of its evaluation, WAPA uses the NEPA process to assess the potential environmental impacts associated with the project developer's entire proposed wind project, in addition to WAPA's requirement to address the interconnection itself.

This Environmental Assessment (EA) analyzes and discloses potential impacts of WAPA's decision regarding the interconnection request and tiers off the analysis conducted in the 2015 *Upper Great Plains Wind Energy Programmatic Environmental Impact Statement* (2015 PEIS), a document prepared jointly by WAPA and the U.S. Fish and Wildlife Service (USFWS; 2015).

The 2015 PEIS analyzed the common environmental impacts resulting from development of wind energy projects, the effectiveness of Best Management Practices (BMPs), avoidance of sensitive areas, and mitigation measures in reducing potential impacts. Impacts and mitigation were analyzed in the 2015 PEIS for each environmental resource and all components of wind energy projects were addressed, including turbines, transformers, underground systems of electrical collection cables (collector lines), overhead lines, access roads, substation installations, and operational and maintenance activities. This tiered EA incorporates the common environmental impacts, by reference, and provides a focused review of Project-specific resources (e.g., soil type, watershed characteristics, wildlife habitat, vegetation, viewshed, public concerns, threatened and endangered species, and cultural resources) and Project-specific design. The 2015 PEIS common environmental impacts were reviewed and remain valid for this project. By tiering off the 2015 PEIS, the wind farm would be planned, constructed, operated, and decommissioned consistent with the findings and avoidance, minimization, and mitigation requirements of this EA and the 2015 PEIS. The 2015 PEIS is available online at: https://www.wapa.gov/regions/UGP/Environment/Pages/ProgrammaticWindEIS.aspx

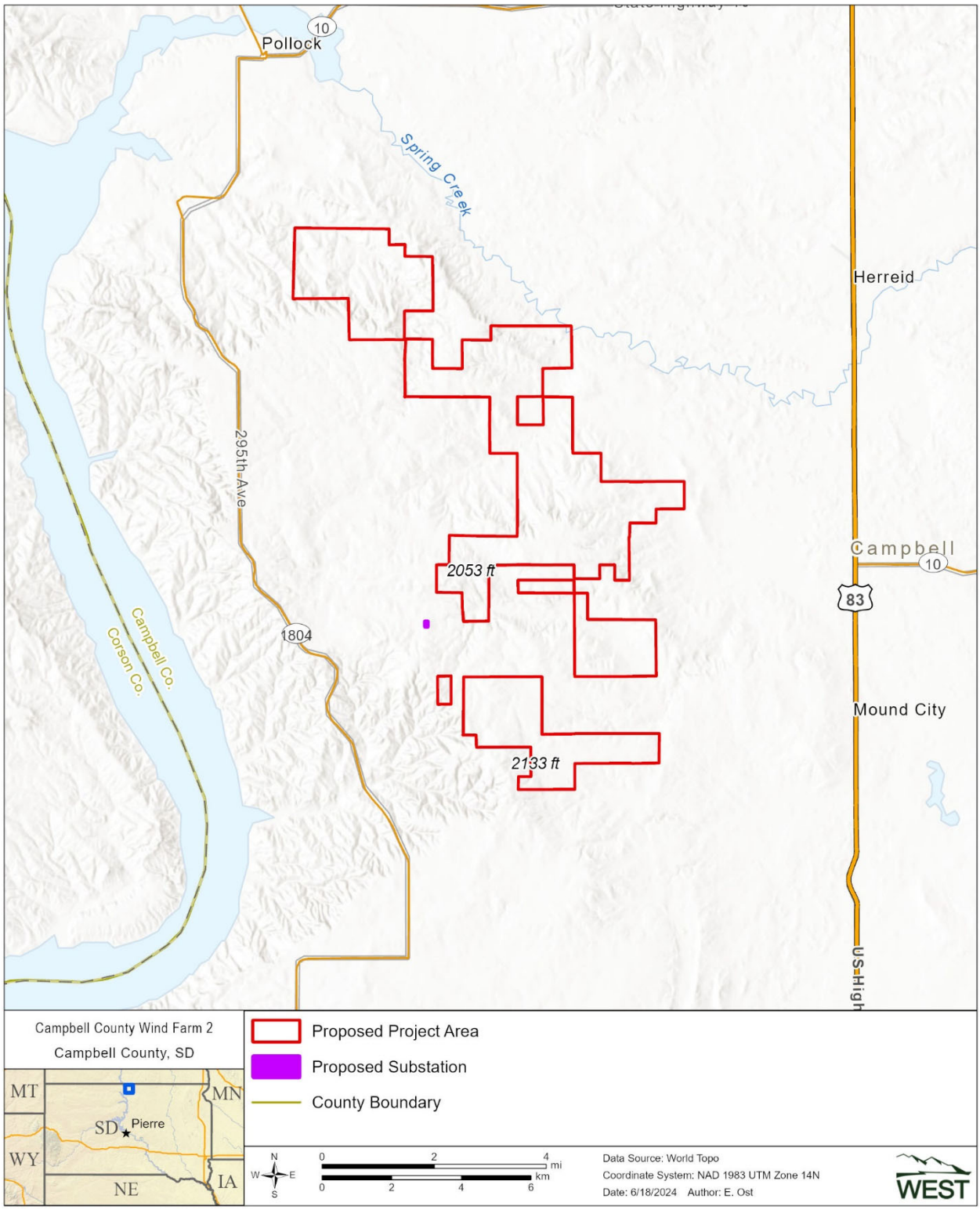

Figure 1.1-1 Location of the proposed Campbell County Wind Farm 2.

1.2 Purpose and Need for Federal Action

WAPA's purpose and need is to consider and respond to the interconnection request by CCWF2, in accordance with the SPP Tariff and the Federal Power Act, as described in Section 1.1.1 of the 2015 PEIS.

1.3 Goals and Objectives of Campbell County Wind Farm 2, LLC

CCWF2's goals and objectives for the Project are to provide an economically sustainable, reliable, and cost-effective source of renewable energy to energy users. To accomplish these goals and objectives, the wind farm must be technically, environmentally, and economically feasible. For viability, CCWF2 needs:

- a reliable wind resource;
- landowners willing to participate in the Proposed Project;
- ecological conditions that allow the Proposed Project to comply with applicable environmental regulations at a reasonable cost;
- a Generator Interconnection Agreement (GIA) with WAPA and SPP to transmit power to a power purchaser; and
- a customer to purchase the power that is generated by the Proposed Project.

2.0 Description of Proposed Action and No Action Alternatives

This EA analyzes two alternatives: the Proposed Action Alternative and the No Action Alternative, defined below.

2.1 Proposed Action Alternative

The Proposed Action Alternative is for WAPA to:

- Grant the Proposed Project's interconnection request and enter a GIA with CCWF2 and SPP.
- Modify an existing bay at the WAPA-owned Campbell County Substation to accommodate the interconnection.

Under this alternative, CCWF2 would construct and operate the Campbell County Wind Farm 2, as described below. To accommodate the interconnection, WAPA has determined that the wind facility is a connected action to the proposed federal action. This alternative evaluates both WAPA's proposed federal action and the connected action, collectively referred to as the Proposed Project.

2.1.1 Proposed Project Description and Construction

The Proposed Project components would include:

- 29 wind turbines;
- up to 10.1 mi of new access roads;
- four temporary meteorological (MET) towers;
- one permanent MET tower;
- potential installation of Aircraft Detection Lighting System (ADLS) at the turbines and permanent MET tower;
- up to 24.1 mi of underground electrical collector systems;
- a fiber optic communication system;
- modification of an existing bay at the WAPA-owned Campbell County Substation to accommodate the point of interconnection (POI);
- a new CCWF2-owned 2.1-ac substation near the WAPA POI;
- up to 700 feet (ft) of 230-kV overhead transmission line (gen-tie line) from the substation to the WAPA POI;
- a 20.2-ac temporary laydown/staging area and concrete batch plant; and
- a new 0.2-ac operations and maintenance (O&M) facility.

Section 3.3 of the 2015 PEIS provides an overview of typical wind farm site construction activities and Section 3.5 describes decommissioning, both of which entail similar footprints. Both construction and decommissioning activities conducted by the Proposed Project would be similar to those described in the PEIS. Project-specific details are described below. Construction activities would last ~ 15-21 months, and decommissioning activities would last ~ 12-15 months. Proposed Project operation would continue for approximately 35 years.

Table 2.1-1 summarizes the temporary and permanent footprint of each Proposed Project component based on the preliminary layout for the proposed Project (Figure 2.1-1). Minor turbine shifts and infrastructure moves could occur based on tribal, agency, and public comments on the Draft EA, negotiations with landowners, geotechnical evaluations, field surveys, and the results of the analysis in this document. The Final EA will account for those minor changes. If additional shifts should become necessary following publication of the Final EA, CCWF2 would notify WAPA of these shifts to determine whether additional analysis is necessary.

Table 2.1-1. Estimated footprint for the Campbell County Wind Farm 2 components.

Project Component	Temporary Land Requirements - Construction and Decommissioning		Permanent Land Requirements - Operations	
	Dimensions	Total Area (acres)[a]	Dimensions	Total Area (acres)
Turbines[b]	Approx. 150-foot radius area around each turbine	43.4	55-foot radius around each turbine	6.7
New access roads	50-foot width centered on road centerline	43.8	16-foot width centered on road centerline	20.8
Improved access roads	40-foot width centered on road centerline	80.4	16-foot width centered on road centerline	37.8
Collector lines and collocated fiber optic communication system	100-foot width centered on route centerline	248.8	N/A	N/A
Proposed substation	Approx 600-foot by 500-foot	2.1	Approx 230-foot by 110-foot	0.6
Overhead transmission line[c]	150-foot width centered on route centerline	1.5	To be determined based on pole placement	TBD
Point of interconnection (Western Area Power Administration facility)	N/A	N/A	To be determined	0.8
Temporary Met Towers (4), temporary LiDAR	125-foot radius around the tower location, 6-foot by 6-foot LiDAR	1.3	82-foot radius around the tower location	1.0
Permanent MET tower	Approx 112-foot by 112-foot	0.4	Approx 12-foot by 12-foot	<0.1
Laydown/staging/batch plant area [d]	Approx 1,600-foot by 770-foot	20.2	N/A	N/A
Operations and maintenance building	Approx 200-foot by 100-foot	0.2	Approx 150-foot by 65-foot	0.2
Project Total[e]	—	441.9	—	67.9
Project Total (adjusted for overlapping components)[e]	—	**407.1**	—	**67.1**

a. Temporary acreage calculation is the temporary land requirements minus long-term (operation) land requirements.

b. Acreages in the table reflect the actual number of Proposed Project components. Since more than one location is being considered for some components, impacts that could occur from all potential locations are assessed in Section 3.0 of this Environmental Assessment.

c. Land use and vegetation within the proposed right-of-way for the overhead transmission line is expected to be returned to pre-construction conditions, except for land replaced by pole installation.

d. Area shown is the maximum size of potential disturbance.

e. Sums may not equal totals shown due to rounding.

Project facilities within the Proposed Project Area are sited to maximize energy production while avoiding or reducing potential cultural and tribal, wetland, wildlife, visual, sound, and other impacts, to the greatest extent possible and in compliance with landowner agreements,

government regulations, state recommendations, and county setback and siting requirements. These requirements are shown in Table 2.1-2.

Table 2.1-2. Project siting requirements and recommendations.

Agency	Requirement/Recommendation
Setbacks	
South Dakota Game, Fish and Parks (SDGFP) Recommendations	Untilled grasslands, large grassland blocks (160 acres or more) and grasslands with native plant species are of particular importance and special care should be taken to avoid placing turbines in these areas. SDGFP recommends avoiding siting turbines in grassland habitats, particularly untilled native grasslands.
	SDGFP recommends avoiding siting turbines in wetlands or within wetland complexes (multiple wetland basins adjacent to each other).
	If siting of project infrastructure in grassland habitats cannot be avoided, SDGFP recommends a 1-mile setback of project infrastructure from active prairie grouse leks to minimize impacts to prairie grouse.
	To avoid impacts to tree roosting bats, SDGFP recommends siting turbines at least 1,000 feet away from suitable bat habitat (e.g., forested areas, woody draws).
	SDGFP recommends not siting turbines within or immediately adjacent to prairie dog colonies to reduce disturbance to habitat, as well as to reduce the risk of collision for avian predators that may forage in prairie dog colonies.
Campbell County Zoning Ordinance Requirements	Distance from an incorporated municipality shall be at least 5,280 feet or one mile. Distance to be measured from the incorporated municipality boundary to the base of the wind energy system turbine.
	Distance from existing off-site residences, businesses, churches, and buildings owned and/or maintained by a governmental entity shall be at least 3,960 feet. Distance from on-site or lessor's residence shall be at least 500 feet. Distance to be measured from the wall line of the neighboring principal building to the base of the wind energy system turbine.
	Distance from any property line shall be 500 feet or 110% of the height of the wind turbine, whichever distance is greater. The vertical height of the wind turbine is measured from the ground surface to the tip of the blade when in a fully vertical position. The horizontal setback shall be measured from the base of the turbine to the adjoining property line unless wind easement has been obtained from adjoining property owner.
	The turbines shall be spaced no closer than three rotor diameters (measurement of blades tip-to-tip) within a straight line. If required during final micro-siting of the turbines to account for topographic conditions, up to 10% of the turbines may be sited closer than the above spacing, but the permittees shall minimize the need to site the turbines closer.
	Distance from centerline of public roads shall be 500 feet or 110% of the height of the wind turbine, whichever distance is greater.
Noise	
Campbell County Zoning Ordinance Requirements	Noise level shall not exceed 45 A-weighted decibels, average A-weighted sound pressure including constructive interference effects at the perimeter of the principal and accessory structures of existing off-site residences, businesses, and buildings.

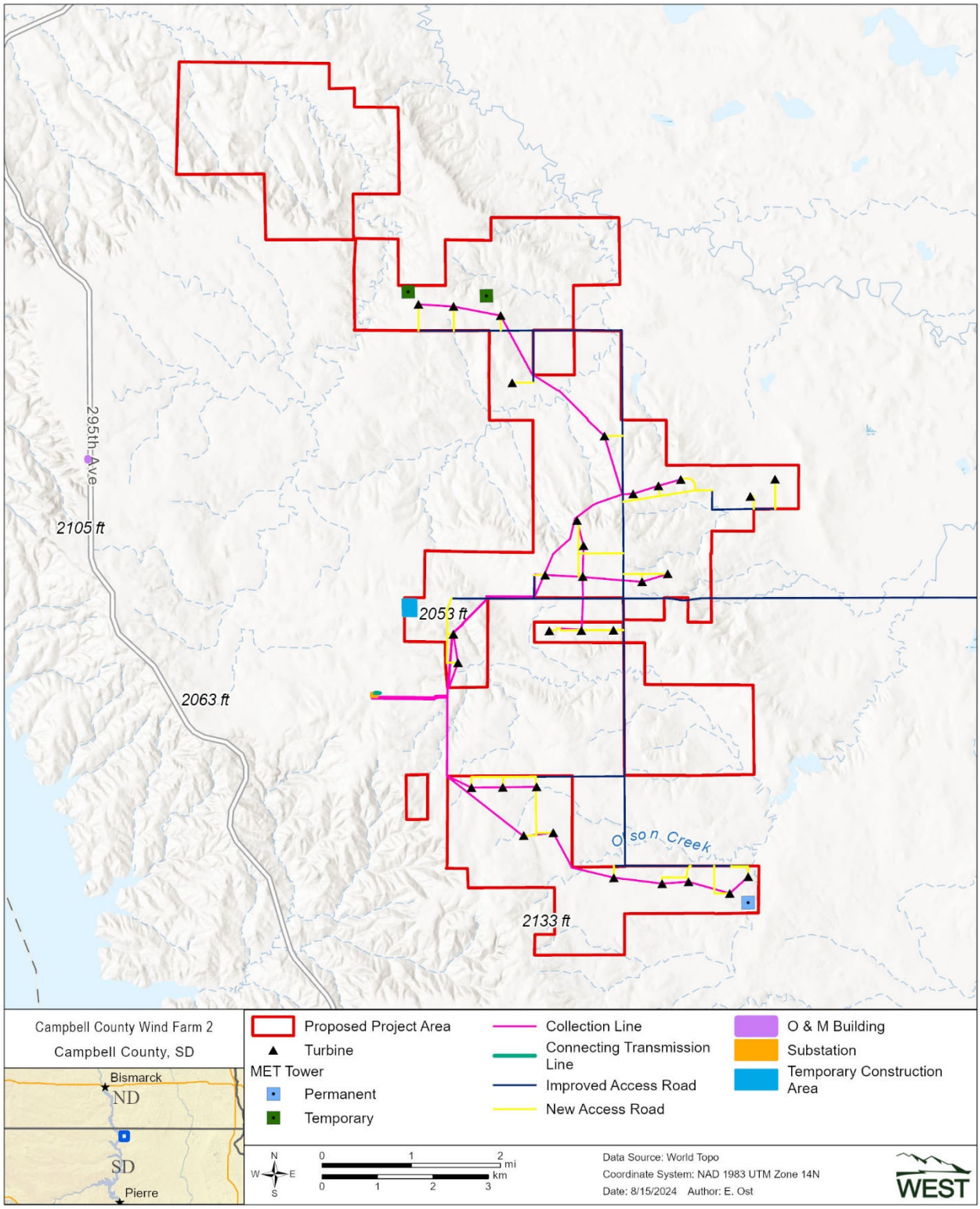

Figure 2.1-1. Proposed Project layout.

2.1.1.1 Point of Interconnection

To accommodate the interconnection request, WAPA would construct a new POI along the existing Fort Bismarck to Glenham 230-kV transmission line at an existing bay within the existing Campbell County Substation. The POI would occupy an estimated 0.8 ac and house equipment, such as breakers, relays, communications and control equipment, and aboveground bus structures. The POI would be constructed in accordance with the GIA between WAPA and CCWF2. WAPA may construct a temporary tap at the Campbell County Substation within the existing proposed Project footprint to enable the Project to interconnect while the substation is being upgraded. The temporary tap would be constructed in accordance with a construction agreement between WAPA and CCWF2.

2.1.1.2 230-kilovolt Overhead Transmission Line

Up to 700 ft of the gen-tie line would connect the Proposed Project collection substation to WAPA's new POI on the south side of the existing WAPA substation. The area around the POI will contain the transmission line corridor and appurtenant equipment.

CCWF2 would utilize a 150-foot-wide temporary workspace centered on the route to construct the gen-tie line. This workspace would contain vehicles and equipment to construct the gen-tie poles and string the conductor. Areas temporarily disturbed during construction would be restored to preconstruction land use.

2.1.1.3 Wind Turbines

This EA is evaluating 31 turbine locations: 29 primary locations and two alternate locations. The Proposed Project plans to install only 29 wind turbines. CCWF2 has proposed to install General Electric (GE) 3.4 MW-140 turbines, each turbine having a hub height of 322 ft and a rotor diameter of 459 ft, with a corresponding blade length of 204 ft. The total rotor-swept area for each turbine would be 165,700 sq ft. The tip height of the turbine blade in the 12 o'clock position would be almost 551 ft.

CCWF2 has coordinated with the Federal Aviation Administration (FAA) and received a Determination of No Hazard to Air Navigation for all turbines and proposed meteorological (MET) towers. Turbine towers would be painted a non-glare, off-white or gray color, and be marked and lit in accordance with *FAA circular 70/7460-1M, Obstruction Marking and Lighting*.

The wind turbine foundations are typically made of concrete and steel and buried underground at a depth of up to 10 ft, except for approximately 12 inches that would remain aboveground to allow the tower to be bolted to the foundation. A transformer, called a "step-up transformer," would be installed at the base of each wind turbine to increase the output voltage of the wind turbine to match the voltage of the power collection system (34.5 kV).

During construction, an approximately 150-ft radius area would be cleared to lay down the rotors and maneuver cranes during turbine assembly. After construction, a 55-ft radius area

around each turbine would be maintained and graveled to prevent potential damage to the underground foundations and cabling. Areas temporarily disturbed during construction would be restored to preconstruction land use.

2.1.1.4 Access Roads and Crane Paths

CCWF2 anticipates using approximately 18 mi of existing public roads, private roads, and field paths, plus constructing up to 10.1 mi of new private access roads to reach Proposed Project components. Existing public roads may be temporarily widened up to 40 ft before or during construction to accommodate heavy equipment and a gravel cap would be added. New access roads would be constructed in a 50-foot-wide right-of-way. After construction, these roads would be narrowed to approximately 16 ft in width, or their original width, and would be all-weather, gravel surfaced. Roads should include appropriate drainage controls, such as culverts. Gates would be installed where access roads cross landowner fences, with landowner approval.

Separate access may be required for the cranes used to erect the turbines. Because large construction cranes may spend as little as one day at each turbine site before moving on to the next, cranes are sometimes moved cross-country rather than using developed access roads. Where cranes are required to travel cross-country, workers would lay down some form of cribbing, bedding, or mats to support the weight of the crane, minimizing impacts to the underlying ground. The cribbing, bedding, or mats would be removed immediately after the crane passes by to be re-used elsewhere.

Section 3.10 of the 2015 PEIS describes the common transportation operations necessary for the construction and operation of a commercial wind farm, while Section 4.1.3.4 of the 2015 PEIS describes several types of roads to be considered for constructing a wind farm.

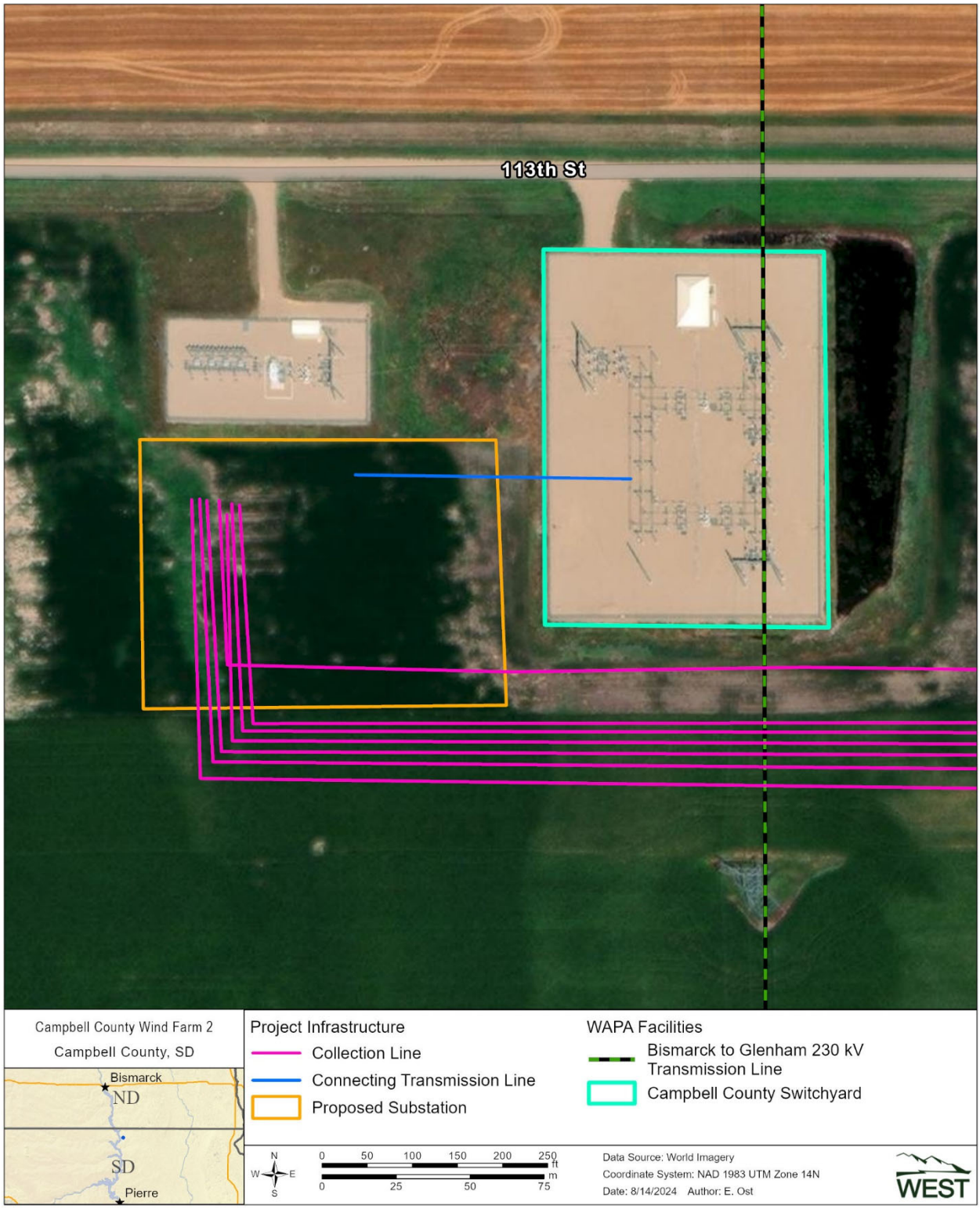

Figure 2.1-2. Proposed interconnection at Campbell County Substation.

2.1.1.5 Laydown Yard, Staging Area, and Concrete Batch Plant (Temporary Construction Area)

CCWF2 would grade a temporary construction area up to 20.2 ac in size to accommodate a construction laydown and staging area, as well as use for a temporary concrete batch plant. The laydown and staging area would provide parking for construction personnel and a staging area for large equipment deliveries. The laydown yard and staging area would also be used to conduct maintenance on construction equipment and vehicles and to store fuel. Figure 3.3 of the 2015 PEIS shows an example of a temporary work/staging area.

Within the temporary construction area, CCWF2 intends to construct a temporary concrete batch plant. The temporary batch plant would include mixing equipment, storage tanks, and silos for material storage, sand, and gravel. The temporary batch plant would also include designated areas for loading, unloading, and washing. Areas temporarily disturbed would be restored to preconstruction land use.

2.1.1.6 Operations and Maintenance Facility

CCWF2 would construct and maintain a permanent 0.2-ac O&M facility. The O&M facility would be located near the existing O&M Facility for Campbell County Wind Farm 1, west of the Proposed Project Area. The new O&M facility would include a vehicle parking area and a single- or two-story building that would house operating personnel, offices, operations and communication equipment, parts storage, and a maintenance area. The Proposed Project would be operated locally from a control room in the O&M building.

2.1.1.7 Meteorological Towers

CCWF2 proposes to construct one permanent meteorological (MET) tower and four temporary MET towers. The permanent MET tower is expected to be free-standing with no guy wires, have a height of 322 feet and use markings and lighting as stipulated by the FAA determination for the Proposed Project. It would remain in place throughout the life of the Proposed Project.

For site calibration, pairs of temporary met towers would be constructed at two turbine locations. One tower will be located upwind of the turbine and one tower will be placed at the turbine location (prior to the turbine installation). Once sufficient data is available the towers on the turbine locations will be decommissioned and removed from the Proposed Project Area, prior to construction of the turbine. After sufficient data is collected, the two temporary towers upwind of turbine locations would be taken down and removed from the Proposed Project Area. A temporary mobile LiDAR equipment would be located at the southwestern corner of the Proposed Project Area and encompass a 6 x 6-foot area.

2.1.1.8 Aircraft Detection Lighting System

CCWF2 is coordinating with the FAA to determine whether installation of an ADLS would be needed for the Proposed Project turbines and permanent MET tower. ADLS enables the turbine

and MET tower lighting to be turned off unless an aircraft is in the vicinity. ADLS uses radar to detect aircraft a specified distance away. When aircraft are detected, the ADLS sends a signal that turns on the turbine and MET tower lighting. Once the aircraft has moved out of the detection area, the ADLS sends out a signal to turn the lights back off. Proposed land requirements of the turbines and MET towers would accommodate ADLS equipment construction if it is installed.

2.1.1.9 Underground Collection Lines and Communication System

From the step-up transformers at each turbine, generated power would run through collector lines to the Proposed Project substation. The Proposed Project substation would increase the voltage to 230 kV to tie into WAPA's transmission system. Up to 24.1 mi of underground circuits would be installed, either by trenching, plowing, or directionally boring the cables underground. Some of the construction disturbance for the underground collection system would be shared with construction disturbance for other Proposed Project facilities where these facilities overlap. The ground surface above the lines would be revegetated, but no trees would be permitted above the lines. The collector lines would be buried to a minimum depth of 48 inches with marking tape and tracer wire to meet the appropriate national electrical code. CCWF2 would register the appropriate underground facilities with the South Dakota One-Call system.

CCWF2 would install fiber optic cables (fiber cables) to link each turbine to the collection substation. The fiber cables allow the turbines, collection substation, and electrical grid to communicate as part of supervisory control and data acquisition (SCADA), a system to monitor safety and control mechanisms. The SCADA system also allows the Proposed Project to be remotely monitored, which increases Proposed Project oversight and performance and reliability of the turbines. The electrical collection system and fiber cables would be placed in the same trench and would include occasional aboveground junction boxes.

Additionally, up to 700 ft of communications fiber cable would be installed between the POI and Proposed Project collection substation.

2.1.2 Proposed Project Operation and Maintenance

Section 3.4 of the 2015 PEIS describes the typical activities that would occur during operation and maintenance of a wind project. Similar types of activities would occur for the Proposed Project.

Construction of the Proposed Project is expected to begin by Q2 of 2025 at the earliest and last for approximately two years, with an estimated commercial operation by Q4 2026. The expected operational life of the Proposed Project is 35 years.

The Proposed Project would be operated locally from the control room in the proposed O&M building, located southwest of Herreid, South Dakota. A permanent staff of four to five on-site personnel would provide O&M support activities to the Proposed Project.

2.1.2.1 Proposed Project Substation

Operation and maintenance associated with the Proposed Project substation would include remote monitoring, in-person inspections, online testing, and vegetation removal within the fenced substation site. CCWF2 may occasionally power-off the substation to complete testing, maintenance, and cleaning, which would otherwise be too dangerous to do when the substation is energized. Equipment replacement would occur on an as-needed basis (e.g., due to damage or failure). All repair work would occur within the fenced 0.2-ac area.

2.1.2.2 230-kilovolt Overhead Transmission Line

Operation and maintenance of the gen-tie line would include visual inspections of the conductor and pole structures and replacing these facilities when necessary. Inspections would occur on foot, due to the short distance, within the existing easement. In rare instances, inspectors may need to use a bucket truck or climb the transmission structures. Repairs and replacements would be accomplished within the easement area using standard equipment, such as bucket trucks. Bird diverters would be maintained for the life of the gen-tie line. Maintenance of vegetation within the easement may include periodic tree and bush trimming, application of herbicide, or both.

2.1.2.3 Point of Interconnection

WAPA would retain ownership and management of the Campbell County Substation. CCWF2 would coordinate with WAPA on operation and maintenance of the gen-tie line on WAPA property.

2.1.2.4 Wind Turbines

Each wind turbine would include a SCADA operations and communications system that allows automated independent and remote operation of the turbine. The SCADA data provides detailed operating and performance information for each turbine, allowing real-time control and continuous monitoring to ensure optimal operation and identification of potential problems. A local wind technician would be either on-site or available on-call to respond in the event of emergency notification or critical outage.

Turbines would operate above the manufacturer's cut-in speed (when winds are at 3.0 meters/second (m/s) or 6.7 miles per hour [mph]) except when time-of-year restrictions apply to protect sensitive species, at which point higher cut-in speeds would be implemented with blades feathered below cut-in speeds (i.e., rotated so as not to turn). Turbines would also be feathered when certain wind speeds are exceeded for safety reasons (as determined by the manufacturer). Any additional curtailment needed for federally protected species would be implemented based on risk and required conservation measures set forth in the 2015 PEIS, Programmatic Biological Assessment (PBA), and/or through Endangered Species Act (ESA) consultation with the USFWS (see Section 3.5).

A preventative maintenance and inspection schedule would be implemented for the Proposed Project. Maintenance of the wind turbines would include visual turbine inspections, remote activities, such as turbine resets and troubleshooting, and other upkeep activities. All major components of the wind turbines would undergo routine maintenance on schedules established by the component manufacturer. Routine maintenance activities occur biannually. Routine maintenance would first occur one month after commercial operation has begun. After that, maintenance would be performed at 6- and 12-month intervals. Additional service and repairs would be done as needed. In most cases, this would involve replacing lubricating oils and coolants in transmissions and motors and using small amounts of grease, lubricants, paints, and/or coatings for corrosion control. Turbine maintenance activities would be conducted at turbine locations.

On occasion, turbines can experience malfunctions, such as equipment failure, which require non-routine maintenance work. Over the life of the turbines, some mechanical components may need repair or replacement; however, most turbine designers construct their turbines in modular fashion. Thus, it is likely that most major overhauls or repairs of turbine components would involve removing the components from the site to a designated off-site repair facility. Some repair activities may require the use of heavy equipment, such as cranes, to assist in the repairs of components, such as the rotor, turbine blades, and nacelle components. Cleaning of a rotor could happen on a rare individual basis but would not be routine practice. This practice would only occur if the rotor assembly were already lowered from the drive train assembly for maintenance work.

Vegetation management at the turbine pads would include mowing and herbicide use as needed to control invasive or noxious weeds. Mowing would occur during daytime hours. The need for mowing would be evaluated by site operations staff periodically during the growing season. Herbicides and pesticides, if necessary, would be applied in accordance with local regulations and all U.S. Environmental Protection Agency (USEPA)-approved labeling.

2.1.2.5 Access Roads and Crane Paths

New and improved access roads would be narrowed to approximately 16 ft (or to their original width for existing roads) after construction. Turbine access roads on private lands would be maintained by CCWF2. This could include dust control, grading, or placement of additional gravel as needed. Maintenance of county roads within the site would be the responsibility of the respective county; however, CCWF2 would be responsible for any road damage caused by maintenance or warranty work.

Temporary crane paths would be restored and returned to pre-construction land use after construction. Temporary bridges or culverts would be removed, and riparian areas would be stabilized and restored.

2.1.2.6 Operations and Maintenance Facility

Standard maintenance and groundskeeping at the O&M facility would include weed control, mowing, and other general landscaping. Other than emergency calls or response to off-hour outages, the O&M activities would be limited to normal business hours.

2.1.2.7 Meteorological Towers

Two of the four temporary MET towers would be removed prior to construction of the Proposed Project. The remaining two temporary MET towers would remain on site for up to four years after construction is complete, at which point they would also be removed. The permanent MET tower would remain on site for the operational lifetime of the Proposed Project. The MET towers would be regularly inspected and maintained. Maintenance and repair activities, when needed, would be contained within a 0.02-ac area at each tower.

2.1.2.8 Aircraft Detection Lighting System

If installed under the direction of the FAA, ADLS would be regularly inspected and maintained. Maintenance and repair activities, when needed, would be contained within the turbine and permanent MET tower footprints.

2.1.2.9 Underground Collection Lines and Communication System

Operation and maintenance of the underground collection system and co-located fiber optic communication system would include remote monitoring of the systems, visual inspections of the aboveground junction boxes via vehicles or walking the collection line route, and collection line repair or maintenance as needed. If repairs are needed for the underground collection system or fiber optic communication system, disturbance would occur within the confined areas of previous construction disturbance (25 to 125-ft wide right-of-way centered on the collection line).

2.1.3 Repowering/Decommissioning

The projected operating life of the Proposed Project turbines is 35 years. After the useful life of the turbines is complete, the Proposed Project would be assessed for the viability of either repowering, by installing new or refurbished turbines or turbine components, or complete decommissioning. Any retrofits and/or upgrades after 35 years may require further approvals from Campbell County. Additionally, CCWF2 has applied for a 40-year GIA; thus, if the project life is extended beyond 35 years, a supplemental NEPA analysis could be needed. At decommissioning, Proposed Project components would be recycled and disposed of in accordance with technologies and regulations applicable at the time of decommissioning. Decommissioning activities would be completed consistent with the requirements in Sections 3.5, 3.6.4, and 3.6.6 of the 2015 PEIS.

2.2 No Action Alternative

Under the No Action Alternative, WAPA, SPP, and CCWF2 would not enter a GIA. WAPA would not construct the interconnection facilities. For the purposes of impact analysis and comparison, it is assumed that the Proposed Project would not be constructed.

3.0 Affected Environment and Environmental Consequences

Section 5 of the 2015 PEIS discusses the potential direct and indirect environmental impacts of wind energy development across the UGP Region and identified BMPs to minimize impacts. This chapter will focus on site-specific information relevant to this Proposed Project. First, the chapter will describe the existing conditions of various resources within the Proposed Project Area or otherwise specified area of analysis. Next, the chapter will analyze the anticipated impact of each alternative on the resource area. Where possible, impacts are categorized as direct or indirect, temporary, or permanent, and by the significance of the impacts (i.e., negligible, minor, moderate, substantial). Lastly, the chapter will list any conservation measures that would be incorporated to reduce impacts.

As discussed in Section 2.1, the temporary construction activities would last an estimated 15-21 months, and decommissioning activities would last an estimated 12-15 months. Long-term, the Proposed Project would operate for approximately 35 years.

3.1 Soil, Paleontological, and Geologic Resources

This section analyzes potential impacts of the Proposed Project on soil, paleontology, and geology. The general analysis of these resources in Sections 4.2/5.2 and 4.8/5.8 of the 2015 PEIS are incorporated herein by reference. The Analysis Area for soil and geologic resources is the Proposed Project Area. The Project-specific affected environment and impacts are analyzed below.

The applicant is committed to implementing conservation measures for soil resources, derived from Section 5.2.3 of the 2015 PEIS, and is in accordance with easement stipulations, to minimize soil impacts associated with the Proposed Project (see Appendix H).

3.1.1 Affected Environment

3.1.1.1 Bedrock and Geologic Resources

Within the Proposed Project Area, bedrock geology is classified as sedimentary, clastic, with geologic resources, including clay or mud, sand, sandstone, shale, and silt (Figure 3.1-1; Martin et al. 2004). Sedimentary, clastic bedrock is created when pre-existing rock undergoes physical (i.e., wind, temperature, or water) or chemical weathering, is transported, and then becomes compacted and/or cemented (Brady and Weil 2004). As sedimentary, clastic bedrock weathers, a mosaic of soil horizons (i.e., layers) develops. Silt is the main geologic resource within the Proposed Project Area (Figure 3.1-1). Soils with high silt content are typically high in available

nutrients for plants, making them ideal for farming (Brady and Weil 2004). Sedimentary, clastic bedrock is also considered a very stable soil when heavy in clay and silt, due to its characteristic of cementing within pores in the parent material (Haldar and Tisljar 2014). There are no known or mapped fault lines, active/abandoned oil and gas wells, or mining pits within the Proposed Project Area. The risk of geological hazards in the Proposed Project Area is considered low.

3.1.1.2 Paleontological Resources

Sections 4.8 and 5.8 of the 2015 PEIS state that the UGP Region has the potential to contain notable fossils, although fossils are rare. During the cretaceous period, the Rocky Mountains forming to the west pushed the land surface in South Dakota downward, inundating much of the state with the Western Interior Seaway (Everhart 2017). This seaway was inhabited by abundant invertebrates and vertebrate species. Adjacent to the sea, broad coastal plains provided for land-based species. Therefore, fossils could occur in the Proposed Project Area since fossils are found in sedimentary rock formations. However, the Proposed Project Area is unlikely to support important vertebrate fossils discussed in the 2015 PEIS.

Important vertebrate fossils, such as those of dinosaurs, are generally found in two areas of South Dakota: along the ridge that forms the outer boundary of the Black Hills, and in the counties of the northwestern corner of the state (Bjork and Tallman 1995). Generally, rock formations more likely to contain such fossils are not found within Campbell County (Bjork and Tallman 1995). Additionally, much of the soils within the Proposed Project Area are being farmed; therefore, earthmoving activities have likely already affected paleontological resources, if present.

3.1.1.3 Soils

The Proposed Project facilities and infrastructure are located on 70 different soil map units. Of these, the main soil type is Bryant silt loam, 2 to 6 percent slopes (Table 3.1-1, Figure 3.1-2).

Four soil types are considered prime farmland (approximately 611 ac) and 20 are farmland of statewide importance (approximately 4,398 ac; Table 3.1-1). These areas are protected under the Farmland Protection Policy Act (FPPA) of the Agriculture and Food Act of 1981 (HUD Exchange 2024). Four soil types are classified as hydric soils (approximately 462 ac; Table 3.1-1).

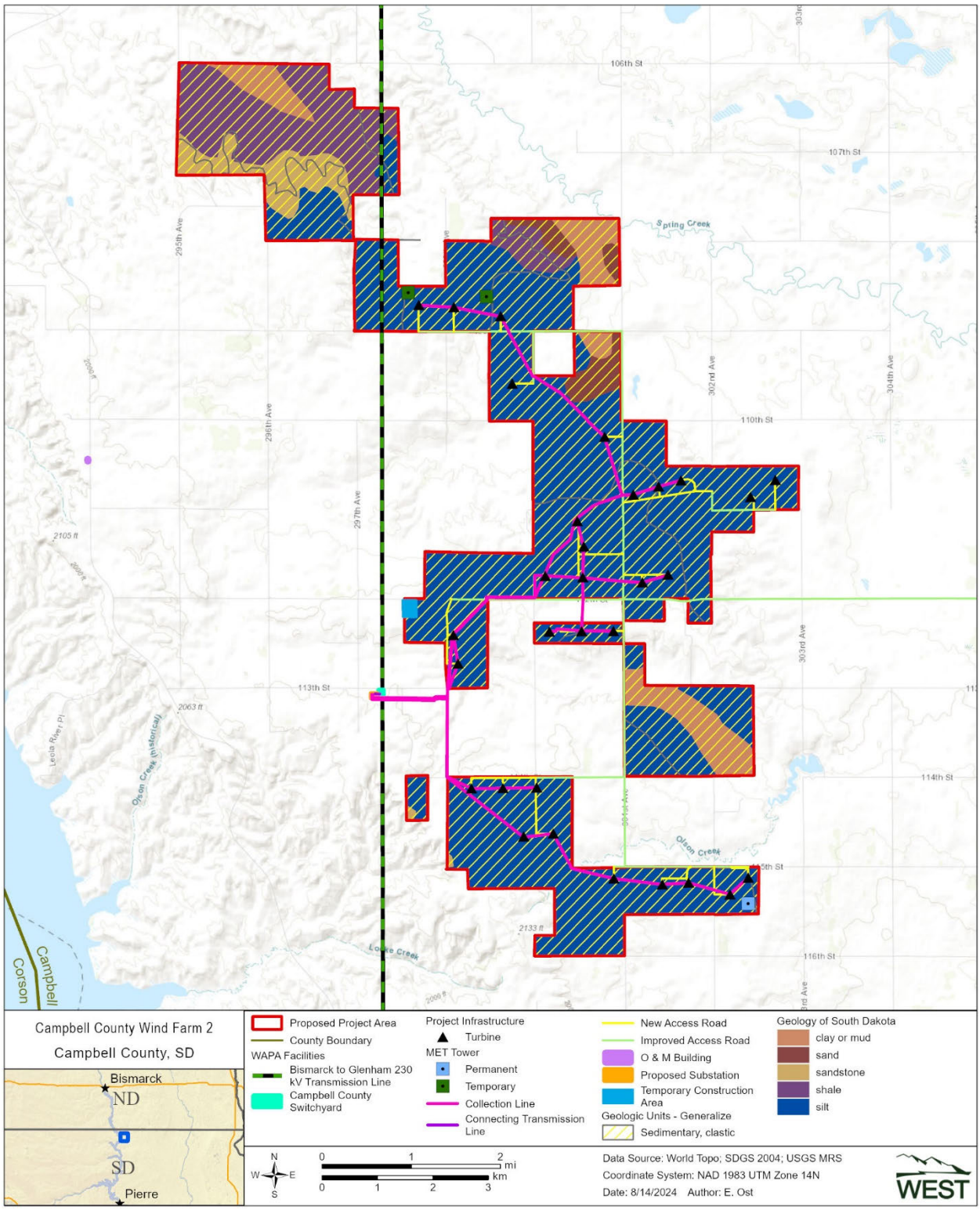

Figure 3.1-1 Bedrock and geologic resources within the Proposed Project Area.

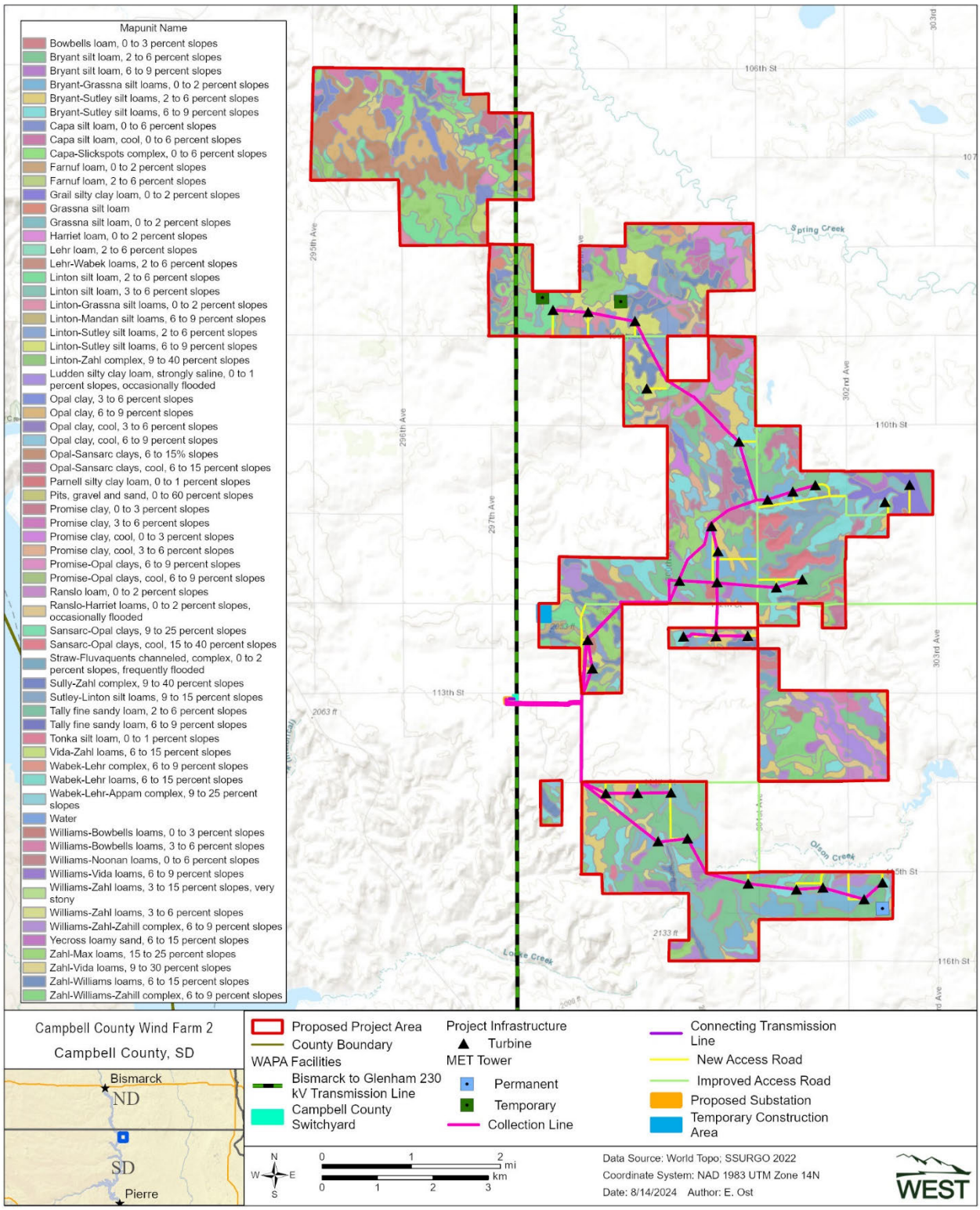

Figure 3.1-2 Soil resources within the Proposed Project Area.

Soils located within the Proposed Project Area are predominately not susceptible to erosion from wind. However, Yecross loamy sand, 6 to 15 percent slopes may be, with a Wind Erodibility Index (WEI) of 134 (WEI ranges from 0 to 310; Table 3.1-1). Four soil types are characterized as erodible by water, with K factors of 0.43 and 0.49 (K factor ranges from 0.02 to 0.64; Table 3.1-1). Soil K factor is a quantification of the susceptibility of soil erodibility or detachment by water. The erodibility factor predicts the long-term average soil loss resulting from sheet and rill erosion under various soil management practices. Soils that have high silt content are typically the most susceptible to water erosion, as particles easily detach from each other (U.S. Geological Survey [USGS] 2024c).

3.1.2 Environmental Consequences: Proposed Action Alternative

3.1.2.1 Bedrock and Geologic Resources

Bedrock would not be significantly impacted by the construction and operation of the Proposed Project. The bedrock is not considered shallow and will allow for construction of the Proposed Project (Martin et al. 2004). No important geologic resources occur in the Proposed Project Area; therefore, impacts would be negligible. Similarly, seismic, landslide, or other geological risks to or caused by Proposed Project development and operation are unlikely to occur.

3.1.2.2 Paleontological Resources

Should any fossils occur in the Proposed Project Area, they could be broken, crushed, or displaced, primarily during excavation for turbine footings, collection lines, and the proposed substation. Indirectly, increased erosion caused by construction activities may result in uncovering or movement of paleontological resources, although this is unlikely with proposed erosion control measures. Decommissioning impacts would be similar to those from Project construction. Cultivation and other farming activities have likely already damaged or displaced shallow marine fossils most likely to occur in the Proposed Project Area. Because the Proposed Project Area is not known for being a rich resource for important marine or vertebrate fossils, any construction impacts would be permanent but minor.

3.1.2.3 Soils

Section 5.2.1 of the 2015 PEIS discusses direct and indirect impacts to soil related to wind energy project construction, operations, maintenance, and decommissioning. The Proposed Project would affect soil during both construction and operation due to temporary soil disturbance and permanent facilities, respectively.

Approximately 407 ac of soil would be disturbed by the Proposed Project during construction activities. Most soil disturbance would be temporary during the construction of the Proposed Project. Grading and excavation would be carried out for construction of most Proposed Project components, exposing soils and bringing subsoils to the surface. Accordingly, the potential temporary impacts on the soil would include soil compaction, soil horizon mixing, sediment erosion by wind, water runoff, and vehicle usage, and possible soil layer contamination.

Following construction, subsoil would be decompacted where necessary and salvaged topsoil would be replaced. Soils would be returned to preconstruction land uses, which primarily involves crop cultivation. Non-cultivated areas would be stabilized with erosion controls, where needed, and revegetated. Impacts from construction activities would be expected to have a temporary, minor impact on soil resources.

Permanent aboveground facilities would permanently displace up to 67.1 ac of soil during operation of the Proposed Project. This includes the development of permanent aboveground facilities, including turbine pads, roads, a substation, and an O&M building.

Table 3.1-1. Soil units and characteristics within the Proposed Project Area.

Soil Unit Name	Area (acres)	Percent of Proposed Project Area	Hydric?	K Factor[a]	WEI[b]	Drainage Rating	Prime Farmland
Bowbells loam, 0 to 3 percent slopes	81	1	No	.28	48	Moderately well drained	All areas are prime farmland
Bryant-Grassna silt loams, 0 to 2 percent slopes	533	4	No	.37	48	Well drained	Prime farmland if irrigated
Bryant-Sutley silt loams, 2 to 6 percent slopes	470	4	No	.37	48	Well drained	Prime farmland if irrigated
Bryant-Sutley silt loams, 6 to 9 percent slopes	869	7	No	.37	48	Well drained	Farmland of statewide importance
Bryant silt loam, 2 to 6 percent slopes	1,777	15	No	.37	48	Well drained	Farmland of statewide importance
Bryant silt loam, 6 to 9 percent slopes	127	1	No	.37	48	Well drained	Farmland of statewide importance
Capa-Slickspots complex, 0 to 6 percent slopes	230	2	No	.49	86	Moderately well drained	Not prime farmland
Capa silt loam, 0 to 6 percent slopes	198	2	No	.49	48	Moderately well drained	Not prime farmland
Capa silt loam, cool, 0 to 6 percent slopes	37	0	No	.43	48	Moderately well drained	Not prime farmland
Farnuf loam, 0 to 2 percent slopes	64	1	No	.28	48	Well drained	Farmland of statewide importance
Farnuf loam, 2 to 6 percent slopes	35	0	No	.28	48	Well drained	Farmland of statewide importance
Grail silty clay loam, 0 to 2 percent slopes	159	1	No	.32	48	Moderately well drained	All areas are prime farmland
Grassna silt loam	16	0	No	.32	48	Moderately well drained	All areas are prime farmland
Grassna silt loam, 0 to 2 percent slopes	355	3	No	.32	48	Well drained	All areas are prime farmland
Harriet loam, 0 to 2 percent slopes	318	3	Yes	.37	48	Poorly drained	Not prime farmland
Lehr-Wabek loams, 2 to 6 percent slopes	11	0	No	.28	56	Somewhat excessively drained	Not prime farmland

Soil Unit Name	Area (acres)	Percent of Proposed Project Area	Hydric?	K Factor[a]	WEI[b]	Drainage Rating	Prime Farmland
Lehr loam, 2 to 6 percent slopes	3	0	No	.28	56	Somewhat excessively drained	Not prime farmland
Linton-Grassna silt loams, 0 to 2 percent slopes	102	1	No	.37	56	Well drained	Prime farmland if irrigated
Linton-Mandan silt loams, 6 to 9 percent slopes	85	1	No	.37	56	Well drained	Farmland of statewide importance
Linton-Sutley silt loams, 2 to 6 percent slopes	128	1	No	.37	56	Well drained	Prime farmland if irrigated
Linton-Sutley silt loams, 2 to 6 percent slopes	12	0	No	.37	56	Well drained	Prime farmland if irrigated
Linton-Sutley silt loams, 6 to 9 percent slopes	371	3	No	.37	56	Well drained	Farmland of statewide importance
Linton-Zahl complex, 9 to 40 percent slopes	32	0	No	.37	86	Well drained	Not prime farmland
Linton silt loam, 2 to 6 percent slopes	476	4	No	.37	56	Well drained	Prime farmland if irrigated
Linton silt loam, 3 to 6 percent slopes	23	0	No	.37	56	Well drained	Prime farmland if irrigated
Ludden silty clay loam, strongly saline, 0 to 1 percent slopes, occasionally flooded	113	1	Yes	.32	48	Poorly drained	Not prime farmland
Opal-Sansarc clays, 6 to 15 percent slopes	525	4	No	.37	86	Well drained	Not prime farmland
Opal-Sansarc clays, cool, 6 to 15 percent slopes	236	2	No	.37	86	Well drained	Not prime farmland
Opal clay, 3 to 6 percent slopes	78	1	No	.37	86	Well drained	Farmland of statewide importance
Opal clay, 6 to 9 percent slopes	289	2	No	.37	86	Well drained	Not prime farmland
Opal clay, cool, 3 to 6 percent slopes	19	0	No	.37	86	Well drained	Farmland of statewide importance
Opal clay, cool, 6 to 9 percent slopes	92	1	No	.37	86	Well drained	Not prime farmland
Parnell silty clay loam, 0 to 1 percent slopes	14	0	Yes	.24	48	Very poorly drained	Not prime farmland
Pits, gravel, and sand, 0 to 60 percent slopes	1	0	No	.02	56	Excessively drained	Not prime farmland
Promise-Opal clays, 6 to 9 percent slopes	34	0	No	.15	86	Well drained	Not prime farmland
Promise-Opal clays, cool, 6 to 9 percent slopes	5	0	No	.37	86	Well drained	Not prime farmland

Soil Unit Name	Area (acres)	Percent of Proposed Project Area	Hydric?	K Factor[a]	WEI[b]	Drainage Rating	Prime Farmland
Promise clay, 0 to 3 percent slopes	26	0	No	.37	86	Well drained	Farmland of statewide importance
Promise clay, 3 to 6 percent slopes	56	0	No	.37	86	Well drained	Farmland of statewide importance
Promise clay, cool, 0 to 3 percent slopes	22	0	No	.37	86	Well drained	Farmland of statewide importance
Promise clay, cool, 3 to 6 percent slopes	33	0	No	.37	86	Well drained	Farmland of statewide importance
Ranslo-Harriet loams, 0 to 2 percent slopes, occasionally flooded	141	1	No	.28	48	Somewhat poorly drained	Not prime farmland
Ranslo loam, 0 to 2 percent slopes	62	1	No	.28	48	Somewhat poorly drained	Not prime farmland
Sansarc-Opal clays, 9 to 25 percent slopes	70	1	No	.37	86	Well drained	Not prime farmland
Sansarc-Opal clays, cool, 15 to 40 percent slopes	186	2	No	.15	86	Well drained	Not prime farmland
Straw-Fluvaquents channeled, complex, 0 to 2 percent slopes, frequently flooded	55	0	No	.28	48	Well drained	Not prime farmland
Sully-Zahl complex, 9 to 40 percent slopes	12	0	No	.49	86	Well drained	Not prime farmland
Sutley-Linton silt loams, 9 to 15 percent slopes	4	0	No	.32	86	Well drained	Not prime farmland
Sutley-Linton silt loams, 9 to 15 percent slopes	267	2	No	.37	86	Well drained	Not prime farmland
Tally fine sandy loam, 2 to 6 percent slopes	42	0	No	.20	86	Well drained	Prime farmland if irrigated
Tally fine sandy loam, 6 to 9 percent slopes	4	0	No	.20	86	Well drained	Farmland of statewide importance
Tonka silt loam, 0 to 1 percent slopes	17	0	Yes	.32	48	Poorly drained	Not prime farmland
Vida-Zahl loams, 6 to 15 percent slopes	108	1	No	.24	48	Well drained	Not prime farmland
Wabek-Lehr-Appam complex, 9 to 25 percent slopes	47	0	No	.32	56	Excessively drained	Not prime farmland
Wabek-Lehr complex, 6 to 9 percent slopes	30	0	No	.17	48	Excessively drained	Not prime farmland
Wabek-Lehr loams, 6 to 15 percent slopes	6	0	No	.32	56	Excessively drained	Not prime farmland

Soil Unit Name	Area (acres)	Percent of Proposed Project Area	Hydric?	K Factor[a]	WEI[b]	Drainage Rating	Prime Farmland
Water	24	0	Not Rated	NA	NA	NA	Not prime farmland
Williams-Bowbells loams, 0 to 3 percent slopes	108	1	No	.24	48	Well drained	Farmland of statewide importance
Williams-Bowbells loams, 0 to 3 percent slopes	8	0	No	.24	48	Well drained	Prime farmland if irrigated
Williams-Bowbells loams, 3 to 6 percent slopes	158	1	No	.24	48	Well drained	Farmland of statewide importance
Williams-Bowbells loams, 3 to 6 percent slopes	65	1	No	.24	48	Well drained	Prime farmland if irrigated
Williams-Noonan loams, 0 to 6 percent slopes	120	1	No	.28	48	Well drained	Farmland of statewide importance
Williams-Vida loams, 6 to 9 percent slopes	11	0	No	.24	48	Well drained	Farmland of statewide importance
Williams-Zahl-Zahill complex, 6 to 9 percent slopes	365	3	No	.24	48	Well drained	Farmland of statewide importance
Williams-Zahl loams, 3 to 15 percent slopes, very stony	2	0	No	.24	48	Well drained	Not prime farmland
Williams-Zahl loams, 3 to 6 percent slopes	71	1	No	.24	48	Well drained	Farmland of statewide importance
Yecross loamy sand, 6 to 15 percent slopes	53	0	No	.10	134	Excessively drained	Not prime farmland
Zahl-Max loams, 15 to 25 percent slopes	914	8	No	.24	86	Well drained	Not prime farmland
Zahl-Vida loams, 9 to 30 percent slopes	61	1	No	.28	48	Well drained	Not prime farmland
Zahl-Williams-Zahill complex, 6 to 9 percent slopes	402	3	No	.24	86	Well drained	Not prime farmland
Zahl-Williams loams, 6 to 15 percent slopes	519	4	No	.24	86	Well drained	Not prime farmland
Totals[c]	**11,989**	**100**	**–**	–	–	–	–

Source: U.S. Department of Agriculture Natural Resources Conservation Service (2021).

a. K factor = indicates the susceptibility of a soil to sheet and rill erosion by water; 0.02 is the least and 0.64 is the most erodible.

b. WEI = Wind Erodibility Index; 0 is the lowest and 310 is the highest index value.

c. Totals may not equal the sum of the addends due to rounding.

The FPPA directs federal agencies to identify the quantity of farmland that would be converted by federal programs, identify and take into account the adverse effects from farmland conversion, consider alternative actions, and ensure the federal program is compatible with state, county, and private programs and policies to protect farmland. Although prime farmland, prime farmland if irrigated, and farmland of statewide importance are present in the Proposed Project Area, coordination with the Natural Resources Conservation Service (NRCS) determined there would be no impacts to prime farmland (Appendix B).

Impacts to soil during operations would mainly entail periodic inspections and maintenance activities that would not increase the potential for soil erosion, surface runoff, or measurable sedimentation of nearby lakes, rivers, and streams. However, soil erosion could still occur along roads as surface runoff is channeled into natural drainages. Decommissioning impacts would be similar to construction impacts. Operations, maintenance, and decommissioning activities would have a permanent, minor impact on soil resources.

3.1.3 Environmental Consequences: No Action Alternative

The No Action Alternative would have no Project-related direct or indirect impacts on soils or geological resources. Impacts related to existing land uses, particularly agriculture, would continue to affect soils in the Proposed Project Area, such as through tilling and soil amendments, loss due to wind and water erosion, as well as soil disturbance and compaction from farm machinery and cattle.

3.2 Water Resources

This section analyzes potential impacts from the Proposed Project to surface waters, floodplains, and groundwater. The general analysis of these resources in Sections 4.3 and 5.3 of the 2015 PEIS are incorporated herein by reference. The Analysis Area for water resources is the Proposed Project Area. The Project-specific affected environment and impacts for water resources are analyzed below.

The applicant is committed to implementing conservation measures for water resources derived from Section 5.3.2 of the 2015 PEIS and according to easement stipulations, to minimize impacts to water resources associated with the Proposed Project (see Appendix H).

3.2.1 Affected Environment

Section 4.3.1 of the 2015 PEIS provides an overview of the White-Little Missouri drainage basin, which includes the Proposed Project Area.

Wetlands and waterbodies were identified for the Draft EA, based on a desktop assessment, using data from the USFWS National Wetlands Inventory (NWI; 2024) and USGS National Hydrography Dataset (NHD; 2024b), along with soils data, topographic information, climate data, and multiple years of aerial imagery to identify areas that are likely to exhibit wetland characteristics.

To refine and confirm the desktop information, CCWF2 will conduct delineations in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers [USACE] 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Version 2.0; USACE 2010). The delineation of water resources will be conducted in Spring 2024, with a focus on areas where Proposed Project infrastructure may impact water resources. Results of this delineation will be presented in the Final EA and will be used to determine impacted acreages.

Under Section 404 of the Clean Water Act (CWA), a permit is required from the USACE for dredge or fill into Waters of the U.S. (WOTUS). Generally, WOTUS can include rivers, streams, creeks, and wetlands associated with them. The definition of WOTUS and those water resources under Section 404 jurisdiction is ultimately determined by the USACE as the regulatory authority. After delineations are completed, CCWF2 would coordinate with the USACE as appropriate and seek permits for any potential dredge and fill activity within WOTUS.

Section 401 of the CWA requires states to review projects and federal permits to ensure they will not impact the stream quality or violate South Dakota Surface Water Quality Standards. Concurrent with Section 404 authorization with the USACE, CCWF2 would also seek to comply with the conditions outlined in the Statewide 401 Water Quality Certification for USACE 404 Nationwide Permits or seek individual 401 Water Quality Certification with the South Dakota Department of Agriculture and Natural Resources (SDDANR).

Section 311 of the CWA addresses the discharge, including accidental spills, of oil and other hazardous substances into navigable and coastal waters. It requires facilities that may store over 1,320 gallons of oil, or that “have a reasonable expectation of an oil discharge to water” to develop a Spill Prevention, Control and Countermeasure (SPCC) Plan.

3.2.1.1 Surface Water (Rivers/Streams, Wetlands)

The Proposed Project Area overlaps two Level 8 Hydrologic Unit Codes, Upper Lake Oahe and Western Missouri Coteau. Surface water resources within the Proposed Project Area include 38.6 mi of intermittent streams and 0.3 mi of perennial Spring Creek (Table 3.2-1; Figure 3.2-1; USGS 2024b). Intermittent streams convey water seasonally, temporarily after precipitation events, or if adequately supported by local groundwater levels or springs. Perennial rivers convey water throughout the year (Levick et al. 2008). During low flow season (i.e., fall/winter), only sections of intermittent streams may experience surface water flows (Levick et al. 2008). Perennial rivers and intermittent streams typically support diverse riparian vegetation, creating important forage and cover habitat for a variety of wildlife species (Levick et al. 2008). Based on aerial imagery of the Proposed Project Area, several areas of intermittent streams support multiple structural levels of vegetation.

Numerous open water features (lake/pond) are located within the Proposed Project Area, amounting to approximately 30.5 ac (USGS 2024b). Like intermittent and perennial streams,

lakes/ponds and associated vegetation communities may provide structural and functional diversity important to wildlife.

Table 3.2-1. Miles of intermittent and perennial surface water within the Proposed Project Area.

National Hydrography Dataset Type	Miles
Intermittent	38.6
Perennial	0.3
Total:	**40.2**

Source: U.S. Geological Survey (2024b).

The USEPA coordinates with states to identify impaired waters under Section 303(d) of the CWA. The SDDANR establishes total maximum daily loads specific to the pollutants causing impairment within a waterbody (567 IAC 61). One 303(d) listed impaired water was identified in the Proposed Project Area: Spring Creek (SDDANR 2022). Spring Creek is not meeting use criteria for dissolved oxygen, including limited contact recreation and warmwater fisheries.

No rivers are designated as part of the National Wild and Scenic Rivers System within the Proposed Project Area (National Park Service 2023). There are no Federal Emergency Management Agency (FEMA) designated floodplains within the Proposed Project Area (FEMA 2021).

According to the NWI, there are approximately 406 ac of wetlands mapped within the Proposed Project Area. The wetlands primarily consist of freshwater emergent wetlands, with freshwater ponds and riverine wetlands present to a lesser extent (Table 3.2-2). No NRCS or USFWS wetland easements were identified within the Proposed Project Area (USGS Gap Analysis Program 2022; National Conservation Easement Database 2024, USFWS NWI 2024).

Table 3.2-2. U.S. Fish and Wildlife Service National Wetlands Inventory wetlands identified in the Proposed Project Area.

Wetland Type[a]	Area (Acres)	Percent of Proposed Project Area
Freshwater emergent	320.1	0.02
Freshwater pond	43.0	<0.01
Riverine	41.4	<0.01
Freshwater forested/shrub	1.6	<0.01
Totals[b]	**406.0**	**0.03**

[a] U.S. Fish and Wildlife Service National Wetlands Inventory (2024).

[b] Totals may not equal the sum of the addends due to rounding.

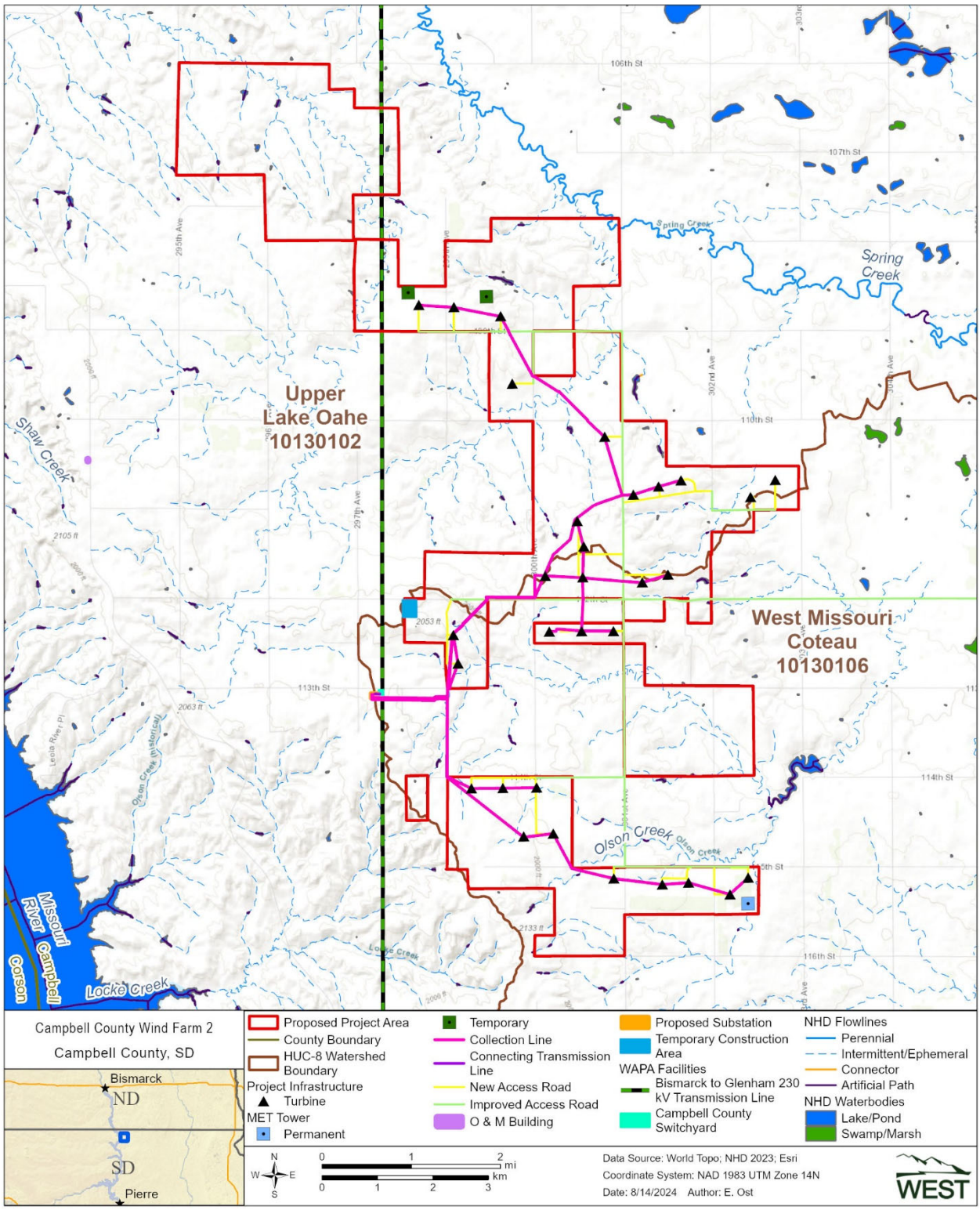

Figure 3.2-1 Surface water resources within the Proposed Project Area.

3.2.1.2 Groundwater (Aquifers)

The Northern Great Plains aquifer underlays the Proposed Project Area and is considered nationally important, as it has supported major agricultural operations and drinking water since 1940 (Peterson et al. 2020). In 2012, the total withdrawals from the aquifer for agricultural irrigation, public drinking supply, and other uses were the largest of any North American aquifer, totaling approximately $50 billion dollars in value (Peterson et al. 2020).

Available groundwater within the Northern Great Plains aquifer is predicted to decline with increased anthropogenic needs over the next 50 years (Peterson et al. 2020). Groundwater withdrawals for irrigation have been the single largest anthropogenic effect on the groundwater-flow system of the Northern High Plains aquifer and represent the largest outflow of available groundwater from the system. Groundwater supply modeling of the aquifer, conducted by Peterson et al. (2020), anticipates that even in normal precipitation and aquifer recharge years, withdrawals for irrigation and other consumptive uses will result in declines in overall water availability within the aquifer.

3.2.2 Environmental Consequences: Proposed Action Alternative

3.2.2.1 Surface Water (Rivers/Streams, Wetlands)

Section 5.3.1 of the 2015 PEIS describes common impacts on surface water resources due to wind energy development. Common impacts include the use of water resources, potential degradation of water quality, and potential alteration to natural flows.

Proposed Project components have been located generally in upland areas, mostly avoiding low-lying wetlands and streams. Construction activities have the potential to impact 0.6 mi of intermittent streams at collection line and access road crossings. NHD data indicates no impacts to streams at other Proposed Project components. The primary construction impacts at these crossings would be to water quality from sedimentation due to excavation, trenching, and grading near these areas. A general permit for storm water discharges from the SDDANR would be obtained for construction activities, and construction practices required under the permit would likely reduce impacts from these activities.

Proposed Project facilities have been sited away from Spring Creek and, therefore, no direct impacts to 303(d) impaired waters are expected.

Construction activities have the potential to impact 5.7 ac of wetlands identified in NWI data. This includes 4.2 ac of temporary impacts during construction and 1.5 ac of permanent impacts during operation. Table 3.2-3 summarizes the potential impacts below. Approximately 0.3 ac of riverine wetland habitats may be temporarily removed during construction associated with collection lines and access roads, while under 0.1 ac may be permanently filled due to access road construction, resulting in short term impacts to suitable habitat for wildlife and water quality. Up to 0.1 ac of riverine wetlands may be eliminated due to construction of new and/or improved access roads. Relative to the abundance of wetlands in the surrounding area, the

1.5 ac of permanent wetland impact due to Proposed Project operation is minimal on local and landscape scales.

Table 3.2-3. Potential impacts to wetlands.

Project Component[b]	Wetland Type	Construction (Temporary) Impacts (acres)[a]	Operational (Permanent) Impacts (acres)[a]
Collection Lines	Freshwater Emergent Wetlands	0.8	--
	Riverine Wetlands	0.2	--
New and Improved Roads	Freshwater Emergent Wetlands	3.0	1.4
	Riverine Wetlands	0.1	0.1
Turbine Pads	Freshwater Emergent Wetlands	0.1	--
	Riverine Wetlands	--	--
Totals[c]	**--**	**4.2**	**1.5**

Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI; 2024).

[a] Acreages will be updated in the Final Environmental Assessment based on the final wetland and waterbody delineation.

[b] Proposed Project infrastructure sited outside of NWI data are not included in this table.

[c.] Totals may not equal the sum of the addends due to rounding.

After water resources are field-delineated, it is anticipated that CCWF2 will adjust facilities to avoid impacts to streams and wetlands, to the extent practicable. A permit under the USACE Nationwide Permit (NWP) Program would be sought by CCWF2 for any surface water resources that cannot be avoided, to comply with Sections 401 and 404 of the CWA. This includes adhering to all national, regional, and SDDANR Water Quality Certification (WQC) conditions required by the NWP the Proposed Project will seek authorization under.

Once construction is complete, temporary structures would be removed and the original grade and drainage pattern would be re-established to the extent practicable, depending on permit conditions, as well as landowner and county agreements. By minimizing the affected area and through proper design and maintenance, it is anticipated Proposed Project components would have minor, temporary and permanent impacts. Decommissioning impacts on surface waters would be similar to those during construction.

3.2.2.2 Groundwater (Aquifers)

Impacts to groundwater by the Proposed Project include potential changes in runoff patterns and volume of runoff. These impacts would likely be negligible compared to the overall volume of water reaching the Northern High Plains aquifer. Surface disturbance anticipated by the Proposed Project represents < 0.1% of the overall surface area (≈ 93,000 square mi) that provides groundwater recharge to the Northern High Plains aquifer (Peterson et al. 2020).

3.2.3 Environmental Consequences: No Action Alternative

The No Action Alternative would have no Project-related direct or indirect impacts on water resources. Existing land uses, particularly agriculture, would likely continue. Agricultural activities can affect water resources by removing or altering vegetation, which can increase erosion and sedimentation, as well as introducing pollutants from agricultural operations (e.g., fertilizer, hormones, pesticides, and animal waste) into surface waters.

3.3 Vegetation and Land Cover

This section analyzes potential impacts of the Proposed Project to vegetation and land cover. The general analysis of these resources in Sections 4.1/5.1 and 4.6.1/5.6.1.1 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for vegetation and land cover is the Proposed Project Area. The Project-specific affected environment and impacts for vegetation and land cover are analyzed below.

CCWF2 is committed to implementing conservation measures for vegetation resources derived from Section 5.1.2 of the 2015 PEIS and in accordance with landowner agreements, to minimize vegetation impacts associated with the Proposed Project (see Appendix H).

3.3.1 Affected Environment

3.3.1.1 Land Cover

Existing land cover in South Dakota is addressed in Section 4.1.1 of the 2015 PEIS and upland plant communities are described in Section 4.6.1.1 of the 2015 PEIS. Vegetation specific to the Proposed Project is described below, including general vegetation types, untilled grassland and grassland easements, and noxious weeds.

Table 3.3-1 provides acreages of land cover within the Proposed Project Area. According to the National Land Cover Database (NLCD; 2021), the Analysis Area is dominated by herbaceous and cultivated crops, with 52.4% (6,281 ac) and 41.7% (5,001 ac) coverage, respectively (Table 3.3-1). The NLCD defines herbaceous as areas mainly composed of (≥ 80% of total vegetation) grasses or non-woody vegetation. These areas are not subject to intensive management, such as tilling, but may be grazed. Forests and woodland areas are not prevalent in the Proposed Project Area and are limited to ≈ 7 acres.

Table 3.3-1. Land cover types within the Proposed Project Area.

Land Cover Type [a]	Area (acres)	Percent of Proposed Project Area
Herbaceous	6,281	52.4
Cultivated Crops	5,001	41.7
Developed	261	2.2
Hay/Pasture	227	1.9
Emergent Herbaceous Wetlands	203	0.4

Land Cover Type [a]	Area (acres)	Percent of Proposed Project Area
Open Water	9	0.1
Deciduous forest	6	<0.1
Woody wetlands	1	<0.1
Totals[b]	**11,989**	**100**

[a] National Land Cover Database (2021).

[b] Totals may not equal the sum of the addends due to rounding.

3.3.1.2 Grasslands

The Proposed Project Area is within two Level IV ecoregions, the Southern Missouri Coteau Slope, and the Missouri Coteau Slope (USEPA 2012). These ecoregions, historically composed of grasslands, have been largely converted for agricultural use (e.g., row crops and livestock grazing; USEPA 2012) and include some wetland and riparian areas.

Native grasslands are of high conservation value in South Dakota, with significant losses in the state due to conversion to agricultural and development purposes (Bauman et al. 2016). A grassland habitat assessment was completed to classify sod types of grasslands as either broken or unbroken (Appendix A). Broken sod includes grasslands that have been mechanically manipulated historically (Bauman et al. 2018). Unbroken sod includes all undisturbed grasslands or native prairies. Results of the habitat assessment indicated ≈ 47% of the Proposed Project Area is composed of grasslands, with 5,108 ac of unbroken sod and 508 ac of broken sod (Table 3.3-2).

Table 3.3-2. Grassland sod types within the Proposed Project Area.

Sod Type	Acres	Percent of Total Grassland	Percent of Proposed Project Area
unbroken sod	5,108	91.0	42.6
broken sod	508	9.0	4.3
Total[a]	**5,616**	**100**	**46.9**

[a.] Totals may not equal values shown due to number rounding.

3.3.1.3 Conservation Easements

WAPA has coordinated with the USFWS Sand Lake Wetland Management District and has determined no USFWS easements are present in the Proposed Project Area (see Appendix B). Also, no Farm Service Agency (FSA) easements are in the Proposed Project Area.

3.3.1.4 Noxious Weeds

Noxious weeds are defined by South Dakota Codified Law (SDCL) 38-22 as any plant which the South Dakota Weed and Pest Commission (Commission) has found to be detrimental to the production of crops or livestock or to the welfare of persons residing in the state. Noxious weeds and other invasive plant species can pose serious threats to agricultural productivity. The

Commission regulates noxious weeds through the administration of the State Weed and Pest Program, which established a list of designated noxious weeds. Designations are reviewed annually; however, the commission may make emergency designations as warranted. The Commission can also make designation of locally noxious weeds, limited to a total of eight per county and to a renewable five-year period (Table 3.3-3). The Commission, and associated county weed and pest boards, encourages voluntary compliance with the provisions of the state weed and pest statute and regulations. Protective operations and remedial actions, as allowed by SDCL 38-22, are only taken by the Commission when voluntary compliance is not attainable within a reasonable length of time.

Table 3.3-3. State and locally designated noxious weeds in Campbell County.

State Noxious Weeds	Local Noxious Weeds with Reported Infestations in Campbell County
absinth wormwood (*Artemisia absinthium*)	field bindweed (*Convolvulus arvensis*)
Canada thistle (*Cirsium arvense*)	musk thistle (*Carduus nutans*)
leafy spurge (*Euphorbia esula*)	yellow toadflax (*Linaria vulgaris*)
perennial sow thistle (*Sonchus arvensis*)	
hoary cress (*Cardaria draba*)	
purple loosestrife (*Lythrum salicaria*)	
saltcedar (*Tamarix aphylla, T. chinensis, T. gallica, T. parviflora and T. ramosissima*)	

3.3.2 Environmental Consequences: Proposed Action Alternative

3.3.2.1 Land Cover

The Proposed Project would affect up to 236 ac of cropland, 97 ac of herbaceous vegetation, 67 ac of developed land, and 7 ac of hay/pasture cover types during construction and operation (Table 3.3-4). No forested land cover impacts are expected. These estimates are the maximum extent of disturbance if all final and alternate turbines under consideration were to be built.

Table 3.3-4. Land cover types potentially impacted by the Proposed Project.

Land Cover Type [a]	Temporary Impacts during Construction (acres)	Permanent Impacts during Operation (acres)
Cultivated Crops	236	19
Herbaceous	97	15
Developed	67	31
Hay/Pasture	7	1
Barren Land	<1	0
Totals[b]	**407**	**67**

[a] National Land Cover Database (2021).

[b] Totals may not equal the sum of the addends due to rounding.

Impacts to land cover and general vegetation by the Proposed Project would be similar to those described in Section 5.1.1 of the 2015 PEIS. Construction impacts would be short-term, lasting the duration of construction (or about one growing season), and the additional time it takes for restoration of disturbed areas (typically a minimum of two years). CCWF2 has minimized vegetation impacts by collocating Proposed Project components where feasible. Following construction, temporary construction areas would be returned to pre-construction land uses. Non-cultivated areas would be reseeded to herbaceous vegetation. Crops would be temporarily affected but would be re-established by the next growing season. Other herbaceous plant communities would likely experience short-term impacts, with recovery within two to three years. Overall, anticipated direct vegetation impacts would be minor.

Beyond the permanent conversion of land to developed uses, operation of the Proposed Project would not result in additional impacts during operation. Activities during operation and maintenance would be restricted to developed, unvegetated areas, such as turbine pads, permanent access roads, a substation, and O&M buildings.

During construction, indirect, short-term to permanent degradation to plant communities and crops could occur due to surface disturbance, traffic, and revegetation activities that could introduce and/or spread noxious weeds. If uncontrolled, noxious weeds could lead to a general reduction in vegetative condition throughout the Proposed Project and surrounding area and could degrade conditions for agriculture and wildlife. Conservation measures listed in Appendix H, such as vehicle washing, would minimize the introduction of noxious weeds, and others, such as a control plan and monitoring, would minimize the spread of noxious weeds.

Operation of the Proposed Project is unlikely to result in the introduction or spread of noxious weeds, although vehicle traffic associated with maintenance activities could transport weed seeds along access roads. Decommissioning impacts would be similar to construction impacts.

3.3.2.2 Grasslands

Proposed Project construction would temporarily disturb ≈ 31 ac of native, unbroken grassland (unbroken sod) by crushing or trampling from vehicles, equipment, and workers. Proposed Project operation would affect ≈ 2.1 ac long-term due to conversion of existing vegetation into developed facilities. As recommended by South Dakota Game, Fish and Parks (SDGFP), no turbines would be constructed in native, unbroken grasslands.

3.3.3 Environmental Consequences: No Action Alternative

No Project-related impacts to vegetation resources would occur, but ongoing impacts, such as conversion of herbaceous land cover to cropland, would continue at existing rates.

3.4 Wildlife

This section analyzes potential impacts from the Proposed Project to wildlife, including species that are common, rare, or classified as state Species of Greatest Conservation Need (SGCN). The

general analysis of these resources in Sections 4.6 and 5.6 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for wildlife is the Proposed Project Area. The Project-specific affected environment and impacts to wildlife are analyzed below.

CCWF2 is committed to implementing the conservation measures for wildlife resources derived from Section 5.6.2 of the 2015 PEIS, to minimize wildlife impacts associated with the Proposed Project. A list of these measures can be found in Appendix H.

3.4.1 Affected Environment

CCWF2 has carried out wildlife studies in accordance with the recommendations in the 2012 USFWS *Land-Based Wind Energy Guidelines* (WEG). These studies have accomplished the third, *Field Studies to Document Site Wildlife and Habitat and Predict Project Impacts*, of five tiers of site characterization studies. These studies are listed in Table 3.4-1 and are included in Appendix A, wherein details regarding study areas and methodologies can be found. Due to changes in the proposed layout, some species-specific surveys were conducted in areas not currently within the current Proposed Project Area. However, these survey results provide a baseline for wildlife conditions in the Proposed Project Area and are discussed in the context of supplemental public data sources and pertinent literature results in the subsections below. Analysis areas for covered wildlife groups vary based on species-specific protocols and life history requirements and are specified in their respective subsections.

Table 3.4-1. Summary of wildlife studies conducted at the Proposed Project.

Study Type	Survey Dates	Reference
Avian Use Survey	June 21, 2020 – May 19, 2021	Piorkowski and Agudelo 2021b
Avian Use Survey	March 2023 – February 2024	Piorkowski and Chouinard 2024
Whooping Crane Stopover Habitat Assessment[a]	March 2023	See Appendix E
Prairie Grouse Lek Survey	April 4–29, 2021	Piorkowski and Agudelo 2021a
Prairie Grouse Lek Survey	March 27 – May 2, 2023	Piorkowski and Gerringer 2023
Prairie Dog Survey	April 2021	Piorkowski 2021c
Raptor Nest Survey	March 29–31; May 10–11, 2021	Piorkowski 2021a
Raptor Nest Survey	March 12 – July 8, 2023	Piorkowski and Wilson 2023
Bat Acoustic Survey	August 5 – October 23, 2019; April 17 – June 25, 2020	Burns & McDonnell Engineering Company Inc. 2020
Northern Long-eared Bat Summer Habitat Assessment	Not Applicable	Piorkowski 2021b
Northern Long-eared Bat Presence/Probable Absence Surveys	July 31 – August 9, 2023	Sirajuddin and Piorkowski 2023

[a] Assessment to determine suitable whooping crane stopover habitat conducted to inform the Whooping Crane consistency evaluation for the Proposed Project. See Appendix E for additional detail.

3.4.1.1 General Wildlife

Wildlife is addressed in Section 4.6.2 of the 2015 PEIS, including herpetofauna, birds, and mammals in the UGP Region. The Proposed Project Area falls in the Northwestern Glaciated Plains Level III Ecoregion (USEPA 2013). Common wildlife species in this ecoregion, outside of the taxa groups discussed below, include white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), pronghorn (*Antilocapra americana*), white-tailed jackrabbit (*Lepus townsendii*), white-tailed prairie dogs (*Cynomys leucurus*), and bobcat (*Lynx rufus*). Common herpetofauna species include snapping turtle (*Chelydra serpentina*), spiny softshell turtle (*Apalone spinifera*), smooth green snake (*Opheodrys vernalis*), and prairie rattlesnake (*Crotalus viridis*; McNab 1996). Invertebrates in the ecoregion include species commonly associated with prairies and agricultural lands. Wildlife may use agricultural lands for foraging and shelter, along with herbaceous vegetation in field edges and swales. Wooded areas or shelterbelts, riparian areas, and wetland/waterbody habitats may also be used by general wildlife species (see Section 3.2).

3.4.1.2 Birds

The Proposed Project Area is within the Prairie Potholes Bird Conservation Region 11 (U.S. North American Bird Conservation Initiative 2021) and two Level IV ecoregions, the Southern Missouri Coteau Slope and the Missouri Coteau Slope (USEPA 2012). These ecoregions, historically composed of grasslands, have been largely converted for agricultural use (USEPA 2012) and include some wetland and riparian areas. No National Audubon Society Important Bird Areas were identified in the Proposed Project Area. The Proposed Project Area is located in the Central Flyway, which contains the routes of migrating birds through the region (USFWS 2024b). Birds in the Proposed Project Area mainly include species associated with the Northern Great Plains and areas with open, disturbed agricultural habitat with seasonal migrants, including waterfowl, waterbirds, and shorebirds.

A total of 7,653 bird observations were made across all avian use (AU) surveys (Appendix A), consisting of 75 unique species. Groups with the greatest representation included waterfowl (88.0%), passerines (5.7%), and doves/pigeons (0.8%). Small bird surveys were conducted in the first year of AU surveys, with a total of 26 unique small bird species observed during the survey period. The three most observed small bird species included red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), and horned lark (*Eremophila alpestris*; Piorkowski and Agudelo 2021b).

The Migratory Bird Treaty Act of 1918 is the cornerstone regulatory act of migratory bird conservation and protection, including prohibiting the take of migratory bird species. The USFWS has furthered these conservation efforts by identifying Birds of Conservation Concern (BCC; USFWS 2021a) that are at a greater risk of becoming candidate species under the ESA and are a high conservation priority. Five BCC species were recorded during AU surveys at the Proposed Project, including Franklin's gull (*Leucophaeus pipixcan*), northern harrier (*Circus hudsonius*), bobolink (*Dolichonyx oryzivorus*), grasshopper sparrow (*Ammodramus savannarum*), and red-headed woodpecker (*Melanerpes erythrocephalus*; Table 3.4-2;

Piorkowski and Agudelo 2021b, Piorkowski and Chouinard 2024; Appendix A). The USFWS Information for Planning and Consultation (IPaC) report for the Proposed Project (USFWS 2024a) also listed black tern (*Chlidonias niger*), marbled godwit (*Limosa fedoa*), and western grebe (*Aechmophorus occidentalis*) as BCC species with potential breeding populations on site.

In 2015, South Dakota Game, Fish and Parks drafted a state Wildlife Action Plan to assess the health of South Dakota's fish and wildlife and associated habitats (SDGFP 2023). This plan includes endangered and threatened species, SGCN, species regionally or globally imperiled for which South Dakota represents an important portion of their remaining range, and species with characteristics making them vulnerable. Three SGCN were observed during the Proposed Project's AU surveys, including American white pelican (*Pelecanus erythrorhynchos*), ferruginous hawk (*Buteo regalis*), and peregrine falcon (*Falco peregrinus*; Table 3.4-2). Three bald eagles (*Haliaeetus leucocephalus*) and one golden eagle (*Aquila chrysaetos*), also SGCN, were recorded incidentally (i.e., outside of AU point-count surveys) at the Proposed Project (Table 3.4-2). These observations are discussed in further detail in Section 3.4.1.4.

As recommended in the WEG, CCWF2 is developing a Project-specific WCS. The WCS will identify wildlife species at risk from mortality resulting from covered activities and establishes BMPs to be implemented by the Proposed Project to minimize impacts to these species.

Table 3.4-2. Summary of selected species observations during avian use surveys and incidentally at the Proposed Project by survey year.

Species	Scientific Name	Status[a]	Year One Surveys		Year Two Surveys[b]		Average # Obs/Yr
			# obs	incidental	# obs	incidental	# obs
American white pelican	*Pelecanus erythrorhynchos*	SGCN	1	0	0	0	0.5
bald eagle	*Haliaeetus leucocephalus*	SGCN; BGEPA	0	2	0	1	0
golden eagle	*Aquila chrysaetos*	BGEPA	0	0	0	1	0
ferruginous hawk	*Buteo regalis*	SGCN	1	0	0	0	0.5
Franklin's gull	*Leucophaeus pipixcan*	BCC	21	0	21	0	21
peregrine falcon	*Falco peregrinus*	ST; SGCN	1	0	0	0	0.5
northern harrier	*Circus hudsonius*	BCC	9	0	5	0	7
bobolink	*Dolichonyx oryzivorus*	BCC	2	0	–	–	2
grasshopper sparrow	*Ammodramus savannarum*	BCC	4	0	–	–	4
red-headed woodpecker	*Melanerpes erythrocephalus*	BCC	3	1	–	–	3

a. ST = State Threatened; SGCN = Species of Greatest Conservation Need; BGEPA = Bald and Golden Eagle Protection Act of 1940; BCC = Birds of Conservation Concern. Sources: BGEPA 1940; South Dakota Game, Fish and Parks, 2014, 2018, 2024b; U.S. Fish and Wildlife Service 2021c, 2024a.

b. Year two surveys did not include avian use surveys for small birds.

3.4.1.3 Prairie Grouse

The Proposed Project Area is in the occupied range of the greater prairie-chicken (*Tympanuchus cupido*) and sharp-tailed grouse (*T. phasianellus;* collectively "prairie grouse"). Prairie grouse

were once widespread in South Dakota but have declined in distribution and abundance due to loss and fragmentation of grassland habitat (SDGFP 2022). Historically, sharp-tailed grouse occurred throughout South Dakota, but have since been extirpated from the south-east portion of the state (Runia and Solem 2018). Greater prairie-chickens occur in the northeast part of the state, but the densest and most stable populations are in the center of the state and south to Nebraska (Runia et al. 2021). Greater prairie-chickens are a SGCN in South Dakota and both species are considered game species important to state hunting and recreational resources (SDGFP 2022). Prairie grouse are obligate grassland species, preferring large heterogenous swaths of intact prairies in which they can forage and find adequate shelter (SDGFP 2022).

Lek surveys were conducted to document prairie grouse leks during the breeding season (late March to early May) in the Proposed Project Area and a 2-mi buffer (collectively, the Analysis Area) in 2021 and 2023 (see Appendix A for survey methodology). All leks were sharp-tailed grouse leks. Of the four leks surveyed, four leks were found to be active during the 2021 survey period, while only one lek remained active during the 2023 survey period (Table 3.4-3). Of the four 2021 leks, only one was located in the Proposed Project Area and was not active in 2023.

Table 3.4-3. Summary of prairie grouse leks in the Proposed Project Area by survey year.

	2021			2023		
Lek ID	Species	Maximum Number of Grouse	Status	Species	Maximum Number of Grouse	Status
1[a]	STGR	12	Active	–	0	Inactive
2	STGR	13	Active	STGR	3	Active
3	STGR	7	Active	–	0	Inactive
4	STGR	7	Active	–	0	Inactive

[a] Located within the Proposed Project Area.

Species: STGR = sharp-tailed grouse.

3.4.1.4 Eagle and Other Raptors

The Bald and Golden Eagle Protection Act of 1940 provides federal protection to bald and golden eagles, prohibiting the taking or otherwise harming of eagles, their nests, or their eggs. Ground and aerial raptor nest surveys were conducted in 2021 and 2023, respectively, to gather information on eagle nest locations and nests of other raptor species in the Analysis Area. A cumulative 29 unique nests were identified across survey years in the Analysis Area. To date, no golden eagle nests have been observed within the Analysis Area. One bald eagle nest was observed in both years of raptor nest surveys in the Analysis Area but was not within the Proposed Project Area. This nest was observed as occupied and active during both survey periods and was located near the eastern edge of the Analysis Area, 2.17 mi away from the nearest proposed turbine location (Appendix A).

No bald or golden eagles were observed during the AU surveys; however, three bald eagles and one golden eagle were observed incidentally at the Proposed Project (Table 3.4-2; Appendix A). These incidental observations were recorded in the southern portion of the Proposed Project

Area during the winter months. Data presented by eBird (2007 to 2021) indicates the Analysis Area is in an area of generally low abundance of bald eagles with no clear areas of concentration, outside of river corridors located to the west of the Proposed Project Area (Figure 3.4-2). The same bald eagles may be seen throughout the year as they have been observed nesting within the region and have the potential to migrate or winter in and around the Proposed Project Area. The potential for golden eagle use is likely more constrained to wintering or migration times. Incidental-only eagle observations from both years of studies suggest eagle use is not widespread throughout the Proposed Project Area.

3.4.1.5 Bats

There are 13 bat species that have the potential to occur throughout the Proposed Project Area, including the federally listed northern long-eared bat (NLEB; *Myotis septentrionalis*). Bats are generally associated with landscape features, such as water resources, trees, and hedge rows. During the Fall Migration Period (FMP; generally, August through October), bats begin moving toward wintering areas and many species of bats initiate reproductive behaviors (Cryan 2008). Bats return from their winter habitats in spring, typically arriving at maternity roosts by mid-to-late spring (generally April to June; South Dakota Bat Working Group [SDBWG] 2004). Potential suitable roosting habitats for bats include deciduous forest, evergreen forest, mixed forest, and woody wetlands (SDBWG 2004, SDGFP 2014). Acoustic field surveys were conducted to characterize general bat occurrence, while a desktop habitat assessment and mist-net surveys were conducted to evaluate the likelihood of NLEB habitat suitability and presence throughout the Proposed Project Area.

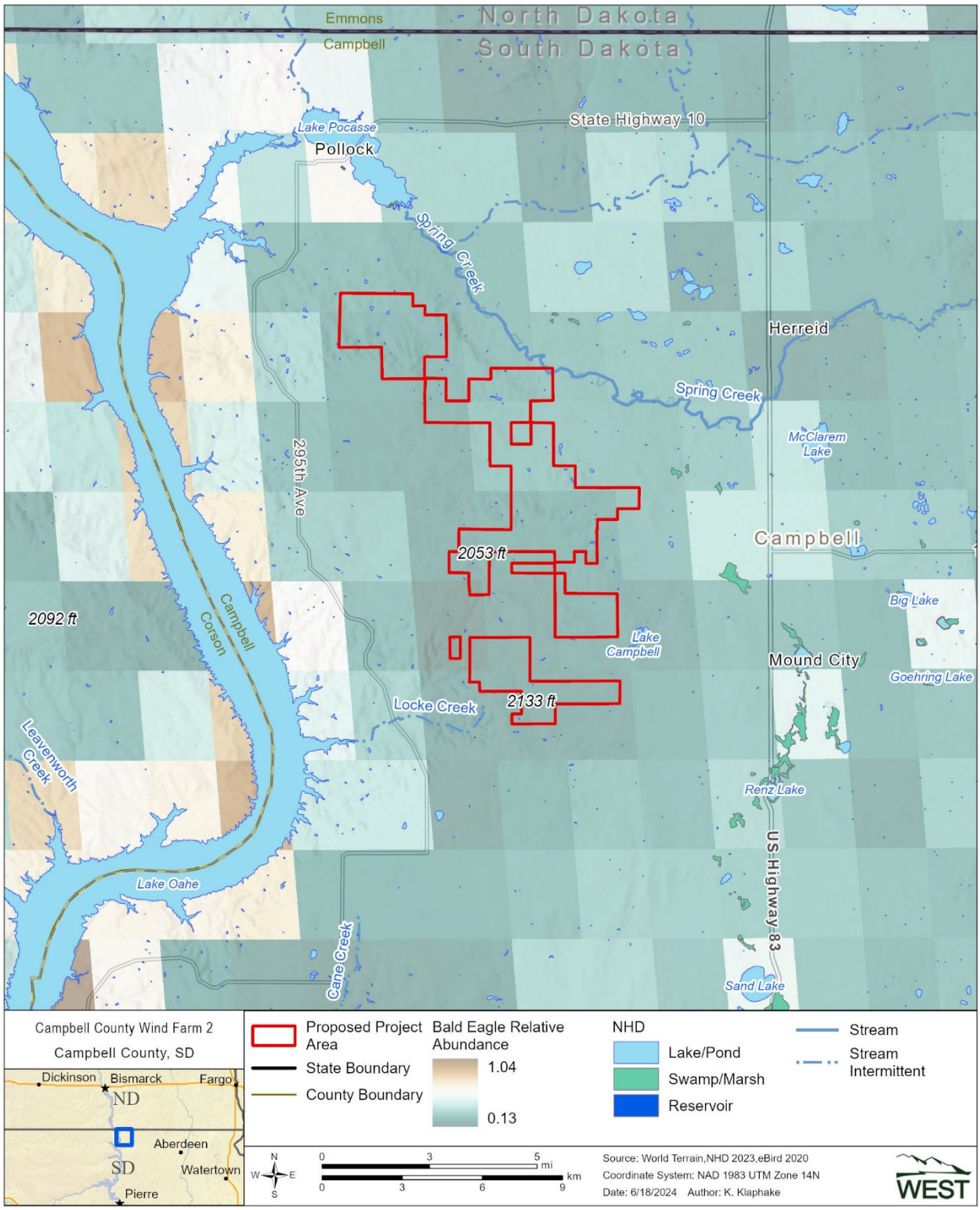

Figure 3.4-1. Bald eagle relative abundance near the Proposed Project Area.

Bat activity acoustic surveys were conducted from August 5 to October 23, 2019, and April 17 to June 25, 2020, at two monitoring stations located in the Proposed Project Area (see Appendix A for survey details). Bat passes recorded during the general acoustic surveys were not identified to species. Instead, calls were identified to frequency groups (i.e., high-frequency [HF] and low-frequency [LF]). HF calls could include species such as the eastern red bat (*Lasiurus borealis*), little brown bat (*Myotis lucifugus*), and NLEB. LF calls could include species such as the big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), and hoary bat (*Lasiurus cinereus*). Averaging across the two stations, approximately 52% of bat passes were classified as HF and 48% of bat passes were classified as LF (Burns & McDonnell Engineering Company Inc. 2020). Bat activity varied between seasons, with lower activity during the spring and higher activity during the fall. The mean bat activity recorded at ground representative stations during the FMP was 34.1 ± 11.8 bat passes per detector-night. A bat presence/absence mist-net survey was also conducted between July 31 and August 9, 2023, at three to four mist-net locations at two sites within the Proposed Project Area. Results of this survey included five eastern red bats, four hoary bats, and two big brown bats (Sirajuddin and Piorkowski 2023).

3.4.2 Environmental Consequences: Proposed Action Alternative

Section 5.6.1.2 of the 2015 PEIS describes common impacts wind energy projects have on wildlife, including wildlife in the Proposed Project Area and are incorporated herein by reference. Impacts may occur during all phases of construction, O&M, and decommissioning. Impacts are categorized as direct or indirect, temporary, or permanent, and by the significance of the impacts (i.e., negligible, minor, moderate, substantial).

3.4.2.1 General Wildlife

During Proposed Project construction, direct impacts on wildlife species would likely be from injury or mortality from the use of construction equipment in areas with habitats used for foraging, shelter, and/or breeding. These areas would include small swaths of pasture, wooded sites, and riparian areas in the Proposed Project Area and would include up to 0.5 ac of tree clearing. These direct impacts would most likely affect less mobile species, such as denning mammals, amphibians, and reptiles within the Proposed Project Area. Indirect impacts from construction activities would involve the temporary disturbance of wildlife in adjacent areas from noise and human activity. These impacts would likely be greatest during the breeding season, when disturbance may lead to abandoned young or reduced fecundity due to behavior alterations, reduction in foraging habitat, and increased stress (see Section 3.10 for more information on noise levels anticipated at the Proposed Project). Direct and indirect impacts are expected to be temporary and minor during construction since mainly common wildlife species adapted to disturbance in cultivated cropland, pasture, and edge habitats would be impacted.

During operation, general wildlife would experience direct impacts through the loss of up to 15 ac of small, isolated areas of herbaceous habitat, due to the permanent placement of

Proposed Project infrastructure in grasslands, pasture, and field edges. This includes the loss of 2.1ac of unbroken grassland (unbroken sod). Because of the small amount of habitat affected and the availability of alternative habitat in adjacent areas, these permanent impacts would be negligible to minor. The temporary direct and indirect impacts to wildlife during Proposed Project decommissioning would mirror those described for the construction phase.

3.4.2.2 Birds

During Proposed Project construction, birds could be directly impacted via injury or mortality from removal of vegetation, tree clearing, grading, and other ground/habitat disturbing activities. The Proposed Project would include 0.5 ac of tree clearing, and CCWF2 would limit tree clearing from April 1 to October 31, to minimize impacts to nesting birds during the majority of most avian breeding seasons. These activities would be limited to localized areas in the Proposed Project Area, and direct impacts from Proposed Project construction would be temporary and minor to local bird populations.

Indirect impacts from Proposed Project construction could include habitat fragmentation of suitable habitat, including grasslands and wetlands, within the Proposed Project Area. Grassland birds were documented as one of the highest proportions of small bird group observations in the summer and winter seasons (Appendix A). Proposed Project facilities, primarily access roads and turbine pads, would contribute to fragmentation; 97 ac of herbaceous land cover and 4.2 ac of potential wetlands in the Proposed Project Area would be temporarily affected (see Sections 3.2.2 and 3.3.2).

Proposed Project operation would primarily result in direct impacts to birds through injury or mortality caused by turbine collisions. Post-construction fatality monitoring reports at wind energy facilities from the USFWS Mountain-Prairie region show a wide variation of bird mortality, ranging from 0.30 to 8.25 birds per MW per year (Western EcoSystems Technology, Inc. [WEST] 2023b). Studies at wind energy facilities in South Dakota have reported a similar range in mortality estimates. A recent post-construction monitoring study at a wind facility in eastern South Dakota reported a total bird fatality rate of 0.23 fatalities per turbine (Chodachek et al. 2022), while a facility in central South Dakota reported a rate of 2.39 fatalities per turbine (Derby et al. 2014). It is expected that the long-term, direct impacts on birds by the Proposed Project would have a minor, permanent impact on local bird populations.

Operation of the Proposed Project may result in displacement of local birds in the Proposed Project Area. Studies indicate that avoidance impacts to birds ranges from 246 to 2,624 ft from a turbine, depending on the environment and the bird species affected (Strickland 2004, Shaffer and Buhl 2016). However, displacement impacts are likely lower at the population level, since displaced birds are not precluded from breeding elsewhere. A recent study from Shaffer et al. 2019 provided a methodology to estimate the displacement effects, up to 300 meters from wind turbines. Using this methodology and the grassland data collected for the Proposed Project (Section 3.3.1.2), the Proposed Project would indirectly cause avoidance/displacement of ≈ 47.7 ac of broken grassland sod and ≈ 272.4 ac of unbroken grassland sod for use by

grassland birds (Shaffer and Buhl 2016, Shaffer et al. 2019) Given the turbines would primarily be placed in existing cropland, apart from the 15 ac of herbaceous and 1.5 ac of wetlands that would be permanently impacted by Proposed Project infrastructure, permanent direct impacts to grassland/wetland habitat is limited. Indirect impacts of displacement from operation are expected to be minor.

The Proposed Project could have direct and indirect impacts on migratory BCC species, including the species observed during Proposed Project AU surveys (Table 3.4-2). Previous post-construction fatality monitoring studies have recorded carcasses of grasshopper sparrows and American white pelicans at wind farms in South Dakota (Derby et al. 2014, Chodachek et al. 2022). Research has indicated grassland nesting BCC and SGCN, listed in Section 3.4.1.2, are negatively affected when their habitat becomes fragmented (Bakker 2020). The conservation measures committed to by CCWF2 would minimize impacts to suitable habitat, as noted in Sections 3.2.2 and 3.3.2 above. CCWF2 is also considering additional best management practices and mitigation measures to reduce impacts to migratory bird habitats. Given the limited forested habitats in the Proposed Project Area and limited impacts to herbaceous cover, the Proposed Project's permanent direct and indirect impacts to migratory BCCs, raptors, and other bird species would have a minor impact on overall population levels.

3.4.2.3 Prairie Grouse

Proposed Project construction and operation has the potential to impact prairie grouse directly and indirectly within the Proposed Project Area, mainly through direct injury/mortality, human disturbance, and habitat fragmentation. Construction and operation activities could also have impacts on leks in the Analysis Area. CCWF2 has cited all Proposed Project infrastructure ≥ 1 mi away from any documented lek, apart from a temporary MET tower. This proposed location would be in disturbed cropland, which has been reviewed and approved by the SDGFP (H. Morey, pers. comm., 2024), and the temporary tower would be removed within four years after construction. Since the Proposed Project has been sited away from leks, impacts to prairie grouse are anticipated to be minor.

3.4.2.4 Eagles and Other Raptors

The impacts to nesting and foraging raptors from Proposed Project construction would be similar to other birds, including direct mortality or injury from collision and habitat alterations. Tree clearing would be limited to winter months, to minimize the risk of harm. A summary of eagle mortalities at wind facilities in the contiguous U.S. found at least 32 wind energy facilities experienced eagle fatalities (Pagel et al. 2013). Between 2013 and 2018, 49 verifiable records of bald eagle mortalities were reported in the U.S. (Kritz et al. 2018).

The USFWS considers eagle nests ≤ 2-mi of a wind energy facility to be potentially impacted (USFWS 2020b). Impacts to nesting eagles near the Proposed Project Area would be unlikely due to the nest's location being > 2-mi from the Proposed Project Area. CCWF2 is evaluating

eagle use at the site to determine the potential for take and would coordinate with the USFWS for take coverage, if deemed necessary.

These impacts could affect several raptor species based on their presence documented in the Proposed Project Area and/or suitable habitat. It is expected the Proposed Project would have the most impact to red-tailed hawks (*Buteo jamaicensis*) as this species is among the top five raptor species reported at wind facilities in the Mountain-Prairie region (WEST 2023b) and was the most common raptor species recorded during AU and raptor nest surveys at the Proposed Project (Appendix A). Based on the relatively low presence of raptors in the Proposed Project Area, collision fatalities would have a minor, permanent, direct impact on raptor populations.

3.4.2.5 Bats

Construction, operation, and decommissioning of the Proposed Project could have both direct and indirect impacts to bat species within the Proposed Project Area. Direct impacts from collisions with turbines and tree clearing could result in injury or morality of bats. CCWF2 would limit tree clearing from April 1 to October 31 to minimize risk to covered bat species. This minimization measure would also protect non-listed bat species that use the same habitat.

Most bat fatalities occur during the FMP and most fatalities occur on nights with relatively low wind speeds (e.g., less than 20 ft per second; Arnett et al. 2008, 2013; Arnett and Baerwald 2013). Typically, wind farm mortality records do not show a comparable spring peak in collision mortality despite the fact bats also migrate during spring. Although reasons for this remain unclear, factors may include differing flight height, migration routes, or mating behavior and courtship flight during spring and fall migration (Cryan 2008, Cryan and Barclay 2009).

To determine potential bat fatality rates for the Analysis Area, publicly available bat fatality rates documented in Minnesota, North Dakota, and South Dakota were reviewed since these states were determined to have similar landscapes and contain a more similar bat composition to the Analysis Area than the other states in the USFWS Midwest and Prairie-Mountain Regions. Public Renew data from these states range from 1.71 to 32.11 bats per turbine per year (WEST 2023b). South Dakota projects report lower values, ranging from 0.78 to 1.71 bats per turbine per year (Derby et al. 2014, Chodachek et al. 2022). It is expected that hoary bat, silver-haired bat, and eastern red bat would be the most common fatalities at the Proposed Project, consistent with reported fatalities from many wind facilities and individuals caught during mist-net surveys (Arnett et al. 2008, WEST 2023b; Appendix A).

The Proposed Project Area is not expected to support large numbers of bats during the summer season given the limited woodland roosting habitat available, which primarily occurs along the gen-tie line. However, farm buildings and other structures are abundant and may provide suitable roosting for certain bat species more tolerant of disturbance. Many bats prefer to forage along forest edges and in forest openings and gaps. Riverine/riparian corridors and drainages provide high quality foraging habitat, as these features attract concentrations of insect prey and provide open corridors in which bats may fly and effectively locate and capture

insect prey (Taylor et al. 2020). Spring Creek may provide potential habitat for bats in the Proposed Project Area, although tributaries of Spring Creek in the Proposed Project Area are intermittent and would not provide a year-round source of water for bat use (USFWS NWI 2024). Based on available habitat, bats may roost in the Proposed Project Area but are more likely to roost in higher quality habitat along the Missouri River, ≈ 5 mi to the west. The Proposed Project is expected to have negligible, indirect, permanent impacts to potential bat habitat and minor, direct, permanent impacts to bat populations in the Proposed Project Area.

3.4.3 Environmental Consequences: No Action Alternative

No Project-related impacts to wildlife would occur, and ongoing impacts, mostly agriculture related, would continue at existing intensities.

3.5 Threatened and Endangered Species

This section analyzes potential impacts from the proposed Project to threatened and endangered species. The general analysis of these resources in Sections 4.6.4 and 5.6.1.4 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for threatened and endangered species is the Proposed Project Area. The Project-specific affected environment and impacts for threatened and endangered species are analyzed below.

3.5.1 Affected Environment

Section 4.6.4 of the 2015 PEIS describes the plant and animal species that are listed as threatened or endangered under the ESA that could occur within the UGP Region. Threatened and endangered species that may occur in the Proposed Project Area were identified through a query of the USFWS IPaC and include whooping crane (*Grus americana*), NLEB, piping plover (*Charadrius melodus*), and rufa red knot (*Calidris canutus rufa*; USFWS 2024). No designated critical habitat for any of these species is in the Proposed Project Area; the nearest is the Missouri River (piping plover) ≈ five mi west of the Proposed Project Area.

3.5.1.1 Whooping Crane

The Proposed Project Area is in the migratory path of the only naturally occurring, self-sustaining population of whooping cranes, the Aransas/Wood Buffalo whooping crane population (AWBP). The AWBP extends from the coast of Texas into several Canadian provinces. The AWBP breeds in Wood Buffalo National Park in Canada and winters along the Texas coast, including in the Aransas National Wildlife Refuge (Urbanek and Lewis 2020). The AWBP migrates through South Dakota annually to northern breeding grounds and southern wintering areas. Spring and fall migration dates range from late March to mid-May and mid-September to mid-November, respectively. On average, migrating whooping cranes make 11 to 12 overnight stopovers and four multi-day stopovers during each trip.

During migration, whooping cranes must land at suitable stopover habitat to forage or roost. Foraging habitat includes emergent herbaceous wetlands (preferred) and cropland, while

roosting habitat includes open water and emergent herbaceous wetlands (Baasch et al. 2019). Wetland size and depth, vegetation characteristics, proximity to anthropogenic features, and proximity to additional foraging resources are documented factors that affect the suitability of potential stopover habitat (USFWS 2007, Niemuth et al. 2018, Pearse et al. 2021).

No whooping crane observations were recorded during the Proposed Project's AU surveys (Appendix A) or at the neighboring Campbell County Wind Farm 1 during the 2012 spring and fall AU surveys (WAPA 2015). However, several whooping crane records exist within a 12-mi buffer around the Proposed Project Area. A query of the South Dakota Natural Heritage Program identified numerous sightings in the surrounding area, but none in the Proposed Project Area (Figure 3.5-1). One adult was observed in a group of sandhill cranes (*Antigone canadensis*) in October of 2004, while three adults were observed in April of 2020 (eBird 2024). It is possible whooping cranes could occur in suitable stopover habitats in the Analysis Area during migration, however, it is likely to be a rare occurrence due to the small population numbers of the AWBP (536 individuals; Butler et al. 2023).

The USFWS, in evaluating the ongoing and anticipated development of wind facilities in the migration corridor, has stated, "[s]uitable stopover habitat in the prairie pothole region of the Dakotas and eastern Montana does not appear to be limited at the present time" (USFWS 2009, Pearse et al. 2021). While the quantity, quality, and distribution of potential stopover habitat in the region likely changes from year to year (Dahl 2014, Pearse et al. 2018, Alemu et al. 2020), whooping crane habitat in the prairie pothole region is typically described as being abundant compared to other portions of the migration corridor (Stahkecker 1997a, 1997b; Bates 2019). This is empirically supported by evidence suggesting site fidelity was more pronounced in areas such as the southern portion of the migration corridor where core use sites were fewer, likely indicating limited available stopover habitat in those areas (Pearse et al. 2020).

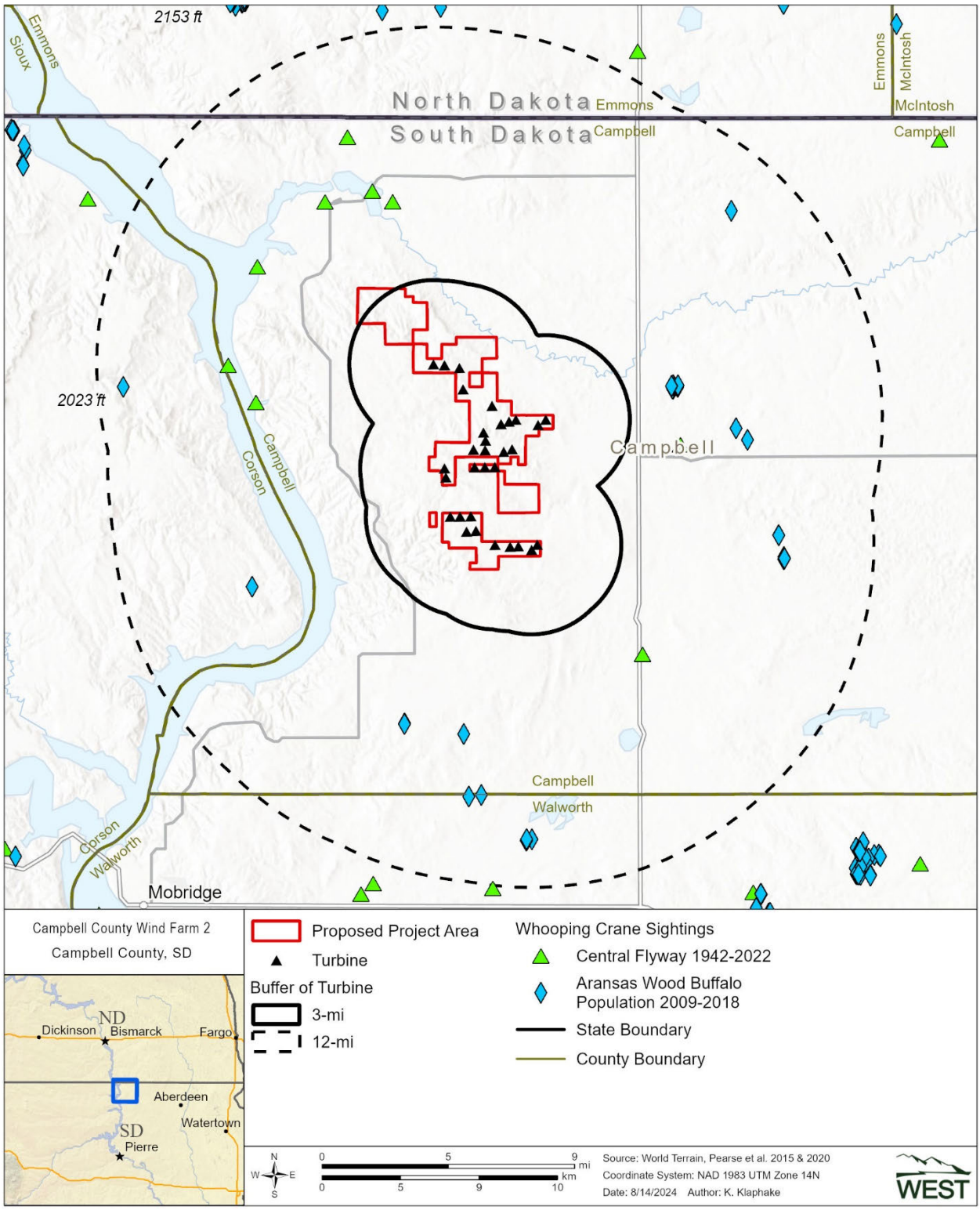

Figure 3.5-1 Whooping crane sightings with 3-mile and 12-mile buffers for the Proposed Project Area.

3.5.1.2 Northern Long-eared Bat

The Proposed Project Area is in the western tier of the NLEB estimated range (Bat Conservation International 2024). This species occurs in South Dakota throughout the year, including during hibernation, spring and fall migrations to and from hibernacula, and the summer maternity season. However, they are mainly found in narrow, riparian corridors (SDGFP 2014, Andersen and Geluso 2022). The South Dakota Natural Heritage Database identified records of NLEBs ≈ 15 mi south of the Proposed Project Area in Lake Hiddenwood State Park.

This medium-sized bat (3.0 to 3.7 inches long) is a generalist predator of aerial invertebrates. This species forages at night in mainly mature forested areas, along forest edges, and in small clearings. NLEBs use different roost sites in different seasons. In winter, NLEBs mainly hibernate in caves and mines, singly or in small numbers. During summer, they typically roost singly or in maternity colonies under bark, in crevices, or in cavities of live or dead trees, though males and non-reproductive females may roost in caves or mines. NLEBs also may roost in buildings, barns, bat houses, behind window shutters, under bridges, and on utility poles. Nighttime foraging consists of feeding on insects, which the bats catch while in flight using echolocation or by gleaning motionless insects from vegetation and water surfaces (USFWS 2015).

The Analysis Area for evaluating effects to NLEBs includes the area within a 2.5-mi buffer around Proposed Project infrastructure, based on guidance from the *Range-wide Indiana Bat Survey Guidelines* (USFWS 2020a; Figure 3.5-2). Following the WEG, pre-construction bat acoustic surveys were completed at two bat acoustic stations within the Proposed Project Area in the fall of 2019 and spring of 2020 (see Section 3.4.1 and Appendix A for additional details). These bat acoustic surveys did not identify bats by species, but rather according to the frequency of their calls. Bats were grouped either as LF or HF bats. Since NLEBs fall within the HF category, results of these surveys cannot definitively confirm presence within the Proposed Project Area. Acoustic surveys were also conducted at the neighboring Campbell County Wind Farm 1 during the fall of 2010. Call results of this survey were not identified to species level and could not be used to definitively confirm presence of NLEB in the area (WAPA 2015).

Suitable NLEB habitat in the Analysis Area was evaluated for the presence and connectivity of forested areas that might be used for roosting, foraging, and traveling or commuting corridors. Forest patches in the Analysis Area were identified from aerial imagery and were found to occur as isolated stands of trees, most often with little connectivity. A 1,000-ft buffer was placed around forest patches of 10 ac or greater in size. These areas were considered suitable NLEB roosting/foraging habitat (Figure 3.5-2).

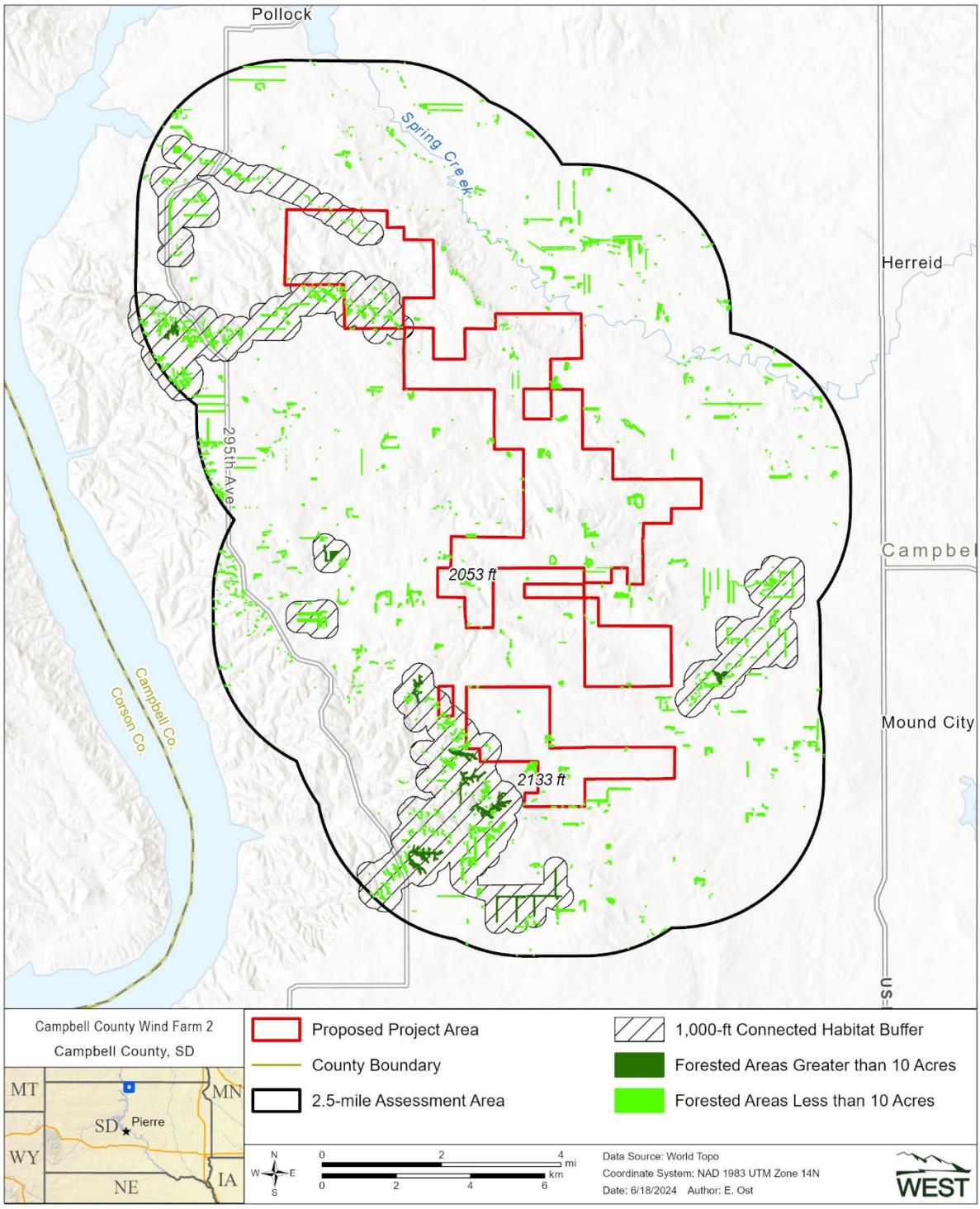

Figure 3.5-2. Results of the Northern Long-eared Bat Summer Habitat Assessment for the Proposed Project Area.

While NLEB presence was assumed at each patch of trees 10 ac or greater in size, presence/absence mist-net surveys were completed in August of 2023, in which no NLEBs were captured (Appendix A). These cumulative assessment and survey results show probable absence of the NLEB in the Proposed Project Area during the summer. The species could pass through the Proposed Project Area seasonally in the spring and fall, although no spring or fall occurrences have been documented based on publicly available data.

3.5.1.3 Piping Plover

Piping plovers are small, migratory shorebirds that breed in limited regions of the U.S. The Northern Great Plains population occurs along rivers and lakes in the region and breeds from Canada to Colorado. Typical piping plover habitat includes sandy riverbanks, sand bars, and alkali lakes. Piping plovers arrive on breeding grounds in early April and nest in mid-to-late April (Elliott-Smith and Haig 2020). Piping plovers nest in shallow depressions and their eggs hatch from late May to early June on exposed habitat, mainly sandbars with low vegetative cover (SDGFP 2005). Fledging occurs 25 to 35 days after hatching (USFWS 2024d). In South Dakota, piping plovers nest between May 1 and August 15 (SDGFP 2005).

Piping plovers are closely associated with the Missouri River in South Dakota. Available nesting habitat varies annually depending on water levels. The nearest suitable habitat includes the Missouri River, which is ≈ five mi from the Analysis Area (Figure 3.5-3). For piping plovers nesting on the Missouri River, overland movements are likely. The extent of overland movements by this species is not known; however, the proximity of the Proposed Project to the Missouri River might increase the potential for on-site occurrence during migration, breeding, or dispersal. While piping plovers seem to prefer sandy riverbanks and sand bars, piping plovers are also known to nest on alkali lakes with exposed habitat (SDGFP 2005). No alkali lakes occur in the Analysis Area and most alkali lake occurrences are in North Dakota. In dry years, seasonal (e.g. dried up) wetlands with exposed shore in the Analysis Area could provide piping plover habitat. There is limited (e.g., seasonal wetlands) habitat in the Proposed Project Area to attract piping plover from the Missouri River corridor.

The nearest reported piping plover is a 2016 sighting 16.3 mi from the Proposed Project (eBird 2024). Most publicly available observations of piping plover near the Proposed Project occur around the city of Mobridge, 16.5 mi west of the Proposed Project. No piping plover observations were made during AU surveys, nor were they observed incidentally while conducting other wildlife surveys at the Proposed Project (Appendix A). No alkali lakes were observed in the Proposed Project Area; therefore, the nearest suitable and critical habitat for piping plover is the Missouri River, ≈ 5 miles west of the Proposed Project (Figure 3.5-3).

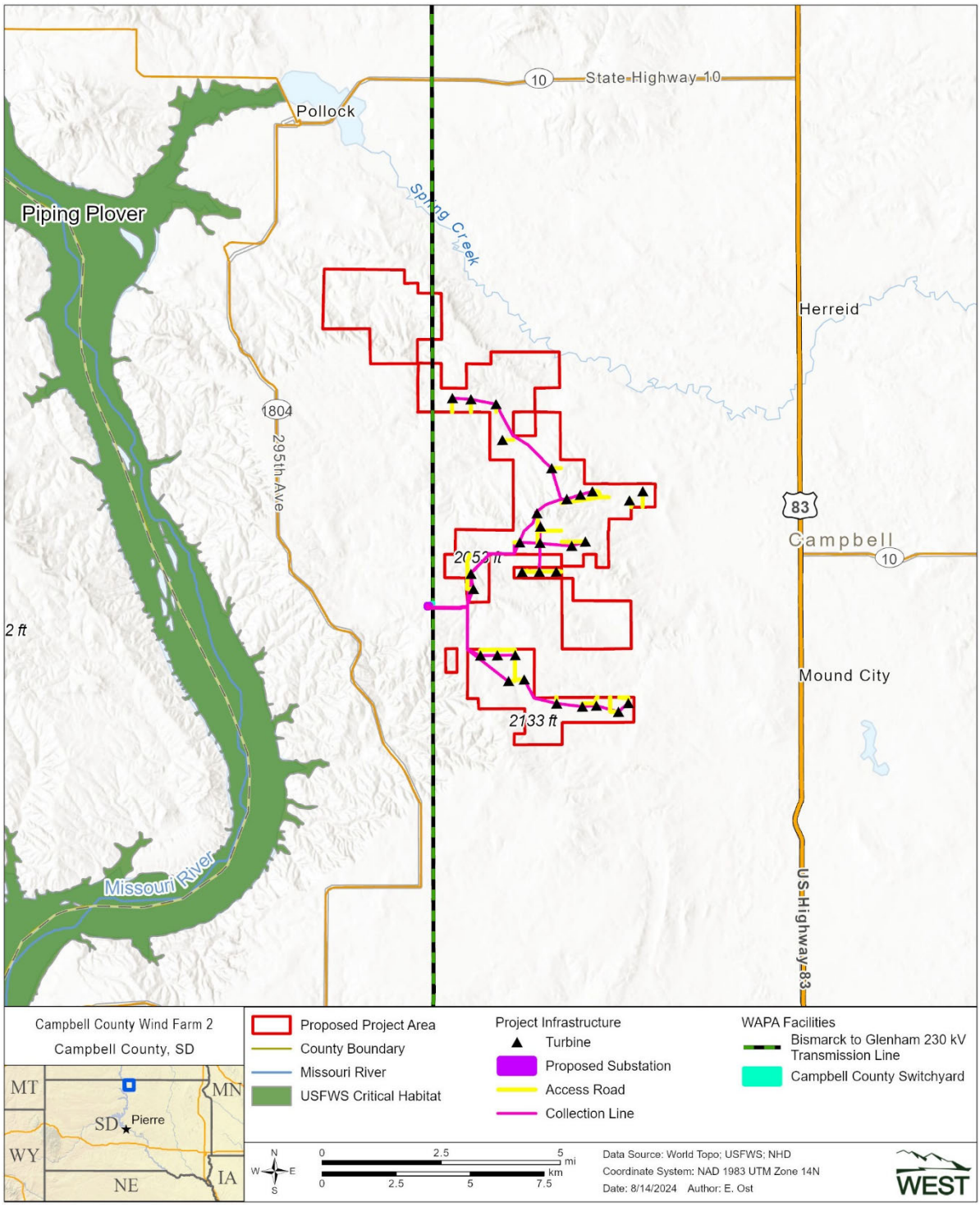

Figure 3.5-3. Piping Plover Critical Habitat and in relation to the Proposed Project Area.

3.5.1.4 Rufa Red Knot

The rufa red knot is a coastal shorebird, occurring in South Dakota as a seasonal migrant. Small numbers of rufa red knots are reported annually across the interior of the U.S. during their spring and fall migration. These reported sightings are concentrated along the Great Lakes, but multiple reports have been made from nearly every interior state, including South Dakota (eBird 2024). Rufa red knots nest in the Arctic and winter mainly in Florida, the adjacent Gulf Coast and Caribbean, northern Brazil, and the Chilean and Argentine Tierra del Fuego (American Bird Conservancy 2024). The long-distance migrations between nesting and wintering sites can be over 9,000 mi and occur twice each year, in spring and autumn. During migration, the birds mainly use marine habitats, but frequent shorelines of larger lakes or freshwater marshes when they occasionally appear at interior locations (Cornell Lab of Ornithology 2024).

Rufa red knot does not breed in South Dakota but could be an occasional migrant during the spring and fall. There were 29 sightings of rufa red knot reported in South Dakota since 2002 (eBird 2024). The nearest potential rufa red knot habitat is ≈ five mi west of the Proposed Project Area, at the Missouri River (Figure 3.5-3). The nearest reported rufa red knot, detected in 2022, was 28.3 mi from the Proposed Project Area (eBird 2024).

3.5.2 Environmental Effects: Proposed Action Alternative

3.5.2.1 Effects Determinations

CCWF2 would follow applicable conservation measures required in the 2015 PEIS and 2015 *Upper Great Plains Wind Energy Programmatic Biological Assessment*, as listed in the species consistency evaluation forms, to ensure the Proposed Project would not significantly affect federally listed species. These measures are listed individually by species below. WAPA is requesting informal Section 7 consultation with the USFWS in compliance with the ESA by submitting the Proposed Project's consistency evaluation forms along with other documentation, as relevant, to the USFWS. Results, including final determinations, will be presented in the Final EA. Conservation measures for water resources (Section 3.2), vegetation (Section 3.3), and wildlife (Section 3.4) could also benefit threatened and endangered species, including federally listed and state-listed species.

3.5.2.2 Whooping Crane

The Proposed Project may affect whooping cranes from construction, operation, and decommissioning activities. The loss of whooping crane habitat, such as filling wetlands to construct Proposed Project infrastructure, in the Proposed Project Area would be minimal. The Proposed Project would temporarily impact 4.2 ac of wetlands during construction and permanently impact 1.5 ac during operation (Table 3.2-3). Construction-related impacts would be temporary, and the 4.2 ac of wetlands disturbed during construction would be restored. Relative to the abundance of wetlands in the surrounding area, the 1.5 ac of permanent wetland impact due to Proposed Project operation is minimal on local and landscape scales.

Direct impacts of the Proposed Project could include whooping crane collisions with Proposed Project facilities resulting in their mortality or injury. Collision with Proposed Project facilities could occur at turbines, the transmission line, or MET towers. In addition, collisions could occur with industrial equipment used during construction or decommissioning. The likelihood of whooping crane collisions with wind turbines at the Proposed Project is low due to the tendency of migrating whooping cranes to avoid wind energy facilities (USFWS 2009). Pearse et al. (2021) stated the observed avoidance of wind turbines by three mi decreases the probability that collisions with these structures may occur.

Additionally, no documented whooping crane fatalities related to turbine collisions have been recorded to date (USFWS 2009, American Wind Wildlife Institute 2020, WEST 2023b). The likelihood of whooping crane collisions with other Proposed Project infrastructure, such as the transmission line and MET towers, would also be low. Collision risk with the transmission line at the Proposed Project would be low because the power line between the substation and POI is short (≈ 700 ft) and it would be outfitted with bird flight diverters. The use of underground collection lines also reduces the risk of collision mortality.

Indirect effects to whooping cranes may result from degradation of existing habitat, loss of potentially suitable habitat, or additional whooping crane behavioral responses to the operations of the Proposed Project. Since whooping cranes may avoid habitat within ≈ three mi of turbines (Pearse et al. 2021), there is an assumed loss of potentially suitable stopover habitat near wind turbines. Thus, the preferred species-specific guidance from the UGP Wind Programmatic Biological Assessment is avoidance of all infrastructure ≤ one mi of wetlands that provide potentially suitable habitat. Since Proposed Project turbines will be located in this buffer, CCWF2 has elected to complete the species-specific minimization measure, which allows for the acreage of suitable wetlands located ≤ 0.5 mi of turbines to be offset. Suitable stopover habitat was assessed within a 0.5-mi buffer around the Proposed Project Area, collectively referred to as the Analysis Area, and it was determined to be a total of 133.6 ac. More detail regarding this assessment can be found in Appendix E: Species Consistency Evaluation Forms.

Degradation of suitable stopover habitat can occur from Proposed Project-related surface water runoff and deposition of eroded soils in wetland areas. These impacts are expected to be minor at the Proposed Project because, as described in Sections 3.2.1 and 3.2.2, surface water and wetland effects would be minimized by the implementation of conservation measures and compliance with a general permit for stormwater discharges from the SDDANR for construction activities and a permit from the USACE for wetland effects.

The following conservation measures would be implemented at the Proposed Project to reduce potential effects to whooping cranes:

- CCWF2 would complete ≥ one year of avian and bat fatality monitoring consistent with recommendations for operations monitoring included in the WEG, 2015 PEIS, Species Consistency Evaluation Forms, and the USFWS' *Draft Land-based Wind Energy Voluntary Avoidance Guidance for the Northern Long-eared Bat*, as applicable.

- Operational monitoring would be conducted during whooping crane migration seasons. Operations staff would be trained to identify whooping cranes, and turbines within 2.0 mi of whooping cranes would be shut down until the whooping cranes moved on naturally, as per the Proposed Project's whooping crane operational contingency plan.
- The use of guy wires on MET towers would be avoided. If guy wires would be installed, all guy wires would be marked and maintained with approved bird flight diverters following Avian Power Line Interaction Committee (APLIC) standards (APLIC 2012).
- Bird flight diverters consistent with APLIC standards would be placed and maintained on the top static wire of overhead transmission lines.
- A whooping crane observation plan and turbine shutdown protocol would be implemented during whooping crane migration periods for the life of the Proposed Project (Appendix F).
- Participation in an environmental awareness training program would be required for Proposed Project staff and subcontractors working on-site. The program includes training participants in the proper identification, response protocol, and reporting of sandhill and whooping cranes.
- CCWF2 commits to funding habitat offsets of 133.6 ac of wetlands that fall within the category of suitable stopover wetland habitat within South Dakota.

With implementation of whooping crane species-specific conservation measures and considering the best available data, there would be discountable direct and indirect impacts to whooping cranes during construction, operations, and decommissioning. WAPA has determined the Proposed Project *may affect, but is not likely to adversely affect***,** the whooping crane.

3.5.2.3 Northern Long-Eared Bat

The Proposed Project may affect the NLEB from construction, operation, and decommissioning of Proposed Project infrastructure. Direct and indirect impacts to the NLEB, including injury or mortality and noise disturbance, may occur during tree clearing activities for construction. To avoid impacts to NLEBs during construction, tree clearing would be limited during the NLEB's active season (April 15 to October 31). CCWF2 would follow the USFWS' *Draft Land-based Wind Energy Voluntary Avoidance Guidance for the Northern Long-eared Bat* as currently proposed. Once finalized, the NLEB conservation commitments would be updated.

Direct effects to NLEB could include injury or death due to collisions with Proposed Project turbines. The risk of collision has been minimized by siting Proposed Project infrastructure ≥ 0.5-mi from suitable NLEB roosting/foraging habitat (Figure 3.5-3). Collision risk for bats is highest during the FMP, when activity for all bat species is typically higher and bats travel from their summer habitat to hibernacula. NLEBs are not considered long-distance migrants and typically travel ≤ 55 mi between hibernacula and summer habitat (USFWS 2022). The nearest known hibernacula are 180 mi from the Proposed Project in the Black Hills of South Dakota, which is more than twice the species known migration range from hibernacula. Although

suitable NLEB habitat exists in the Analysis Area, the likelihood of the species' presence is minimal due to the distance to the nearest known hibernacula. These factors lead to a reduced risk of collision with Proposed Project infrastructure.

Based on Proposed Project presence/probable absence surveys, limited habitat acreage, and rarity of the species, summer risk for the NLEB is not anticipated to occur. However, the species may collide with turbines during spring and fall migration. To ensure take is unlikely to occur, the Proposed Project would implement the applicable measures as listed below. *Note: these are based on the current USFWS' Draft Land-based Wind Energy Voluntary Avoidance Guidance for the Northern Long-eared Bat and are subject to change if the USFWS updates their guidance*.

- CCWF2 would complete ≥ one year of Tier 4a avian and bat fatality monitoring efforts consistent with recommendations for operations monitoring included in the WEG, 2015 PEIS, Species Consistency Evaluation Forms, and the USFWS' *Draft Land-based Wind Energy Voluntary Avoidance Guidance for the Northern Long-eared Bat*, as applicable. This post-construction study would use the Evidence of Absence estimator to achieve a minimum detection probability (g-value) of 0.2 and analyze fatality estimates.
- From ½ hour before sunset to ½ hour after sunrise, CCWF2 would raise turbine cut-in speeds at all Proposed Project turbines from 3.0 m/s to 5.0 m/s during the South Dakota NLEB FMP (August 16 – October 31), when temperatures exceed 40° F (4.44° C).
- Feather blades to the manufacturer's cut-in speed from sunset to sunrise, when the temperature is above 40° Fahrenheit, from June 1 – August 15.
- No siting of turbines within 1,000 ft of potentially suitable summer habitat.
- Implementation of a Wildlife Incident and Reporting System to be developed for the Proposed Project to notify the USFWS South Dakota Ecological Services Field Office if an injured or dead NLEB is detected.

It is anticipated the Proposed Project would have discountable direct and indirect impacts to the NLEB during construction, operations, and decommissioning. WAPA anticipates the Proposed Project *may affect, but is not likely to adversely affect,* the NLEB. A final determination would be made in the Final EA based on the outcome of WAPA's Section 7 consultation with the USFWS. Prior to completion of consultation with the USFWS, conservation measures listed throughout this document for ESA species may be subject to change, particularly if USFWS provides additional species guidance or information.

3.5.2.4 Piping Plover

Because of the lack of reported piping plover sightings in and near the Analysis Area and the lack of suitable habitat, except in dry years when dried up wetlands with exposed shore could provide piping plover habitat, direct Proposed Project impacts to piping plover are unlikely. Piping plovers are more likely to be attracted to and use suitable habitat along the Missouri River rather than the marginal habitat in the Analysis Area. Because piping plover are unlikely to use the Analysis Area, collision risk with turbines is low. While collision with other project

infrastructures is possible (i.e., the < 700 ft of proposed overhead power lines, MET towers, vehicles), conservation measures such as bird flight diverters, unguyed towers, and reduced vehicle speeds would be used to minimize the potential for collision.

The Proposed Project would have minimal direct habitat effects when considering the availability of wetlands in the Proposed Project, surrounding area, and the proximity of more suitable habitat along the Missouri River (≈ five mi from the Proposed Project Area). Of the 1,763 ac of wetlands in the Analysis Area, the Proposed Project would temporarily affect 4.2 ac during construction and 1.5 ac during operation (Table 3.2-3). Conservation measures for water resources described in Section 3.2.2.3 would further reduce the potential for Proposed Project effects to piping plover habitat (wetlands) in the area. The environmental commitments identified in Section 3.4.1 to minimize wildlife impacts associated with the Proposed Project would reduce impacts to piping plovers. Additionally, conservation measures to offset impacts to 133.6 ac of wetlands for whooping cranes would also benefit other avian species with the potential to use wetlands, such as piping plovers.

WAPA has determined the Proposed Project *may affect, but is not likely to adversely affect,* the piping plover.

3.5.2.5 Rufa Red Knot

Mortality due to collision with Proposed Project wind turbines is possible, but collision risk is low because rufa red knot would be a rare migrant in the Proposed Project Area. Rufa red knots flying at migratory altitudes are likely to be above the rotor-swept area, but few direct measurements of flight altitudes are available for red knots (O'Connell et al. 2011). The birds could occur in rotor swept altitudes and may occur at those altitudes more frequently during ascent or descent from long distance flight, or during short distance flights between areas used for feeding and roosting (Loring et al. 2018). However, migrating rufa red knot are more likely to be ascending or descending to feeding and roosting sites along the Missouri River, ≈ five mi west of the Proposed Project, than in the Analysis Area since the birds seem to prefer shorelines of larger lakes. However, rufa red knots could use wetlands found in and near the Proposed Project Area. Based on publicly available data (WEST 2023b), there have been no known fatalities of this species at wind energy facilities in the UGP. It is possible the presence of the Proposed Project could cause migrating rufa red knots to avoid the Proposed Project Area, however, data specific to rufa red knot avoidance of wind turbines is limited, especially inland.

The Proposed Project would have minimal direct habitat effects when considering the availability of wetlands in the Proposed Project Area, surrounding area, and the proximity of more suitable habitat along the Missouri River (≈ five mi from the Proposed Project Area). Of the 1,763 ac of wetlands in the Analysis Area, the Proposed Project would temporarily affect 4.2 ac during construction and 1.5 ac during operation (Table 3.2-3). Conservation measures for water resources described in Section 3.2.2.3 would further reduce the potential for Proposed Project effects to red knot habitat (wetlands) in the area. The environmental commitments identified in Section 3.4.1 to minimize wildlife impacts associated with the Proposed Project

would reduce impacts to red knots. Additionally, conservation measures to mitigate impacts to 133.6 ac of wetlands for whooping cranes would also benefit other avian species with the potential to use wetlands, such as rufa red knots.

WAPA has determined the Proposed Project *may affect, but is not likely to adversely affect,* the rufa red knot.

3.5.3 Environmental Effects: No Action Alternative

Under the No Action Alternative, no Project-related impacts to threatened or endangered species would occur, but ongoing impacts are expected to continue. For whooping cranes, current threats include collisions with power lines and fences, human pressures on wintering habitat, predators, disease, habitat destruction, and severe weather (USFWS 2024e). For NLEBs, the fungal disease white-nose syndrome is the main threat (USFWS 2024c). For piping plover, habitat loss due to dam construction, water diversion, and water withdrawals have reduced available nesting habitat. Human-caused changes have also increased the number and type of predators, therefore, decreasing nest success and chick survival. Human disturbance, beach development, and sea level rise have also decreased winter habitat for piping plovers (USFWS 2024d). For rufa red knot, current threats include loss of habitat, disruption of natural predator cycles on breeding grounds, reduced prey availability, and increased frequency and severity of mismatches in the timing of the annual migratory cycle relative to favorable food and weather conditions (USFWS 2021b).

3.6 Air Quality and Climate

This section analyzes potential impacts from the Proposed Project on air quality and climate. The general analysis of these resources in Sections 4.4 and 5.4 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for air quality and climate is the Proposed Project Area. The Project-specific affected environment and impacts for air quality and climate are analyzed below.

The applicant is committed to implementing conservation measures for air quality and climate derived from Section 5.4.2 of the 2015 PEIS, which minimize impacts to air quality and climate associated with the Proposed Project (Appendix H).

3.6.1 Affected Environment

As described in Section 4.4 of the 2015 PEIS, air quality is regulated in the U.S. by the federal Clean Air Act (CAA) under the jurisdiction of the USEPA (40 Code of Federal Regulations [CFR] 50 [1971]). The USEPA sets National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment (USEPA 2022). This includes six criteria pollutants: PM, ozone (O_3), CO, sulfur oxides (SO_X), NO_X, and lead (Pb). Unlike most criteria pollutants, ozone is not emitted directly from fuel combustion, but is synthesized in the atmosphere via a complex web of chemical reactions from ozone precursors, such as non-methane Volatile Organic Compounds (VOCs), NO_X, CO, and atmospheric methane.

Under the CAA NAAQS, the USEPA classifies areas as "attainment," "nonattainment," or "maintenance" for the degree of ambient air pollution. Attainment areas are geographic areas that meet or exceed the NAAQS and indicate adequate air quality. Nonattainment areas are areas that do not meet these standards. Maintenance areas are geographic areas that have a history of nonattainment, but now consistently meet the NAAQS (USEPA 2024c). Section 4.4.2.1 of the 2015 PEIS provides existing emissions of the six criteria pollutants for South Dakota.

Separate procedures have been established for federal pre-construction review of certain large, proposed projects in attainment areas versus nonattainment areas. There are currently no criteria pollutant nonattainment areas in South Dakota. Review for affected sources located in attainment areas, called Prevention of Significant Deterioration (PSD)[1], is intended to prevent a new stationary source from causing air quality to deteriorate beyond acceptable levels. During construction, none of the Proposed Project facilities are considered stationary sources, nor would they be large enough, once constructed, to trigger PSD requirements.

Construction activities in general are also expected to generate hazardous air pollutant (HAP) emissions. HAPs are substances known or suspected to cause cancer or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects. The USEPA currently lists 188 compounds as HAPs, some of which can be emitted from vehicles and construction equipment, such as benzene and formaldehyde.

3.6.1.1 Climate Change and Greenhouse Gas Emissions

According to the USGS National Climate Change viewer, climate change models agree there will be some degree of warming in the Proposed Project Area due to climate change (USGS 2021). While emissions from the Proposed Project are unlikely to contribute directly to this issue, they would contribute to climate change on a global scale. In addition, the loss of vegetation and soil disruption associated with the development of the Proposed Project would also have a small effect on the ability of the local ecosystem to cycle or sequester carbon and modulate atmospheric CO_2 levels.

In the final regulation on GHG permitting, under Section 111(b) of the CAA, the USEPA established standards for emissions of CO_2 for newly constructed, modified, and reconstructed fossil fuel-fired electric utility generating units (USEPA 2015). This regulation considers a source that emits more than 100,000 tons per year (tpy) of CO_2 to be a major source and requires a stationary source that emits more than 25,000 tpy to report their emissions. Because GHG emissions for the construction and decommissioning of the Proposed Project are anticipated to be less than reporting minimums and the Proposed Project is not a fossil fuel-fired electric utility generator, no additional assessment is required (Council on Environmental Quality [CEQ] 2010). In May 2023, USEPA proposed new CAA emission limits and guidelines based on cost-

[1] Prevention of Significant Deterioration thresholds apply to emissions of criteria pollutants from stationary sources.

effective and available control technologies, such as carbon capture. However, these new limits would not apply to the Proposed Project as the proposed new limits and guidelines only apply to fossil fuel-fired electric utility generators (USEPA 2023a).

The USEPA also sets GHG emissions standards for on-road and off-road engines. Construction equipment would be operated as needed and the emissions from gasoline and diesel engines would be minimized by engine compliance with the USEPA's mobile-source exhaust standards.

3.6.1.2 Visibility

Class 1 federal lands include areas such as national parks, national wilderness areas, and national monuments. These areas have special air quality protections under Section 162(a) of the federal Clean Air Act. Visibility in Class I areas are protected under two sections of the CAA. Section 165 provides for the PSD program (described above) for new sources. Sources located outside a Class I area may need to obtain a permit to assure there are no adverse impacts on visibility in the Class I area. The USEPA's 1999 Regional Haze Rule set goals to prevent future and remedy existing impairments to visibility in Class I areas. The nearest Class I area, Badlands National Park, is located ≈ 200 mi southwest of the Proposed Project and would not be affected.

3.6.1.3 Conformity

A federal agency must make a determination that permitting or approving an activity will conform to the state implementation plan in accordance with 40 CFR Part 93.150 (1993). Transportation and general conformity evaluations are required for the construction phase of wind farms in nonattainment or maintenance areas for the NAAQS. As of 2022, all areas of the state are currently in attainment status with the NAAQS (SDDANR 2024); therefore, no further assessment is required.

3.6.2 Environmental Consequences: Proposed Action

Impacts to air quality and climate by the Proposed Project would be similar to those described in Section 5.4.1 of the 2015 PEIS. The Proposed Project could result in both short- and long-term air quality impacts through the release of regulated pollutants into the atmosphere during construction and decommissioning activities. Specifically, vehicle emissions during these activities would affect air quality when travel raises fugitive dust particulate matter (PM_{10} and $PM_{2.5}$) and emits by-products of combustion (CO, SO_X, NO_X, VOC, PM).

Fugitive dust raised by vehicle traffic on unpaved roads and trails contributes to air quality degradation, resulting in a direct hazard to human health. Wind disperses suspended particulates from these disturbance events over long distances, allowing dust raised by vehicle travel to disperse dust-adsorbed contaminants beyond the construction area. Any construction requiring earthwork would disturb soils and result in creation of fugitive dust. New road construction and improvements to existing roads may also result in short-term impacts. Throughout the construction and decommissioning periods, air quality impacts from dust would

fluctuate in severity. Dust impacts would be greatest during dry weather but would still be minor in overall severity. Fugitive dust on unpaved roads would be reduced through road watering and other dust-control measures listed in the conservation measures below.

Construction equipment combustion emission of other pollutants would occur during construction and decommissioning of structures and ancillary components. Emissions from paved and unpaved road traffic would occur over a large area, resulting in negligible impacts at any given location.

In all jurisdictions, the Proposed Project would not be regulated because it would not emit any criteria pollutants > 100 tpy and is not considered a major Class I source. Modeling for VOCs was not conducted because VOCs are regulated as precursors to other pollutants (O_3, PM_{10}), and are generally modeled only as part of regional applications. Modeling for GHG emissions was also not conducted because there are no ambient standards for GHGs and they contribute to climate change on a global, rather than local or regional, scale.

Emissions of air pollutants and GHGs during operations would result in negligible reduction in air quality given relatively few vehicles would commute to and from the O&M building daily and vehicles accessing the proposed wind generation facilities for maintenance and testing would occur infrequently. Conversely, generating electricity through wind power instead of burning fossil fuels would have a minor, beneficial impact on air quality at the regional scale by reducing air pollutants and GHG emissions. When operating under the manufacturer's default turbine settings, the Proposed Project is designed to generate 312.67 GWh per year, which is enough electricity to power the equivalent of 28,975 residential homes per year (EPA 2024a). This offset would reduce GHG emissions by at least 200,736 metric tons (221,273 tons) of CO_2/year by replacing fossil fuel-based electricity production (EPA 2024d). This reduction would be equivalent to approximately 7.9% of the CO_2 emissions from the electric power industry in 2021 in South Dakota. (EPA 2024b).

South Dakota has not developed any additional Renewable Portfolio Standards since 2008 (identified in Section 6.2.4 in the 2015 PEIS). Construction of the Proposed Project would contribute to related goals on a national scale. The Proposed Project would help reduce air pollution associated with non-renewable sources of energy. This would improve air quality and visibility, and aid in transitioning the U.S. economy to carbon neutral power sources.

Temporary impacts on air quality and climate change from decommissioning would be similar to those for construction. The minor beneficial impacts in reducing GHG emissions by replacing fossil fuels for energy production would be lost unless the Proposed Project was replaced or repowered. Recent literature on climate change notes social costs of greenhouse gas emissions (SC-GHG). The SC-GHG is the monetary value of the net harm to society from emitting a metric ton of that GHG into the atmosphere (USEPA 2023b). In principle, the SC-GHG is a comprehensive metric that includes the value of all future climate change impacts (negative and positive), including changes in net agricultural productivity, human health effects, property damage from increased flood risk, changes in the frequency and severity of natural disasters,

disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services. In practice, data and modeling limitations restrain the ability of SC-GHG estimates to include all physical, ecological, and economic impacts of climate change, implicitly assigning a value of zero to the omitted climate damages (USEPA 2023b). In 2022, wind climate benefits contributed on average $99/megawatt hour (MWh) and health benefits contributing $37/MWh. When combined with the grid-system value of wind, the total value of wind energy was ≈ $168/MWh (DOE 2023).

3.6.3 Environmental Consequences: No Action Alternative

There would be no direct impacts to air quality, climate change, visibility, and GHG emissions attributed to the construction, O&M, and decommissioning of the Proposed Project under the No Action Alternative. Current degradation of air quality and visibility, as well as increased levels of GHG emissions related to climate change from traditional non-renewable energy sources would continue at their current trajectory.

3.7 Socioeconomics

This section analyzes potential impacts from the Proposed Project to socioeconomics. The general analysis of these resources in Sections 4.10 and 5.10 of the 2015 PEIS is incorporated herein by reference. The Socioeconomics Analysis Area is defined as Campbell County, South Dakota, with a focus on the Proposed Project Area for land use. The Project-specific affected environment and impacts for socioeconomics are analyzed below.

3.7.1 Affected Environment

Section 4.10.1 of the 2015 PEIS provides regional socioeconomic information on employment, unemployment, personal income, sales tax revenues, individual income tax revenues, population, vacant rental houses, state and local government expenditures, state and local government employment, and recreation. Recent measures of economic development applicable to the Proposed Project Area are provided in Table 3.7-1. Data are reported for Campbell County and South Dakota for the most recent year available. South Dakota does not currently have a state income tax; therefore, this measure is not reported. Campbell County household income and poverty levels are similar to state levels. Rental vacancies and unemployment rates are higher than the state average, which indicates additional hiring resulting from the Proposed Project could be absorbed within the county.

The Proposed Project Area is in a rural area ≈ 100 mi north of Pierre, South Dakota, near the Missouri River. All land in the Proposed Project Area is privately owned. Most community facilities and services near the Proposed Project Area are in the towns of Mound City or Herreid, which are ≈ five mi east and ≈ 10 mi northeast of the Proposed Project Area, respectively. In 2020, Mound City had an estimated population of 69 and Herreid had a population of 416 (U.S. Census Bureau 2024b). Herreid has a community center/skate park, swimming pool, fire hall, grocery store, a health clinic, places of worship, parks, and schools,

but police services are provided by the County Sheriff's Department. Mobridge, ≈ 25 mi southwest, provides larger social services and amenities, such as a hospital, a high school, and a municipal airport.

Table 3.7-1. Key measures of economic development within Campbell County.

Economic Development Measures (Year)	Campbell County (SD)	SD
Population (2022)[a]	1,349	909,824
Annual Median Household Income (2021)[a]	$58,206	$63,900
Percent of Population considered Minority (2022)[a]	4.2	18.4
Percent of Population Below Poverty (2022)[a]	10.9	12.3
Rental vacancy rate (2019)[b]	31.88%	6.93%
Unemployment rate (2021)[c]	2.4%	1.8%
State and local government expenditures (2020)[d]	N/A	$1,716,775,467
State and Local Sales Tax Revenue: Tourism (2020)[e]	N/A	$18,250,643
Total State Tax Revenue[e] (Fiscal Year 2022 Sales, Use, and Excise Taxes)	N/A	$1,623,878,853 (2022)

N/A = not available.

a. U.S. Census Bureau 2024b.
b. Department of Numbers 2021.
c. U.S. Bureau of Labor and Statistics 2024.
d. State of South Dakota 2019.
e. South Dakota Department of Revenue 2022.

In 2021, Campbell County had an estimated 929 employed people out of 1,349 residents. The largest industries by employment were farming (336 people), government (148 people), and other services (128 people; Headwaters Economics 2023).

The entire Proposed Project Area is zoned A-Agricultural District. Small parcels of State of South Dakota School and Public Lands (State Land Board) land are near, but not directly adjacent to, the Proposed Project Area. Shaw Creek Recreation Area, also near the Proposed Project Area, is managed by the SDGFP and offers a boat ramp accessing Lake Oahe/Missouri River.

3.7.2 Environmental Consequences: Proposed Action Alternative

Section 5.10 of the 2015 PEIS describes the general direct and indirect economic impacts from the construction and operation of wind energy facilities in the UGP. Direct impacts occur because of expenditures of wages and salaries, procurement of goods and services, and sales tax. Indirect impacts occur as Proposed Project wages, salaries, and procurement expenditures subsequently circulate through the economy, creating additional employment, income, and tax revenue. Other impacts discussed include potential impacts to local recreation and property values. Potential economic impacts of the construction of new transmission lines associated with wind energy developments are discussed in Section 5.10.1.4 of the 2015 PEIS.

Under the Proposed Action Alternative, the number of Project-related short-term construction jobs created is expected to be approximately 165 construction worker jobs plus 12 inspection staff and 25 engineers for commissioning and SCADA over an estimated 8-month peak construction period. Construction of the Proposed Project would require skilled labor, such as foremen, crane operators, iron workers, electricians, millwrights, and heavy equipment operators, as well as unskilled laborers. This diverse workforce would be necessary to install the Proposed Project components, such as the wind towers and turbines, access roads, underground collection lines, and substation. The estimated number of construction jobs by classification and annual employment expenditures during construction are included in Table 3.7-2. The annual salary of construction workers is expected to be above the Campbell County median household income (Table 3.7-1). Since the construction jobs are temporary, the Proposed Project is not expected to result in a material impact on median household income in Campbell County.

Table 3.7-2. Anticipated construction jobs and employment expenditures.

Job Classification	Number of Jobs	Estimated Annual Salary Range
Crane operators	7	$90,000 – $150,000
Civil workers	31	$75,000 – $100,000
Construction workers	35	$60,000 – $90,000
Collection workers	9	$70,000 – $100,000
Tower erectors	44	$60,000 – $90,000
Substation workers	13	$70,000 – $100,000
Foundation workers	26	$60,000 – $90,000
Testing and inspection staff	12	$70,000 – $100,000
Design engineers	15	$90,000 – $150,000
Total	**191**	**$12,985,000 – $19,250,000**

It is anticipated that sufficient general skilled labor is available in Campbell County or South Dakota to serve the basic infrastructure and site development needs of the Proposed Project. Specialized labor would be required for certain components of Proposed Project construction, which may be sourced from other areas in the region. During construction, non-local workers could need temporary housing and the vacancy rate of rental properties in the commuting radius of the Proposed Project could be reduced. However, anecdotal evidence indicates that some construction workers would likely provide their own housing in recreational vehicle trailers in local campsites, as available. If needed, temporary housing for workers would include available facilities in several towns throughout the area. This may be needed given that closer towns are very small and commuting to towns with available lodging would be cumbersome. The Proposed Project is not expected to have a negative effect on the economics of rental properties and could have a short-term positive effect due to increased demand for local services and materials. Local businesses that would be anticipated to potentially benefit economically from increased demand may include service industries (e.g., restaurants, grocery stores, hotels, and gas stations) and other construction material supply businesses.

There could be negative effects, such as increased road maintenance costs due to construction traffic. The applicant is currently negotiating a road use agreement with Campbell County to address these concerns. The road maintenance agreement would be completed as the Proposed Project obtains a county Conditional Use Permit from Campbell County. The road maintenance agreement would identify ways to minimize and mitigate potential impacts to area transportation infrastructure prior to, during, and after construction.

Operation of the Proposed Project could create direct long-term effects for landowners in and adjacent to the Proposed Project Area, Proposed Project employees, and the Campbell County tax bases (Table 3.7-3). The Proposed Project is projected to generate approximately $426,900 annually, on average over the 35-year operating lifespan, in production taxes. Of these production taxes, approximately $104,900 is expected to be provided to the state, and $161,000 each to both Campbell County and School Districts (South Dakota Department of Revenue 2022). These revenues could be used to improve local government or community services, benefiting all residents. Local spending from long-term staff employed at the Proposed Project during operation would result in additional business income, as well as increased state and local tax revenue. Private landowners who participate in the Proposed Project would receive the most direct economic benefit from easement payments for wind turbines and roads located on their properties. These payments would provide a predictable supplemental source of income for the life of the Proposed Project, which is expected to be 35 years.

Table 3.7-3. Direct economic benefits from the Proposed Project.

Payment	Direct Beneficiary	Approximate Annual Total
Wind lease payments	Project landowners	$100,000 - $135,000
Operations and maintenance	≈ 6 to 8 employees	$615,000
Taxes	School districts, Campbell County, and South Dakota	$426,900

The Proposed Project would generate six to eight long-term operation jobs for the first 10 years of commercial operation, which could have a positive effect on local income levels. These long-term positions could bring additional people to Campbell County and positively contribute to the local economy. Long-term positions include a site supervisor, lead technician, and four to six wind turbine technicians.

The estimated number of jobs by classification and annual employment expenditures during operation are shown in Table 3.7-4. While the salary of some of the workers is likely to be greater than the median household income in Campbell County, the small number of workers would not have a substantial effect on overall county median household income. Similarly, this small number of workers would not be expected to affect long-term rental vacancy levels.

Table 3.7-4 Anticipated operation jobs and employment expenditures.

Job Classification	Number of Personnel[a]	Estimated Annual Salary[a]
Site Supervisor	1	$100,000 – 135,000
Lead Technician	1	$90,000 – $115,000

Job Classification	Number of Personnel[a]	Estimated Annual Salary[a]
Wind Turbine Technicians	4 – 6	$50,000 – $95,000
Total	**6 – 8**	**$390,000 – $820,000**

a. For the first 10 years of commercial operation, in 1-year intervals.

Section 5.10.1.2 of the 2015 PEIS notes that estimating the impact of wind facilities on recreation is problematic, as it is not clear how wind development impacts recreational visitation and nonmarket values. The Proposed Project occurs entirely on private property, where recreational use (including hunting) would primarily be by landowners, their families, and invited guests. Livestock grazing and dry land farming would still be allowed in portions of the Analysis Area.

Section 5.10.1.3 of the 2015 PEIS discusses several studies that assessed the potential impacts of wind projects on property values due to deterioration in aesthetic quality, increases in noise, real or perceived health effects, and traffic congestion. Several comments received during scoping also raised concerns regarding loss in property values and a multi-generational effect in such property value lost. The analysis below includes additional peer-reviewed studies, some more recent than the 2015 PEIS.

A survey of county tax assessors was conducted in 13 locations with recent, multiple-turbine wind developments. While not all locations had wind turbines visible from residential areas and others had been constructed too recently for the full impact to be properly assessed, the study found no evidence that wind turbines decreased property values (ECONorthwest 2002). In one area, designation of land parcels for wind development increased property values (ECONorthwest 2002). Multiple studies have looked at influences on change in property value. Results summarized that neither the view of the wind facilities nor the distance of the home to those facilities had a statistically significant effect on sales prices (Hoen et al. 2011). For most wind projects, property values tended to increase faster in areas with a view of wind turbines than in areas with no wind energy generation projects.

The Lawrence Berkeley National Laboratory conducted research regarding utility-scale wind energy development's property value effects (Hoen et al. 2011, 2013). The Lawrence Berkeley National Laboratory authors collected data on almost 7,500 sales of single-family homes within 10 mi of 24 existing wind facilities in nine states. The analysis found if property value impacts exist, they are too small or too infrequent to result in any widespread, statistically observable impact. The possibility, however, that individual homes or small numbers of homes have been or could be negatively impacted was not dismissible.

Another study also found "no unique impact on the rate of home sales near wind turbines." The study did find a negative impact to property values near other infrastructure, such as major roads and electrical transmission lines (Hoen and Atkinson-Palombo 2016).

A U.S.-wide assessment of costs due to visibility impacts was recently conducted using perceived turbine visibility data and home values since 1997 (Guo et al. 2024). The study found

wind turbine visibility negatively affects average home values in an economically and statistically significant way for those in close proximity (5 mi). However, the effect diminishes over time and in distance and is indistinguishable from zero. Data showed that only houses within 1.2 mi of a turbine saw their value significantly affected, at up to 8%. Beyond 1.2 mi, the impact rapidly tailed off. It was determined the reduction in value a property experiences peaks ≈ three years after turbine installation and then becomes smaller the more years pass (Guo et al. 2024). Specifically, while an average wind turbine installed in 2011 has a negative effect on nearby property values, the effect becomes indistinguishable from zero for turbines installed after 2017. The study perceived these results as function of people get used to new structures in their environment over time (Guo et al. 2024).

A study conducted by the DOE found impacts to property values within ≈ one mi of a wind turbine begin ≈ three years before project construction starts, and values continue declining through project construction. Property values return to inflation-adjusted pre-announcement levels three to five years after project operation commences (Brunner et al. 2024).

While short-term, moderate impacts to property values may be experienced in the years following and preceding construction of the Proposed Project, depending on the property's proximity and turbine visibility, long-term impacts would diminish over time to be minor.

3.7.3 Environmental Consequences: No Action Alternative

No Project-related adverse or beneficial impacts to socioeconomics would occur under the No Action Alternative. Socioeconomic conditions in Campbell County would continue based on existing socioeconomic activities and trends.

3.8 Environmental Justice

Environmental justice has been defined as "the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision making and other Federal activities that affect human health and the environment so that people are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systematic barriers; and have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices" (CEQ 2024; 40 CFR 1508.1(m)(1)(2) [2024])

In accordance with this definition, this section analyzes potential impacts on low-income and minority populations that may result from the Proposed Project to ensure they would not experience disproportionate Project impacts, as described further below. A general analysis of environmental justice is discussed in Sections 4.11 and 5.11 of the UGP PEIS and referenced herein. The Analysis Area for Environmental Justice is the Proposed Project Area plus a 30-mile radius due to reporting level of data for minority and low-income populations.

The applicant is committed to implementing conservation measures to minimize or mitigate the Proposed Project's impacts on low-income and minority populations (see Appendix H).

3.8.1 Affected Environment

EO 12898 (1994) requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their actions, programs, or policies on minority and low-income populations. In April 2023, President Biden signed an EO on Revitalizing Our Nation's Commitment to Environmental Justice for All. The new EO amends EO 12898 and "supplements the foundational efforts of EO 12898 to address environmental justice." The new EO "uses the term 'disproportionate and adverse' as a simpler, modernized version of the phrase 'disproportionately high and adverse' used in EO 12898. Those phrases have the same meaning but removing the word 'high' eliminates potential misunderstanding that federal agencies should only be considering large disproportionate effects."

The Analysis Area incorporates portions of nine counties: Campbell, Corson, Dewey, Edmunds, McPherson, and Walworth counties in South Dakota, and Emmons, McIntosh, and Sioux counites in North Dakota. Minority and income status for these counties is shown in Table 3.8-1. Two reservations are within the 30-mi radius: the Standing Rock Sioux Reservation (in Corson, Dewey, and Sioux counties), ≈ five mi west of the Proposed Project Area; and the Cheyenne River Reservation (in Dewey County), ≈ 25 mi southwest of the Proposed Project Area. CEQ (1997) guidance states minority populations should be identified where minority populations of the affected area are > 50%. Minority populations in Dewey and Sioux counties are > 50%. The largest minority populations in Corson, Dewey, Sioux, and Walworth counties are American Indian and Alaska Native. Seven counties in the analysis area are at or above the 13% South Dakota average for % of households living in poverty. Corson and Sioux counties have the largest low-income populations, with > 40% of the population in poverty.

3.8.2 Environmental Consequences: Proposed Action Alternative

The majority of impacts would be in Campbell County, which did not have large minority or low-income populations. Nearby counties with larger minority and low-income populations would have some minor impacts on local residences and communities as described in Section 3.7 (Socioeconomics), Section 3.9 (Transportation and Aviation), Section 3.10 (Noise), and Section 3.11 (Visual Resources and Shadow Flicker). However, none of these effects would be predominantly borne by a minority or low-income population, including the residences on the two reservations within the Analysis Area.

Table 3.8-1 Population data, 2022 estimates within environmental justice Analysis Area.

	Campbell	Corson	Dewey	Edmunds	McPherson	Walworth	Emmons	McIntosh	Sioux
Population	1,349	3,846	5,140	4,065	2,395	5,265	3,250	2,475	3,711
% Population considered Minority	4.2%	70.5%	80.7%	3.2%	3.0%	20.5%	4.2%	4.1%	87.0%

	Campbell	Corson	Dewey	Edmunds	McPherson	Walworth	Emmons	McIntosh	Sioux
Annual Median Household Income	$58,026	$38,281	$46,087	$69,732	$54,324	$51,746	$56,713	$58,056	$39,755
% Population in Poverty	10.9%	41.9%	23.7%	10.1%	16.7%	16.4%	13.4%	13.8%	42.8%

U.S. Census Bureau 2024a.

3.8.3 Environmental Consequences: No Action Alternative

No Project-related Environmental Justice effects would occur under the No Action Alternative.

3.9 Transportation and Aviation

This section analyzes potential impacts from the Proposed Project to transportation and aviation. The general analysis of these resources in Sections 3.10, 4.1.3.2 and 4.1.3.4 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for each resource is defined below. The Project-specific affected environment and impacts for transportation and aviation are analyzed below.

CCWF2 is committed to implementing conservation measures for transportation and aviation derived from coordination with Campbell County, Section 5.1.2 of the 2015 PEIS, and according to easement stipulations, to minimize transportation and aviation impacts associated with the Proposed Project (see Appendix H).

3.9.1 Affected Environment

3.9.1.1 Ground Transportation

The Analysis Area for ground transportation includes roads to be used by construction vehicles, construction workers, and operational vehicles during the life of the Proposed Project (Figure 3.9-1). Table 3.9-1 presents the roads, by type, around the Analysis Area that could be used for construction and operation. The primary access for the Proposed Project would be on rural roads originating from South Dakota Highway 1804 and U.S. Highway 83. In 2022, an average of 68,804 mi was traveled by all vehicle types daily in Campbell County, most on state and local highways (South Dakota Department of Transportation [SDDOT] 2023). Campbell County is currently responsible for maintenance of the public roads in and around the Proposed Project Area (SDDOT 2023). All existing private roads in the Proposed Project Area are maintained by property owners or left unmaintained.

Table 3.9-1. Existing roads within the Proposed Project Area.

Road	Surface Type	Surface Width (feet)	Number of Lanes	Length (miles)
300 Avenue (AVE)	Gravel or Crushed Rock	16	2	0.23
300 AVE	Graded & Drained Earth	14	1	0.50
302 AVE	Primitive (Trail)	10	1	0.53
113 Street (ST)	Primitive (Trail)	10	1	1.00

Road	Surface Type	Surface Width (feet)	Number of Lanes	Length (miles)
109 ST	Gravel or Crushed Rock	26	2	0.54
110 ST	Graded & Drained Earth	20	2	0.98
112 ST	Gravel or Crushed Rock	26	2	0.93
109 ST	Gravel or Crushed Rock	26	2	0.04
115 ST	Unimproved	12	1	0.47
300 AVE	Primitive (Trail)	10	1	1.99
301 AVE	Gravel or Crushed Rock	20	2	0.17
301 AVE	Gravel or Crushed Rock	20	2	2.00
111 ST	Primitive (Trail)	10	1	0.97
301 AVE	Gravel or Crushed Rock	20	2	0.00
114 ST	Primitive (Trail)	10	1	0.78
299 AVE	Primitive (Trail)	10	1	0.91
109 ST	Gravel or Crushed Rock	26	2	0.59
300 AVE	Primitive (Trail)	10	1	0.23
296 AVE	Gravel or Crushed Rock	26	2	0.36
110 ST	Graded & Drained Earth	20	2	0.50
112 ST	Gravel or Crushed Rock	26	2	0.00
301 AVE	Gravel or Crushed Rock	20	2	0.72
296 AVE	Gravel or Crushed Rock	26	2	0.03
116 ST	Primitive (Trail)	10	1	0.39
112 ST	Gravel or Crushed Rock	26	2	0.72
302 AVE	Gravel or Crushed Rock	22	2	0.49
115 ST	Primitive (Trail)	10	1	0.16
295 AVE	Gravel or Crushed Rock	22	2	0.96
300 AVE	Gravel or Crushed Rock	16	2	0.31
113 ST	Primitive (Trail)	10	1	0.45
302 AVE	Primitive (Trail)	10	1	0.36
301 AVE	Gravel or Crushed Rock	26	2	0.53
115 ST	Gravel or Crushed Rock	26	2	0.40

Source: South Dakota Department of Transportation (2023).

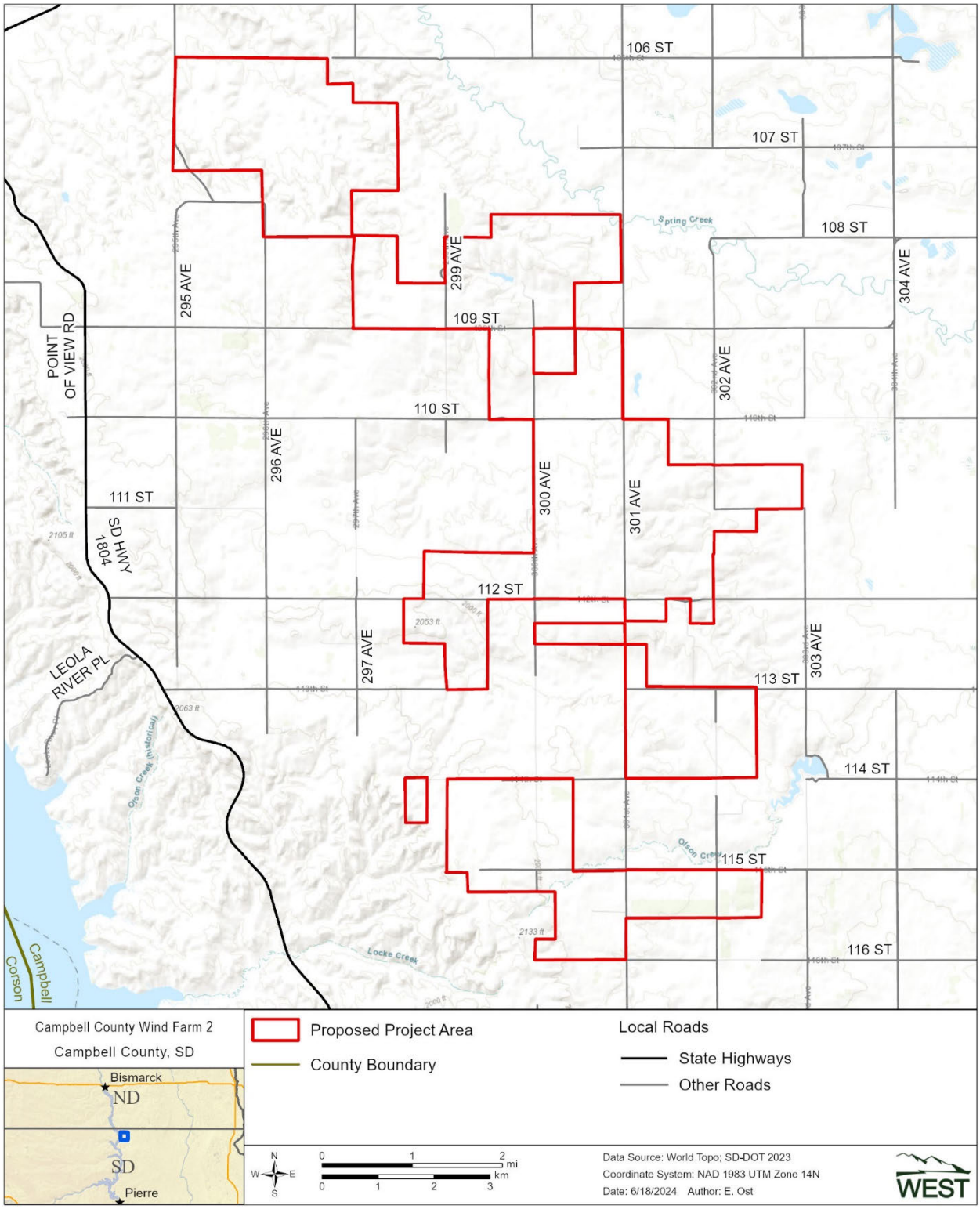

Figure 3.9-1. Ground transportation infrastructure within the Proposed Project Area.

3.9.1.2 Aviation

The Analysis Area for aviation includes airports serving aircraft that may fly over the Proposed Project while traveling to local airports. There are three airports near the Proposed Project Area: Herreid Municipal Airport, Brockel Airstrip (private airstrip), and Moser Airstrip Airport-NA54 (private airstrip; USGS 2024b). Herreid Municipal Airport is the closest airport, ≈ 10 mi from the Proposed Project Area. Primary flight paths from the airports around the Proposed Project Area would likely be aircraft conducting local agricultural spraying, aerial inspection of existing electrical transmission infrastructure, and private plane travel. There are no commercial airports ≤ 100 mi of the Analysis Area. The nearest commercial airports are the Aberdeen Regional Airport and Pierre Regional Airport, both ≈ 110 mi from the Proposed Project Area. Passenger flights are expected to exceed the height of the wind turbines, as the FAA requires aircraft maintain a minimum altitude ≥ 500 ft or not operate an aircraft < 500 ft of any person, vehicle, or structure (14 CFR § 91.119 [1989]). The nearest Airforce base is 178 mi from the Analysis Area, with assumed no training paths near the Analysis Area (USGS 2024b).

3.9.1.3 Emergency Services

There are two volunteer fire departments near the Proposed Project Area: Herreid Volunteer Fire Department and Mound City Volunteer Fire Department (USGS 2024b). Both are ≈ five to seven mi from the Proposed Project Area. The nearest hospital is Mobridge Regional Hospital and Clinic, in Mobridge, South Dakota, ≈ 20 mi from the Proposed Project Area.

3.9.2 Environmental Consequences: Proposed Action Alternative

Section 4.1.3 of the 2015 PEIS describes general direct and indirect impacts from aviation and ground transportation to the construction and operation of wind energy facilities in the UGP.

3.9.2.1 Ground Transportation

County roads, ≈ 18 mi, are expected to be used to deliver construction equipment and aid in transportation of workers to proposed construction areas. The Proposed Project includes construction of 10.1 mi of additional private roads to support the construction and operation of the wind farm. These roads would be on private property and maintained by the applicant for turbine and other infrastructure maintenance access. To mitigate the degradation caused by large and over-sized vehicle traffic for the construction of the Proposed Project, a road maintenance agreement and plan would be established with Campbell County. The road maintenance agreement would be drafted to not cause undue burden to the surrounding properties and the county road system. In addition, CCWF2 would provide temporary widening of public and new access roads to accommodate movement of large and over-sized vehicles to construct the Proposed Project. CCWF2 would mitigate any adverse impacts caused by higher vehicle traffic by adding a gravel cap, creating proper drainages with widening roads, and applying appropriate treatments to roads to minimize dust. For cross-country movement and heavy vehicle movement, CCWF2 would use measures such as cribbing, bedding, and/or mats

to minimize impacts these vehicles have on temporary construction footprints and to limit any long-term effects on road conditions. There would likely be overall improvements to local roads to accommodate construction and operation of the Proposed Project. Improvements could include adding gravel, widening, and repairing potholes.

For delivery of wind turbines, travel plans would be discussed with county, state, and federal transportation departments. These plans would establish routes from factories to the Proposed Project Area via routes with the least impact on local traffic and reduce hazard crossings (e.g., low bridge, low power lines, and overweight crossings).

3.9.2.2 Aviation

CCWF2 would conduct outreach to county, state, and federal governments regarding adjusted FAA flight paths and effects to local field spraying contractors. Wind turbines would likely affect the flight paths of small, local planes and agricultural field crop dusting planes. CCWF2 would follow FAA regulations for marking towers and implementing necessary safety lighting. An ADLS to trigger turbine lights when aircraft is detected near Proposed Project turbines would be installed, pending a review by the FAA, to minimize light impacts at night. CCWF2 would submit a Notice of Proposed Construction or Alteration with the FAA, for all proposed and potential turbine locations, and coordinate potential hazards with the FAA, as appropriate.

CCWF2, in accordance with WAPA, would conduct public outreach to neighboring properties to recommend routes around the Proposed Project and minimize disturbance to local traffic and the environment. While adjusted flight paths could affect aviation, with the lighting measures and outreach committed to by CCWF2, long-term impacts to aviation would be minor.

3.9.2.3 Emergency Services

Regarding emergency response routes, CCWF2 would conduct outreach to local emergency departments, including Herreid Volunteer Fire Department and Mound City Volunteer Fire Department. The outreach would allow an understanding of traffic pattern effects on existing response plans to minimize effects on the quick response of first responders to emergencies.

3.9.3 Environmental Consequences: No Action Alternative

Potential effects to transportation and aviation resources would not occur under the No Action Alternative. Existing transportation and aviation activities, including spray applications for agriculture, would continue. Existing road widths and material would remain the same, with road conditions maintained by the county and no additional new private roads or access points created. Traffic patterns would remain the same along county and state roads.

3.10 Noise

This section analyzes potential noise impacts from the Proposed Project. In the 2015 PEIS, noise is analyzed in Sections 4.5.1, 4.5.2, and 5.5; an explanation of noise acoustics and typical noise

impacts of a wind energy facility are incorporated herein by reference. The Project-specific affected environment and impacts are analyzed below.

CCWF2 is committed to implementing applicable conservation measures for noise derived from Section 5.5.2 of the 2015 PEIS to minimize noise impacts associated with the Proposed Project (see Appendix H).

3.10.1 Affected Environment

The Proposed Project is in rural Campbell County, which is mainly agriculture and herbaceous land, with rural residences scattered throughout. The landscape is mostly open, with scattered trees occurring primarily in riparian areas and as landscaping or shelterbelts on farms. The topography in the Proposed Project Area varies from relatively flat in the northern and eastern portions to rolling uplands to the west and south, particularly as the landscape approaches Lake Oahe and the Missouri River.

No baseline assessment of existing sound sources has been completed for the Proposed Project to date. Farming activities, vehicle traffic, and wind are assumed to be the largest contributors to sound. Generally, background noise levels in rural areas are 35 to 40 A-weighted decibels (dBA; USEPA 1974). Existing ambient sound levels are expected to be relatively low, although sound levels would be higher near roadways. Other human activities, such as agricultural operations and hunting, would seasonally contribute to sound levels in the area associated with crop harvests, livestock handling, and gunshots. The Proposed Project is in a relatively windy region of South Dakota, with an average annual wind speed of 7.0 to 8.5 m/s (15 to 19 mph; WINDExchange 2024a). Typically, background sound levels are quieter during the night than during the day (Wyle Laboratories 1971).

A human's perception of sound can be measured in dBA, which are representative of the human ear's response to sound. Unwanted or offensive sound is often called noise. The sound pressure levels (in dBA) of some common sound sources are provided in Table 3.10-1.

In addition to generally audible noise in the environment (typically, frequencies of 20 to 20,000 Hertz), infrasound (sound with frequencies in the range of one to < 20 Hertz) is common in the U.S. Infrasound is created from natural sources, such as wind and any other natural motions resulting in slow oscillations of air, as well as man-made sources, such as wind turbines, cars, industrial machinery, slow-moving fans, and household appliances (Leventhall 2003, 2006). Infrasound is generally not audible. However, infrasound can be audible at very high levels (110+ dBA) and these sounds may occur from man-made sources or from natural sources, such as avalanches, ocean waves, meteors, or volcanic eruptions (Bedard 1999).

Table 3.10-1. Typical sound pressure levels associated with common noise sources.

Sound Pressure Level (dBA)	Subjective Evaluation	Environment	
		Outdoor	Indoor
140	Deafening	Jet aircraft at 75 feet (ft)	–

Sound Pressure Level (dBA)	Subjective Evaluation	Environment	
		Outdoor	Indoor
130	Pain threshold	Jet aircraft during takeoff at 300 ft	–
120	Feeling threshold	Elevated train	Hard rock band
110	–	Jet flyover at 1,000 ft	Inside propeller plane
100	Very loud	Power mower, motorcycle at 25 ft, automobile horn at 10 ft, crowd noise at football game	–
90	–	Propeller plane flyover at 1,000 ft, noisy urban street	Full symphony or band, food blender, noisy factory
80	Moderately loud	Diesel truck (40 miles per hour) at 50 ft	Inside an automobile at high speed, garbage disposal
70	Loud	B-757 aircraft cabin during flight	Close conversation, vacuum cleaner
60	Moderate	Air-conditioner condenser at 15 ft, near highway traffic	General office
50	Quiet	–	Private office
40	–	Farm field with light breeze, birdcalls	Soft stereo music in residence
30	Very quiet	Quiet residential neighborhood	Bedroom, average residence (w/o television and stereo)
20	–	Rustling leaves	Quiet theater, whisper
10	Just audible	–	Human breathing
0	Hearing threshold	–	–

dBA = A-weighted decibels.

Sources: Adapted from Egan 1988, Ramsey et al. 1994.

Sensitive sound receptors generally include occupied residences and areas where people congregate, such as churches, schools, and community centers. Sensitive sound receptors are found in several communities located near the Proposed Project. The closest are Pollock and Mound City, each ≈ three mi from the Proposed Project Area. Mobridge is 4.1 mi away.

Campbell County's Zoning Ordinance prohibits noise levels produced by wind projects exceeding 45 dBA at existing off-site residences, businesses, and buildings. CCWF2 has conducted a noise assessment for the Proposed Project that models and evaluates the expected noise levels due to Project-related activities at these sensitive receptors.

A Noise Assessment conducted for the Proposed Project modeled sound levels at 251 total receptors, including structures < 6,000 m from the Proposed Project (RSG 2024; Appendix C). This included residences, barns and sheds, and other unoccupied structures. Many of these receptors have existing noise levels due to Campbell County Wind Farm 1, located adjacent to the Proposed Project. Sound levels from Campbell County Wind Farm 1 alone are above 45 dBA for several receptors, with the highest of 52 dBA at one receptor. Campbell County Wind Farm 1 was permitted before the Campbell County Zoning Ordinance was in place. The addition of the Proposed Project would not increase any receptors currently under 45 dBA to above 45 dBA (Appendix C). The highest sound level for participating structures was 48 dBA, found at five

structures (Appendix C). Campbell County's Zoning Ordinance of 45 dBA only applies to nonparticipating receptors.

3.10.2 Environmental Consequences: Proposed Action Alternative

Section 5.5 of the 2015 PEIS describes common noise impacts associated with the construction, operation and maintenance, and decommissioning of a commercial wind energy project. These impacts would apply to the Proposed Project.

Construction of the Proposed Project may cause short-term, unavoidable noise impacts. Sound levels would vary depending on type and age of equipment, specific manufacturer and model, operations being performed, and condition of equipment and exhaust system mufflers. Noise generated by construction would occur intermittently, depending on the phase of construction, and equipment in use at a given time and location. Construction activity would generate traffic, such as trucks travelling to and from the site on public roads, which would cause noise effects.

Most construction activities would occur during the day when higher background sounds would attenuate construction-related noise. However, concrete foundation work and turbine erection work could extend into overnight hours depending on weather and timing of concrete pours, which must be continuous. As noted in the 2015 PEIS, when background noise levels exceed noise emitted from a particular source by ≈ six dBA, the source would not contribute to a perceptible noise increase. Based on typical noise attenuation distances, equipment noise would be expected to attenuate to background noise levels on windy days at ≈ 328 to 1,640 ft, or ≈ 1,000 to 2,000 ft on calm days (Bureau of Land Management [BLM] 2011). Impacts to noise from construction are expected to be minor.

During operation, the Proposed Project's wind turbines and substation would be a long-term source of audible sound. Sound generated by an operating wind turbine is comprised of both aerodynamic and mechanical sound, with the main sound component being aerodynamic. Aerodynamic noise results from air flowing across and around each blade of the turbine and mechanical sound is generated by machinery inside the hub of the turbine, such as gearboxes, motors, cooling systems, and pumps. Substations have switching, protection, and control equipment and typically one or more transformers, which generate a sound generally described as a low humming. As discussed in the 2015 PEIS, noise levels from a substation would generally attenuate to < 40 dBA at 2,000 ft, or within six dBA of background noise levels of a rural area under calm winds.

The maximum value of sound at any nonparticipating receptor is predicted to be at or below 52 dBA, with most receptors < 40 dBA. Noise from Proposed Project wind turbines would be near background noise levels for this area (30 to 50 dBA), and would not increase any receptors currently under 45 dBA to above the 45 dBA Campbell County limit (Appendix C). Given the area often experiences windy conditions, which increase background noise levels, it is expected an increase in audible noise levels at receptors due to turbines would be negligible to minor for

this Project. CCWF2 would coordinate with Campbell County to ensure the Proposed Project addresses the 45 dBA noise prohibition.

Wind turbines can generate infrasound from the rotation of turbine blades. Infrasound levels from contemporary wind turbines are lower than those shown to cause harm (Roberts 2018). Human health effects sometimes attributed to wind farm noise and infrasound include sleep disturbance, vertigo, and stress. Reliable evidence has not provided a link between infrasound and these adverse health effects. An independent expert panel for Massachusetts (Ellenbogen et al. 2012) found insufficient evidence that noise from wind turbines is directly causing human health effects. While studies have not reliably shown wind farms cause direct health effects, perceptions of wind farms have been correlated with health effects, such as sleep disturbance (Ellenbogen et al. 2012). Because infrasound has many sources and can travel efficiently over long distances, its effects on human health have been extensively studied. Expert testimony filed before the South Dakota Public Utilities Commission found peer-reviewed, published scientific research has not demonstrated a link between infrasound from wind turbines and adverse health effects, including sleep disturbance or vertigo (Roberts 2018).

During decommissioning, noise level impacts would be temporary and minor, similar to those used for construction, but on a more limited scale and for a shorter duration.

3.10.3 Environmental Consequences: No Action Alternative

The No Action Alternative would have no Project-related impacts on noise levels in the area. Existing activities, primarily farming and vehicle noise, would continue.

3.11 Visual Resources and Shadow Flicker

This section analyzes potential impacts from the Proposed Project to visual resources. The general analysis of these resources in Sections 4.7 and 5.7 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for visual resources is a 30-mile radius of the proposed wind turbines, which is considered the outer limit of visual effects under normal circumstances (Sullivan et al. 2012). The Project-specific affected environment and impacts for visual resources are analyzed below.

CCWF2 is committed to implementing the applicable conservation measures for visual impacts derived from Section 5.7.1.3 of the 2015 PEIS, to minimize visual impacts associated with the Proposed Project (see Appendix H).

3.11.1 Affected Environment

The Proposed Project Area is in a landscape of gently rolling hills, rangeland, and cropland. Visibility is considered very high and visual absorption capacity, a landscape's susceptibility to visual change from human development, is comparatively low in the Analysis Area due to the relatively flat to rolling terrain and the uniformity of relatively low-growing vegetation in the region. Exceptions are the Missouri River basins and tributaries leading into the Missouri River.

Campbell County Wind Farm 1 and existing lattice transmission line towers are in the Proposed Project viewshed, ≈ four mi to the west. The primary viewing locations where the Proposed Project would be visible are U.S. Highway 83, South Dakota Highway 10, South Dakota Highway 1804, the Towns of Herreid and Pollock, and Pollock Recreation Areas. Outside of these locations, population density is very low.

Where visible, the degree of impact is influenced first by distance from the nearest turbine and then by the combination of viewer sensitivity, number of viewers, and baseline visual quality. Where one of the viewers' sensitivities, number of viewers, or visual qualities is high in the first 10 mi, the degree of impact is high. Where one of the viewers' sensitivities, number of viewers, or visual qualities is moderate in 10 to 20 mi, the degree of impact is moderate, and so on. Table 3.11-1 presents information on criteria used to assess potential visual impacts.

- *Viewer Sensitivity*: an estimated high, medium, or low in professional opinion by analyzing various indicators of public concern: Type of Users, Public Interest, Adjacent Land Uses, Special Designations or Special Areas. Adapted from BLM Visual Resource Inventory Handbook 8410.
- *Viewer Number*: the number of potential viewers as indicated by Municipalities = High; State Highways = Moderate; County Roads = Low.
- *Visual Quality*: an estimated high, medium, or low by professional opinion based on field investigations considering seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications.
- *Distance from Nearest Turbine*: see Figure 3.11-1 and supporting analysis from *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes* (Sullivan et al. 2012.)

Table 3.11-1. Visual impact assessment criteria.

Viewer Sensitivity - Special Designation	Viewer Number	Visual Quality	Distance from Nearest Turbine	Degree of Impact (High, Moderate, Low, Negligible)
High	High	High	0-10 miles	**High**, major focus of visual attention
Moderate	Moderate	Moderate	10-20 miles	**Moderate**, unlikely to be missed by a casual observer
Low	Low	Low	20-30 miles	**Low**, visible when scanning
Low	Low	Low	>30 miles	**Negligible**

Table 3.11-2 describes the characteristics of seven representative key observation points (KOPs) or public viewing locations from stationary points (e.g., recreational site or town) or linear locations (e.g., highway) to document the representative overall degree of impact.

Table 3.11-2. Key observation points within the Proposed Project viewshed.

KOP Number - Name	Viewer Sensitivity - Special Designation (High, Moderate, Low)	# of Viewers (High, Moderate, Low)	Visual Quality (High, Moderate, Low)	Distance to Turbine (miles)	Degree of Impact (High, Moderate, Low, Negligible)
1. Town of Herried	High – Populated Area	High	High	4	High – < 10 mi to turbines
2. Sand Lake State Game Refuge	Low – None	Low	High	8	High – < 10 mi to turbines
3. Pocase National Wildlife Refuge	Low – None	Low	High	7	High - < 10 mi to turbines
4. Pollock Recreation Area	Moderate – Recreation Area	Moderate	High	6	High - < 10 mi to turbines
5. West Pollock Recreation Area	Moderate – Recreation Area	Moderate	High	7	High - < 10 mi to turbines
6. Native American Scenic Byway	High – Scenic Byway	High	High	12	Moderate – > 10 mi to closest turbine
7. Mound City	Moderate – Intermittent Visibility	Moderate	High	4	High - < 10 mi to turbines

Viewer sensitivity, or the estimated level of public concern to noticeable visual changes to the landscape, varies widely. Local public scoping comments and national preference studies indicate strong attitudes both for and against wind energy on account of visual effects (Hoen et al. 2019, Gross 2020). Viewer sensitivity is higher in recreation areas listed in Table 3.11-2 and larger populations near the town of Herried. The areas to the east, south, and west are dispersedly populated, indicating lower visual sensitivity.

3.11.2 Environmental Consequences: Proposed Action Alternative

Common visual impacts of wind energy projects occur in response to site construction, operation, and decommissioning activities and are further described in Section 5.7.1 of the 2015 PEIS. Project-specific impacts for each phase of the Proposed Project are described below.

The proposed wind turbines would change the aesthetics of the landscape with the addition of tall, white towers, rotating blades, and red blinking lights at night. The substation, access roads, gen-tie line, O&M buildings, MET towers, and vehicles would also be visible in the Analysis Area to varying degrees. Various factors can influence the degree of contrast that a project can have on the landscape and on viewer response. Factors accounted for in the impact evaluation (BLM 1986) include:

- Distance: the farther away the facilities are, the less contrast the structures have.
- Angle of Observation: viewing a project from different angles, such as from above or below, can affect the apparent size of a project and the resulting level of contrast.
- Length of Time in View: the longer a project is in view, the more contrast created.
- Relative Size or Scale: contrast created by a project is directly related to its size and scale compared to the surrounding landscape.

- Lighting Conditions: the direction and angle of the sun affects the color, intensity, shadow, reflection, form, and texture of visual aspects on a landscape.
- Motion: movement (i.e., spinning wind turbine blades) draws attention and increases contrast.

Construction activities could result in visual impacts from vegetation clearing and grading; road building/upgrading; construction and use of staging and laydown areas; construction of facilities; vehicular, equipment, and worker presence and activity; dust; and emissions. Because of the large size of wind turbine towers, blades, and other components, the transport and installation of wind turbines and associated dust clouds would be visually conspicuous activities. Large, and in some cases unusual, vehicles are required to transport some components and the sight of these components on local roads would be memorable. In general, construction visual impacts would vary in frequency and duration throughout the course of construction. There would be periods of comparatively intense activity followed by periods with less activity. Associated visual impacts would vary according to construction activity levels. Site monitoring, adherence to standard construction practices, and restoration activities would reduce many of these potential visual construction impacts.

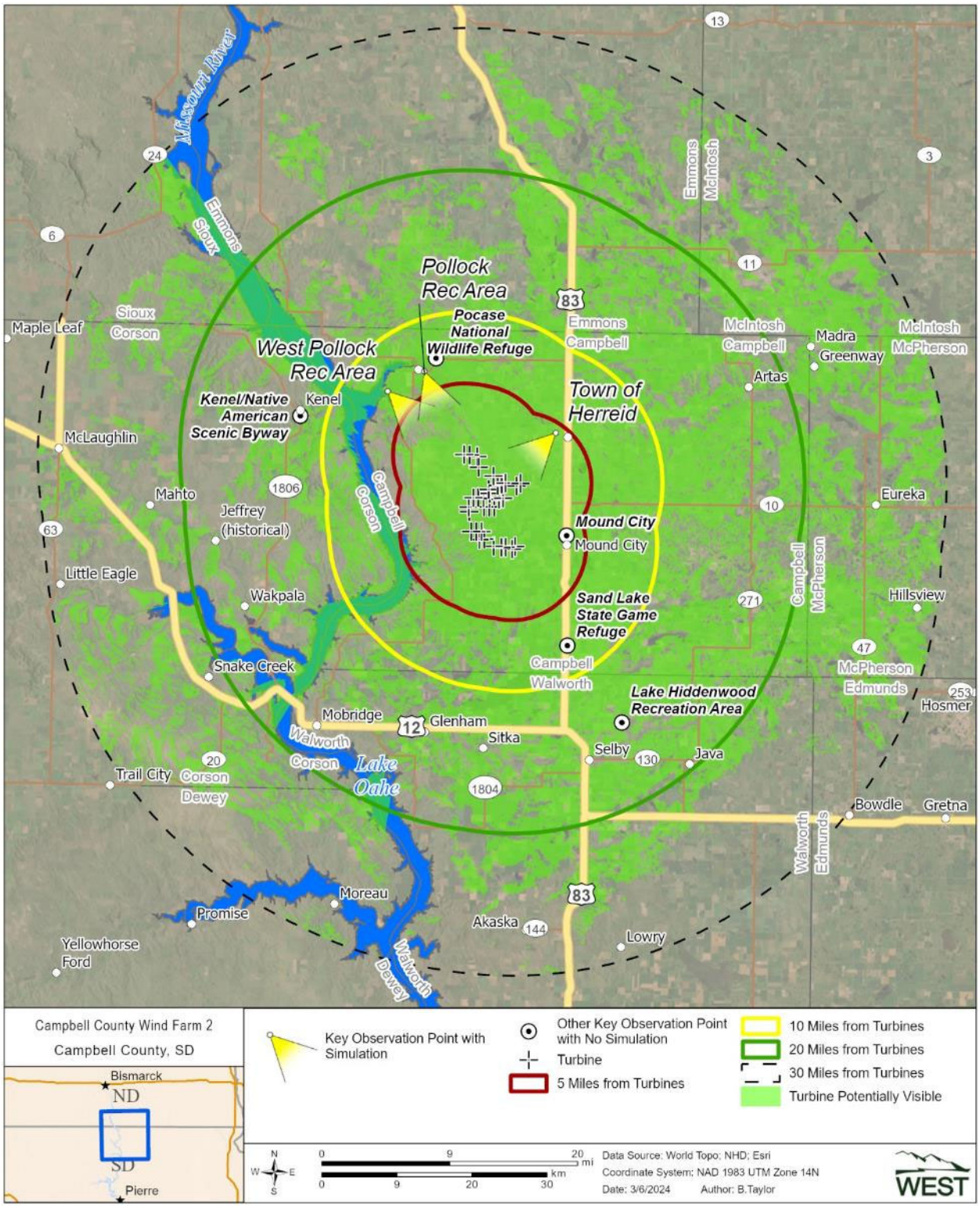

Figure 3.11-1. Visibility of the wind turbines at varying distances.

Visual impacts during decommissioning would be similar to construction impacts; however, decommissioning impacts would be of lesser magnitude and limited to ≈ six months.

The main direct visual impacts associated with operation of the Proposed Project would result from the introduction of vertical lines of the ≤ 29 wind turbines into the generally horizontal landscape found in the Analysis Area. Shadow flicker, blade glinting, and lights on Proposed Project facilities would also result in visual impacts. The magnitude of impacts from a wind turbine is largely proportional to distance. A conservative analysis suggests, to the unaided eye and under optimal viewing conditions, wind turbines would be discernible beyond the 30-mi radius analysis area, though the impact would be considered negligible at this distance. Wind turbine blade movement would be visible and unlikely to be missed by casual observers in ≤ 20 mi. Wind turbines would be a major focus of visual attention and begin to dominate the visual experience at ≤ 10 to 12 mi (Sullivan et. al. 2012). These distances are highlighted on the Proposed Project wind turbine viewshed map (Figure 3.11-1), with visibility screened in some locations by topography and landscape features. The wind turbines would be visible from the populated areas of Herried, Pollock, and Mound City, South Dakota. Segments of the Native American Scenic Byway would be moderately impacted with views of the Proposed Project at ≈ 12 mi. The tips of the blades, though not the center of the rotor hub, would be seen at additional locations and further distances, such as elevated points of Mound City.

The visual contrast between each KOP listed in Table 3.11-2 has a unique visual impact depending on the topography and the distance from the turbines. The KOPs were selected based on where people are likely to congregate and where visual impacts could be the highest. Towns, recreation sites, and sensitive cultural sites were all considered when determining the KOP locations. Table 3.11-2 describes each KOP based on viewer sensitivity, viewer number, visual quality, and approximate distance from the nearest turbine. Table 3.11-2 also shows a summarized degree of impact at each location. Each KOP was surveyed in September 2023. A 50-millimeter equivalent lens was used to capture a panorama of photographs from a stationary point. This lens most closely approximates the human field of vision and does not distort the apparent size or scale of objects in the scene. Visual simulations were created for three KOP locations to visualize the impacts to the existing landscape, and shown in Figures 3.11-2, 3.11-3, and 3.11-4. The three KOP locations (Herreid, West Pollock Recreation Area, Pollock Recreation Area) were chosen based on the severity of the visual impact at varying distances, as illustrated in Table 3.11-1.

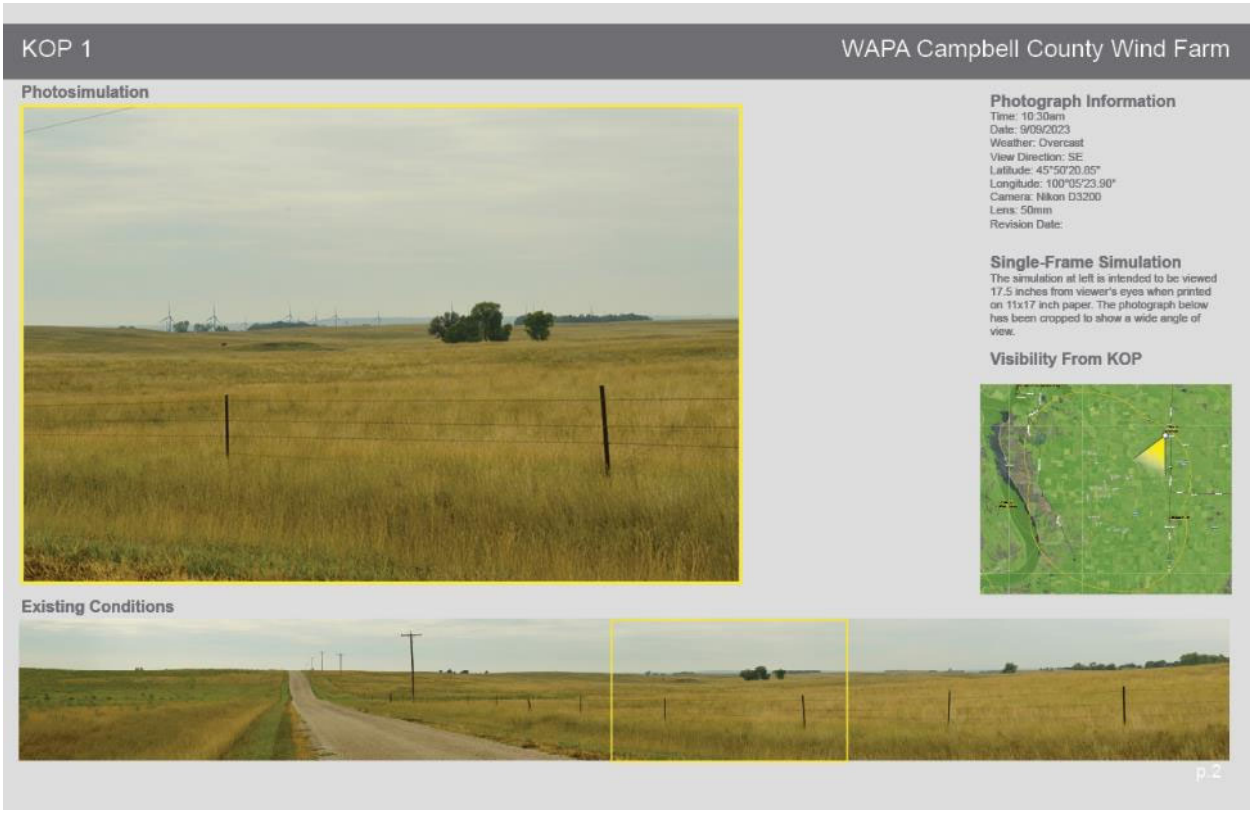

Figure 3.11-2. Simulation from the Town of Herreid key observation point.

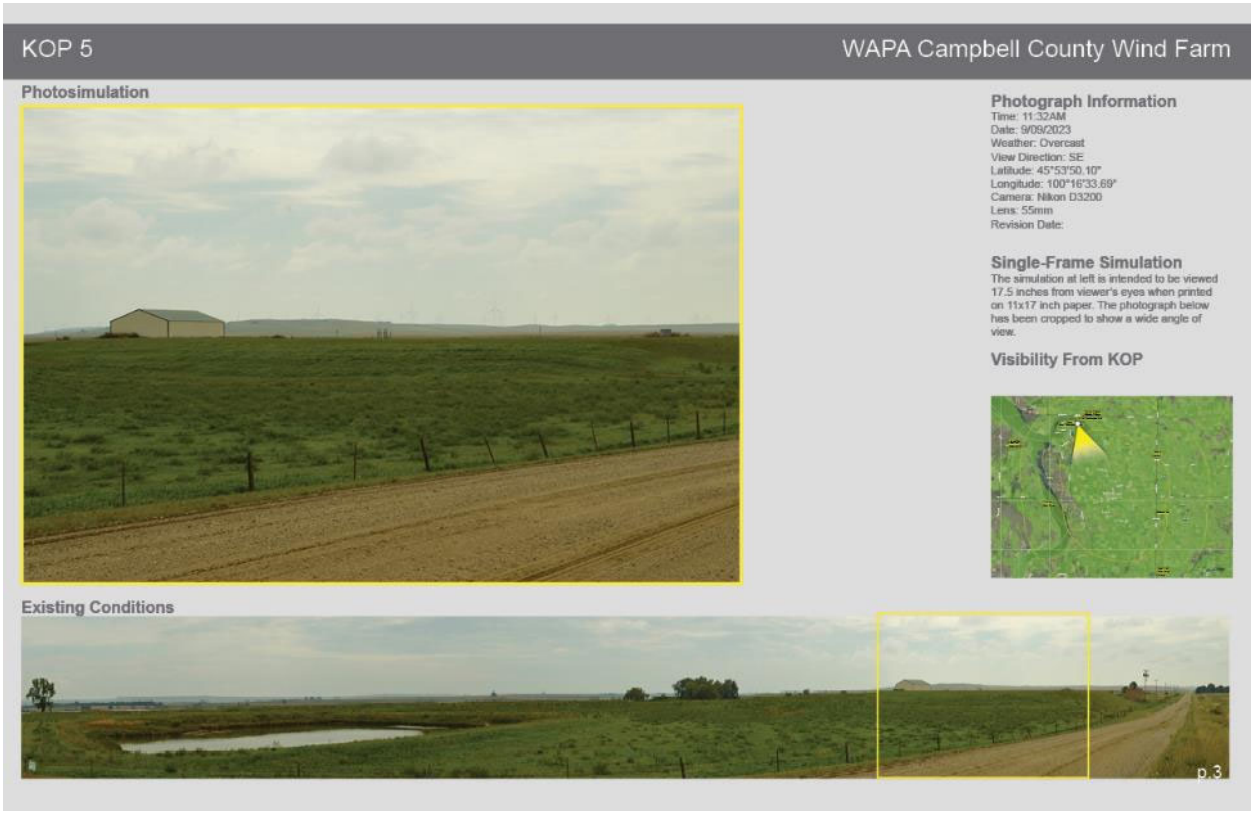

Figure 3.11-3. Simulation from the Pollock Recreation Area key observation point.

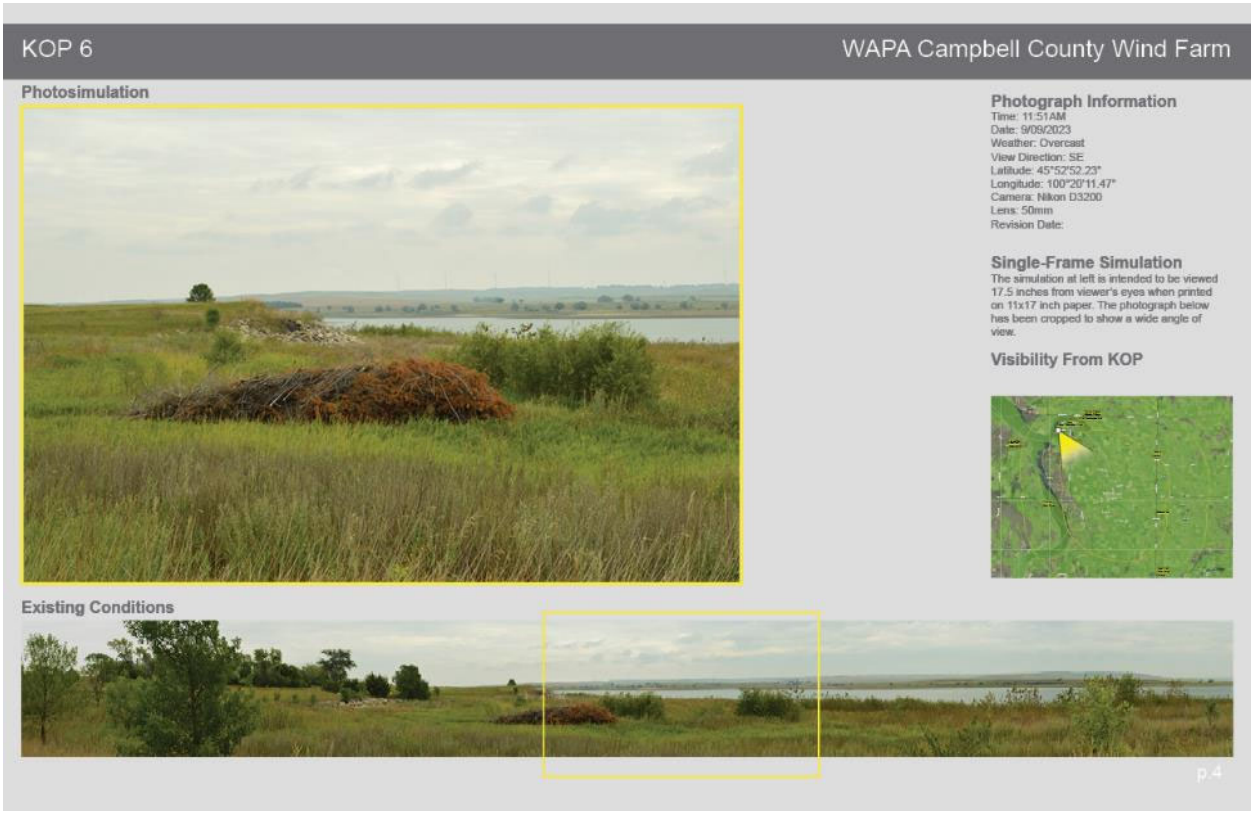

Figure 3.11-4. Simulation from the West Pollock Recreation Area key observation point.

3.11.2.1 Shadow Flicker Effects

Shadow flicker occurs when wind turbine blades pass in front of the sun to create recurring shadows on an object. Such shadows occur under conditions influenced by sun position, wind direction, time of day, and other similar factors. It is perceived as a "flicker" due to the rotating blades repeatedly casting the shadow. Shadow flicker becomes less noticeable with increasing distance from a wind turbine. Although shadow flicker may occur only a few hours in a year, it could create a nuisance for homeowners near turbines. Shadow flicker at distances greater than 10 rotor diameters (i.e., about 4,490 ft or 0.85 mi) is generally relatively low intensity and considered imperceptible (Haley and Partner 2020). At such distances, shadow flicker is typically only caused at sunrise or sunset, when cast shadows are sufficiently long and are generally greater in winter months due to the angle of the sun.

Computer models can accurately predict when, where, and to what degree this problem will occur, so wind project developers can minimize this impact during the site selection process. CCWF2 has conducted a shadow flicker analysis for the Proposed Project that models and evaluates the expected effects of shadow flicker during operation (Tetra Tech 2024; Appendix D). State and federal law do not regulate hours per year of shadow flicker impacts to receptors. However, 30 hours per year of shadow flicker impacts is considered acceptable by industry in the U.S. at non-participating receptors (Tetra Tech 2024).

WindPro software was used to analyze shadow flicker impacts at 29 turbine locations plus four alternate turbine locations (Tetra Tech 2024). Due to inclusion of the four alternate locations, the impacts are overestimated. Modeled hours present "worst-case" scenarios such that hours presented would be the maximum expected per receptor.

Of 34 modeled receptors, 21 are expected to receive zero hours of shadow flicker per year and eight receptors would receive < 10 hours. All nonparticipating receptors are expected to receive from zero to ≤ 9 hours per year of shadow flicker. Two participating receptors are expected to receive 20 to 30 hours of shadow flicker, and three participating receptors are expected to receive > 30 hours of shadow flicker per year (Tetra Tech 2024). It should also be noted that given 33 turbine locations were evaluated, only 29 will be constructed and therefore shadow flicker impacts at certain receptors may be less than currently modeled. Visual impacts from shadow flicker to nonparticipating receptors would be minor, with moderate impacts to certain participating receptors potentially experiencing over 30 hours of shadow flicker per year.

3.11.2.2 Lighting Effects

Current FAA requirements for wind turbine lighting (FAA 2020) typically include red, simultaneously pulsating nighttime lighting and no daytime lighting (as white towers are sufficiently conspicuous to pilots). Use of ADLS could be used, pending coordination with the FAA. ADLSs temporarily activate red nighttime lights only when aircraft enter the airspace and remain lit until ≈ 30 seconds after the aircraft leaves the airspace. Without the use of an ADLS, night-sky contrasts would be relatively substantial in the rural, undeveloped Analysis Area because there are few other light sources, no similar simultaneous pulsating red lights, and a generally featureless dark background. The lights could be visible for > 20 mi, depending on atmospheric conditions, and the lights could create strong long-term visual impacts (Sullivan et al. 2012). Implementation of an ADLS would substantially reduce visual effects from nighttime aviation safety lighting.

3.11.3 Environmental Consequences: No Action Alternative

Under the No-action Alternative it is assumed the Proposed Project would not be developed. No specific Project-related changes to visual resources would occur in the Analysis Area. Under the No-action Alternative, other visual resource impacts could occur because private landowners may develop agricultural or undeveloped properties for more intensive land uses.

3.12 Cultural Resources

This section analyzes potential impacts from the Proposed Project to cultural resources. The general analysis of these resources in Sections 4.9 and 5.9 of the 2015 PEIS is incorporated herein by reference. The Analysis Area for cultural resources is the Proposed Project Area. The Project-specific affected environment and impacts for cultural resources are analyzed below.

CCWF2 is committed to implementing the conservation measures for cultural resources derived from Section 5.9.1.6 of the 2015 PEIS, to minimize cultural impacts associated with the Proposed Project (see Appendix H).

3.12.1 Affected Environment

Cultural resources include archaeological, historic, and architectural sites or structures, or places that are significant in understanding the history of the U.S. or North America. Cultural resources may also include properties of traditional religious and cultural significance to tribes or traditional cultural properties (TCP), defined as sites or places of traditional cultural or religious importance to specified social or cultural groups, including Native American tribes. Cultural resources that meet the eligibility criteria for listing in the National Register of Historic Places (NRHP) are considered "historic properties" under the National Historic Preservation Act (NHPA).

To identify new or previously recorded cultural resources eligible for listing in the NRHP, cultural resource surveys were conducted within the Area of Potential Effects (APE). The APE is defined as the areas that could experience effects from operation of the Proposed Project. The The APE includes the area of potential direct physical effects, which was defined by WAPA in consultation with the State Historic Preservation Officer (SHPO), and includes all areas of physical ground disturbance, including a 250 ft radius around each turbine, alternate turbine, and MET tower location, a 100-foot wide survey corridor along the centerline of each access road and distribution line, a 125-foot wide survey corridor along the centerline of the overhead transmission line, and a 200-ft buffer around each block area (e.g., substation, temporary lay down area, batch plant). Using these parameters, the Class III inventory area encompassed an APE of 1,187 ac.

The APE also includes areas that could experience visual and auditory effects resulting from operation of the Proposed Project. The APE for visual effects to historic properties extends out two miles from the proposed turbine locations.

3.12.1.1 Records Search

A review of South Dakota Archaeological Research Center records for previously recorded archaeological sites and previous cultural resource surveys was conducted in two stages. The first file search was conducted on November 30, 2022, and revealed 16 prehistoric and historic sites and 54 architectural sites recorded on eight projects within a 2-mi radius of the APE (Logan Simpson 2023). A formal file search was conducted on August 24, 2023, in preparation for the Class III inventory. This file search confirmed what was found on the Class I report file search and no additional sites or inventories were in the formal file search. Only three prehistoric archaeological sites, stone circles, and stone cairns, and one abandoned historic structural ruin were near, but not within, the physical APE. Two of the prehistoric sites are eligible for NRHP listing and one was unevaluated. The abandoned historic structure was evaluated as not eligible

for NRHP listing. None of the sites or structures were located within the proposed direct physical APE.

Four structures, located on three sites and a historic railroad grade, are in the 2-mi visual APE buffer area. All four of these properties were previously evaluated as eligible for nomination to the NRHP.

3.12.1.2 Field Survey

The inventory was conducted over three field sessions, with each timed to make sure agricultural fields were harvested prior to the inventory. The field sessions were conducted on September 5 – 12, 2023, November 13 – 18, 2023, and March 18 – 22, 2024. The only find during the Class III inventory was an isolated sandstone mano (39CA0260) identified within the APE along a collection line route. Limited testing indicates a very low probability that additional buried cultural materials are present. The isolated find is not eligible for inclusion in the NRHP and no further work is recommended.

Tribal surveys were conducted by the Sisseton Wahpeton Oyate tribe in March of 2024. The tribe located 14 sites of tribal interest and two areas were located that may contain sites of tribal interest. The tribe inventoried avoidance corridors around all the sites and recommended fencing and monitoring of these sites during construction.

3.12.1.3 Visual and Auditory

File searches found that 21 historic structures that were previously recorded and evaluated are within the visual APE. A reconnaissance architectural survey of structures was conducted within a 2-mi buffer of the proposed wind farm for potential historic architectural sites. Satellite imagery, topographic maps, and a records search provided by the South Dakota Archaeological Research Center were used to determine buildings, structures, and previously recorded sites. No additional historic structures were located because of the reconnaissance file search. The Proposed Project is in agricultural fields some distance from any standing structures. In general, the structures are more prevalent near Highway 1804 to the west and Highway 83 to the east. None of the structures within the two-mile view shed are eligible for nomination to the NRHP and no further visual analysis was conducted.

3.12.2 Environmental Consequences: Proposed Action Alternative

3.12.2.1 Archaeological Resources/Traditional Cultural Properties

Section 5.9.1 of the 2015 PEIS describes common impacts wind energy projects can have on cultural resources which could apply to resources found within the Proposed Project Area, depending on the evaluation of isolated finds, as well as completion of the Class III inventory.

WAPA has evaluated the effects of the project on cultural resources and finds that the Proposed Project will have no effect on any cultural resources or historic property. The Sisseton

Wahpeton Oyate have identified 14 sites and 2 areas where they recommend avoidance from all project impacts and have further recommended fencing and monitoring. CCWF2 is committed to avoidance of these tribal resources and will adjust the Proposed Layout for evaluation in the Final EA.

No historic structures were found in the visual APE and no further work is needed. WAPA consulted the South Dakota SHPO on its finding of no historic properties affected on June 12, 2024, receiving concurrence on June 28, 2024.

3.12.3 Environmental Consequences: No Action Alternative

The No Action Alternative would have no direct or indirect impacts on cultural resources. Existing activities, such as farming and the trend toward conversion of undeveloped land to agriculture, would likely continue and could affect any unidentified cultural resources, should they occur.

3.13 Health and Safety

Section 5.13 of the 2015 PEIS discusses health and safety issues associated with wind energy development, including occupational health impacts on workers and environmental health concerns in the area around the facilities. Project-specific health and safety concerns of climate-related hazards, electric and magnetic fields (EMFs), and spray applications are described below.

3.13.1 Affected Environment

3.13.1.1 Climate-Related Hazards

The Proposed Project is located where strong storms, including tornados and derechos, which are widespread, long-lived windstorms with straight-line winds reaching ≥ 58 mph, could occur (Corfidi et al. 2024). Tornadoes do not occur frequently in the Proposed Project Area. Since 1951, the National Centers for Environmental Information has documented ≤ 15 tornadoes in Campbell County (National Oceanic and Atmospheric Administration 2024). Derechos can occur in all six states in UGP, but are most common in eastern South Dakota, eastern Nebraska, southern Minnesota, and Iowa, where they occur ≈ once every two years (National Weather Service 2022). Blizzards and ice storms can occur in this area of South Dakota, with strong winds and risk of ice formation on turbine blades, which creates a potential for ice throw that could create a hazard in adjacent areas.

3.13.1.2 Electric and Magnetic Fields and Electromagnetic Interference

EMFs at the Proposed Project are not expected to differ from those discussed in the 2015 PEIS but are discussed here due to frequent public concern over them. Natural and manufactured sources of EMFs are commonplace in the U.S. Electric fields exist wherever an electric charge exists. A magnetic field exists when that charge is in motion (i.e., the flow of electrons to

produce an electric current). EMFs are vector quantities, which means they have a strength and a specific direction. The strength of an EMF decreases substantially with increasing distance from the source (National Institute of Environmental Health Sciences [NIEHS] 2024). The International Commission on Non-ionizing Radiation Protection (ICNIRP) and the Institute of Electrical and Electronics Engineers (IEEE) have issued guidelines for exposure to EMFs (ICNIRP 1998, IEEE 2002).

At wind farms, primary areas where EMFs exist include: (1) at the point of power injection into the high-voltage transmission or distribution grid, (2) in the vicinity of the generator in each turbine's nacelle, (3) in the vicinity of any electrical transformer (i.e., transformers located at individual turbines and the Proposed Project substation), and (4) in the vicinity of the power cables (collection lines) connecting the turbines to the Proposed Project substation (see Section 3.8.2.2 of the 2015 PEIS). Research has shown EMF levels at these locations (e.g., at most 0.5 milligauss [mG] at the source) are well below the IEEE maximum permissible exposure levels at these EMF sources of 27.1 Gauss (G) for the head and torso and 632 G for appendages (IEEE 2002, 2015 PEIS), and fade to negligible ≥ 10 to 25 ft, with no detectable levels at ground level from the turbine nacelle or buried collection lines. EMF levels at the Proposed Project are expected to produce the same low EMFs as those discussed in the 2015 PEIS. The Proposed Project gen-tie line would serve as a source of EMFs (Table 3.13-1). As Table 3.13-1 shows, the magnetic field of a sample gen-tie line decreases by 88% (from 57.5 to 7.1 mG) at 100 ft away from the gen-tie line and by 97% (from 57.5 to 1.8 mG) at 200 ft away from the gen-tie line. Furthermore, the EMF exposure is expected to be < the EMF generated by many common household appliances (Table 3.13-2) and below the midpoint of the USEPA recommendations.

Table 3.13-1. Example EMF levels with increasing distance from a 230-kV overhead transmission line.

	Electric Field (kV)[a]				Average Magnetic Field (mG)[a]			
Transmission Line Voltage (kV)	At the Source	100 Feet Away	200 Feet Away	300 Feet Away	At the Source	100 Feet Away	200 Feet Away	300 Feet Away
230	2.0	0.3	0.05	0.01	57.5	7.1	1.8	0.8

Source: Bonneville Power Administration (1994).

a. kV = kilovolt, mG = milligauss; EMF = electric and magnetic fields.

Table 3.13-2. EMF levels of common household appliances.

Appliance	Average Magnetic Field (mG)[a] Within 6 Inches	Average Magnetic Field (mG)[a] 4 Feet Away
Blender	30-100	0
Dishwasher	10-100	0-1
Microwave Oven	100-300	0-20
Electric Range	20-200	0-6
Refrigerator	0-40	0-10
Vacuum Cleaner	100-700	0-10

Source: U.S. Environmental Protection Agency (1992).

a. mG = milligauss; EMF = electric and magnetic fields.

3.13.1.3 Aerial Spray Application Safety

Due to the prevalence of agricultural land in the Proposed Project Area, there is an increased likelihood of crop duster activity (e.g., pesticide applications from airplane or helicopter) in the vicinity of the Proposed Project. Crop dusters have been documented to strike unmarked towers and gen-tie lines. Risk surrounding crop dusting and wind energy facilities are primarily associated with turn radii needed to safely maneuver, turbulence turbine blades are purported to emit, and potential shadow flickers created from rotation of the turbines (Manjooran 2013). These combined factors have led to concerns in the increased complexity of aerial applications to maintain crop productivity and pilot safety.

3.13.1.4 Waste Materials

Construction, operation, maintenance, and decommissioning of the Proposed Project would be expected to generate waste. Construction and decommissioning would be expected to produce the most material waste. Total weight of material used to produce a wind turbine, including tower, nacelle, and blades (foundation not considered), varies depending on size. The amount of steel used in one wind farm is ≈ 107–132 tons per MW, accounting for 24% of total materials in a land-based wind farm, while concrete, ≈ 243–413 t/MW, accounts for ≈ 72% (Global Wind Energy Council 2022). While most materials brought to the Proposed Project Area will be for construction of components, trash and excess materials would be produced. Wind farms in operation across the U.S. annually replace ≈ 2.4% of wind turbine blades (Piel et al. 2019). Of the materials and components of a wind turbine's total mass, ≈ 90% can be recycled. The remaining 10% of a wind turbine's mass consists of composite materials used in the production of wind turbine blades, which are not easily recyclable (Global Wind Energy Council 2022).

3.13.2 Environmental Consequences: Proposed Action Alternative

Potential Project-specific impacts are discussed below, including those associated with climate-related hazards, EMFs, and spray applications. The remaining health and safety impacts applicable from the 2015 PEIS are incorporated herein by reference (see Section 5.13 of the 2015 PEIS).

3.13.2.1 Climate-Related Hazards

Hazards from damaged wind turbines resulting from thrown parts or collapsed towers, or ice throw from ice buildup on blades, are a consideration in this part of South Dakota given the risk of tornados, derechos, blizzards, and ice storms. However, few records of damage to wind turbines from derechos or tornadoes were found to be reported. Proposed Project turbines are designed to withstand ≤ 52 m/s (116 mph) winds. To keep the blades from spinning at dangerous speeds, turbines would have built-in mechanisms that lock and feather blades when wind speeds exceed specified wind speeds (DOE 2018). For the Proposed Project model, turbines would be shut down when wind speeds are ≥:

- 26 m/s (> 600-second duration)
- 31 m/s (> 30-second duration)
- 35 m/s (> 3-second duration)
- 36 m/s (instantaneous, sampled every 1 second; GE Renewable Energy 2022)

The relative infrequency of these storms, the localized area that is generally affected, turbine design and safety measures, and lack of evidence of past damage indicate potential hazards from damaged or broken turbines due to high winds is low. However, the Fourth National Climate Assessment (NCA; U.S. Global Change Research Program 2018) predicts South Dakota and the Northern Great Plains are likely to increasingly experience extreme heat, drought, severe weather, heavy downpours, and flooding with acute storm events occurring with increasing frequency and intensity. While potential impacts are not possible to accurately predict, it is anticipated permanent impacts to Proposed Project infrastructure could occur in extreme weather conditions, which could present health and safety hazards similar to those described below.

As discussed in the 2015 PEIS, both blade throw and ice throw rarely occur, based on quality control standards for utility-scale wind turbine manufacture and turbine control software that triggers a turbine to stop rotating if ice buildup occurs.

3.13.2.2 Electric and Magnetic Fields and Electromagnetic Interference

Potential health effects from EMFs have been extensively studied; however, results show no evidence of a link between EMF exposure and health, including cancer (NIEHS 2024). Given EMF levels in the wind farm and along the Proposed Project gen-tie line are expected to be below the IEEE occupational and general public maximum permissible exposure levels (IEEE 2002), lower than many common household appliances (USEPA 1992), and below the midpoint of USEPA's recommendations, no health impacts from the Proposed Project are anticipated.

While the effects of electromagnetic interference are not recognized as a direct risk to human health, interference of telecommunication frequencies could impact communications to and from emergency services and could be categorized as a safety hazard. In a microwave study conducted on Proposed Project infrastructure sites, two microwave paths were in the Proposed Project Area (Appendix G). Turbines were sited away from these paths to eliminate potential impacts to the interference.

3.13.2.3 Aerial Spray Application Safety

The Proposed Project would have no significant impact on commercial, private, or military flight safety. The continued applicability of aerial crop dusting in the Proposed Project Area would be of concern to surrounding land and business owners. Aerial crop dusting ideally occurs during low wind conditions to reduce the effects of spray drift and turbulence. Wind turbines are typically non-operational and pose little threat to maneuverability for pilots during these conditions. Non-operational turbines still pose a safety threat as obstacles for pilots. Pilots

regularly plan for obstacles encountered in their flight path including power lines, agricultural infrastructure, trees, and occupied residences. To ensure pilots can properly prepare for these obstructions in their flight path, CCWF2 will coordinate with the FAA in implementing measures to aid in visibility of turbines and MET towers. CCWF2 would coordinate directly with landowners should crop dusting be needed.

3.13.2.4 Waste Materials

During construction, excess trash and waste materials would be brought to nearby landfills and disposal sites. Given most materials brought to the Proposed Project Area would be used in construction of the components, excess trash and materials would be low, and impacts to local landfills are expected to be minor. Concrete would be batched on-site, allowing for more accurate and on-demand concrete use, limiting excess material. CCWF2 has committed to waste management practices, described below, to limit excess trash.

At the end of the expected 35-year Proposed Project lifespan, if CCWF2 elects to end commercial operations and decommission, or replace (repower) the turbines with new technology, material waste would be generated. Components would be removed, as necessary and either recycled, salvaged, sold, or disposed. This would contribute to material waste and may contribute to local waste collection sites. It is expected that larger components and waste would be brought to larger, appropriately sized facilities outside Campbell County. Hazardous materials would be disposed of through the hazardous materials management plan developed for the Proposed Project. Impacts to waste collection sites would be minor during construction, and moderate at decommissioning.

3.13.3 Environmental Consequences: No Action Alternative

The No Action Alternative would have no direct or indirect impacts on health and safety. Existing activities, such as farming and crop-dusting activities near existing gen-tie lines, would continue. These types of activities have inherent occupational health and safety hazards. Health and safety risks resulting from climate change would not be expected to increase.

4.0 Cumulative Impacts

This section analyzes the potential cumulative impacts to resources of past, present, and reasonably foreseeable federal and non-federal actions when added to the effects from the Proposed Action or No Action Alternatives. This EA addresses climate change as an environmental trend contributing to cumulative effects on resources. Effects of climate change on the Proposed Project under the Proposed Action Alternative are discussed in Sections 3.1, 3.2, and 3.13; while the Proposed Project effects on climate change are discussed in Sections 3.3 and 3.6.

The general cumulative impacts of past, present, and future actions on resources in the UGP Region are analyzed in Section 6 of the 2015 PEIS (see Table 6.3-2 of the 2015 PEIS) and are incorporated herein by reference. The contribution of cumulative impacts associated with the Proposed Action Alternative falls in the scope of the cumulative impacts analysis in the 2015 PEIS. Impacts would be minimized and mitigated during the construction and operation of the Proposed Project through the implementation of BMPs and conservation measures.

The Cumulative Analysis Area for this analysis is Campbell County and a 10-mi distance from the Proposed Project Area. This includes portions of Corson and Walworth counties in South Dakota and Emmons County in North Dakota (Figure 4.0-1). The Proposed Project is directly east of the adjacent Campbell County Wind Farm 1, a 94.3 MW facility with 55 1.7-MW turbines. No other wind projects are in the Cumulative Analysis Area.

Other past and current actions contributing to cumulative effects include agricultural land use, including cultivated crops and cattle pasture. As of 2017, ≈ 88% of land in Campbell County was used for agriculture, the vast majority of which was cultivated crops (USDA 2019).

The Fourth NCA describes the Great Plains region as expecting extreme heat, drought, severe weather, heavy downpours, and flooding from future climate change (Reidmiller et al 2018). These events could affect health and safety, air, water quality, and other resources as evaluated in this EA (Table 4.0-1). Climate change impacts on each resource covered in this EA continue to occur over time and are complex, particularly regarding vegetation and wildlife. Thus, these effects are not reasonably foreseeable. Other impacts, particularly to soil and water, may be assessed more easily, as summarized in Table 4.0-1, along with other cumulative effects on resources for the Proposed Action and No Action Alternatives.

The Proposed Action Alternative would avoid impacts, as practicable, during construction, operation, and decommissioning. If the No Action Alternative were implemented, impacts from other past, present, and reasonably foreseeable actions in the vicinity of the Proposed Project would continue. With implementation of conservation measures for each resource, cumulative impacts from the Proposed Action Alternative on evaluated resources would be minor, except for visual resources. Visual impacts are in the scope of the 2015 PEIS and applicable conservation measures from the 2015 PEIS would be implemented to minimize impacts.

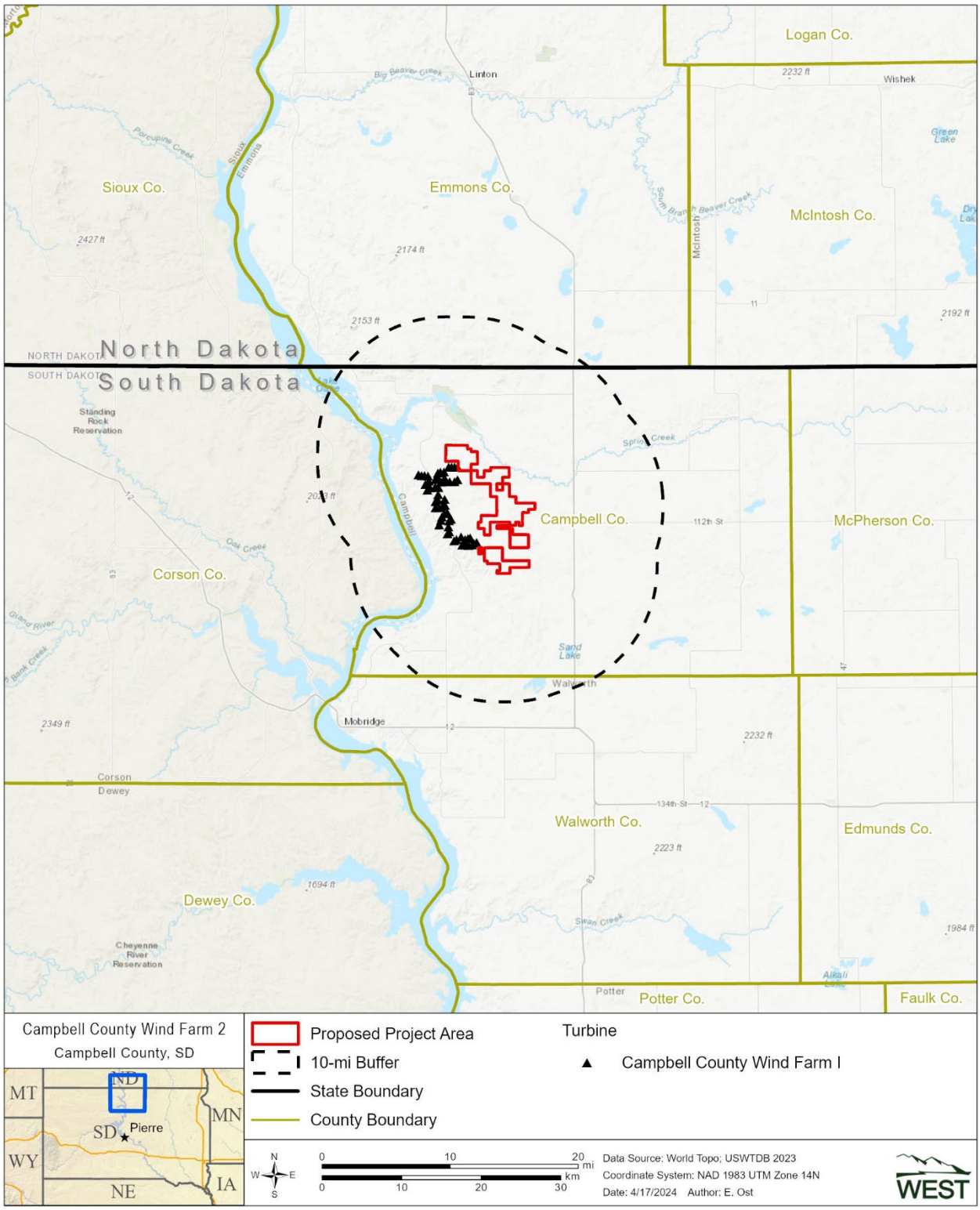

Figure 4.0-1. Existing wind farms in the Cumulative Analysis Area.

Table 4.0-1. Discussion of cumulative impacts.

Resource	Cumulative Impacts of the Proposed Action Alternative	Effect from Past, Present, and Reasonably Foreseeable Actions of the No Action Alternative
Geology – Soils and Paleontology	Proposed Project construction could contribute incrementally to wind and water soil erosion, compaction, and soil contamination along with ongoing farming activities. The contribution to cumulative impacts would be temporary and minor with implementation of proposed conservation measures. Proposed Project operation would contribute incrementally to long-term soil loss due to construction of permanent wind facilities; however, the contribution relative to the Analysis Area would be negligible.	The No Action Alternative would result in continued, long-term wind and water soil erosion, compaction, and soil contamination from ongoing farming activities.
Water Resources	Proposed Project construction could contribute incrementally to increased water use and decreased water quality due to stormwater runoff from construction areas and impacts to streams/wetlands, along with ongoing farming activities. Contributions to cumulative impacts would be temporary and minor with implementation of proposed conservation measures. Proposed Project operation could contribute incrementally to altered stream flows, loss of wetlands due to permanent land requirements, along with anticipated increases in flood frequency and intensity due to climate change. Cumulative impacts would be minimized through coordination with the U.S. Army Corps of Engineers and South Dakota Department of Agriculture and Natural Resources for water resource permitting.	The No Action Alternative would result in continued, long-term water use and potential decreased water quality due to ongoing farming activities.
Vegetation and Land Cover	Proposed Project construction could contribute incrementally to the spread of invasive and noxious weeds and a temporary loss of vegetative cover, along with ongoing farming. Contributions to cumulative impacts would be temporary and minor with implementation of proposed conservation measures. Proposed Project operation would contribute incrementally to the long-term conversion of grassland and agricultural land, including prime farmland, to a developed (industrial) use, along with Campbell County Wind Farm 1. Cumulative impacts would be minor given the relatively small areas affected.	The No Action Alternative would result in continued potential spread of invasive and noxious weeds through ongoing farming activities, though at a potentially lower rate.
Wildlife	Proposed Project construction would contribute incrementally to disturbance, displacement, and potential mortality of common wildlife and fish, primarily in pasture, field edges, and riparian and aquatic habitats, along with ongoing farming activities. Contributions to cumulative impacts would be temporary and minor with implementation of proposed conservation measures. Proposed Project operation would contribute incrementally to long-term disturbance, displacement, and mortality of wildlife, primarily birds and bats through turbine collisions, along with the Campbell County Wind Farm 1. With implementation of proposed conservation measures, cumulative impacts would be minor.	The No Action Alternative would result in continued disturbance, displacement, and potential mortality of common wildlife and fish from ongoing farming activities and continued operation of Campbell County Wind Farm 1.

Resource	Cumulative Impacts of the Proposed Action Alternative	Effect from Past, Present, and Reasonably Foreseeable Actions of the No Action Alternative
Threatened and Endangered Species	Proposed Project operation could contribute incrementally to loss of wetland stopover habitat for endangered whooping cranes, along with ongoing farming activities. Commitment to provide habitat offsets for these lost wetlands would reduce impacts. Whooping cranes may already avoid wetland habitats in proximity to existing operational turbines at Campbell County Wind Farm 1. Proposed Project operation may contribute to northern long-eared bat (NLEB) mortality during spring and fall migration. Proposed Project siting and commitments to raise cut-in speeds would reduce impacts. Given implementation of proposed conservation measures, cumulative adverse impacts would be avoided, minimized, and/or offset in consultation with the USFWS.	The No Action Alternative would result in continued loss of wetland stopover habitat for whooping cranes due to farming activities and continued operation of Campbell County Wind Farm 1. Operation of Campbell County Wind Farm 1 should comply with the ESA, and impacts should be accounted for.
Air Quality and Climate	Proposed Project construction would have minor contributions to decreased air quality from construction emissions of greenhouse gas (GHG) and other air pollutants, along with ongoing farming activities; however, these would be negligible. Cumulative impacts would be temporary and negligible with implementation of proposed conservation measures. Proposed Project operation would contribute incrementally to beneficial impacts by reducing GHG emissions and subsequent climate change by producing renewable energy that reduces the use of fossil fuels, along with the continued operation of Campbell County Wind Farm 1.	The No Action Alternative would result in continued emissions of GHG and other air pollutants from ongoing farming activities. Contributions to the reduction in GHG emissions and climate change would be smaller based on the continued operation of Campbell County Wind Farm 1.
Socioeconomics	Proposed Project construction would contribute to short-term beneficial impacts to the local economy through increased employment, income, and expenditures at local businesses. Proposed Project operation would contribute to long-term beneficial cumulative impacts from employment staff, procurement of supplies and services for maintenance, compensation to landowners from lease and easement agreements, and increased tax bases, along with similar contributions from ongoing agricultural activities and the operation of Campbell County Wind Farm 1.	The No Action Alternative would result in continued contributions to local economies, primarily from ongoing agricultural operations and the operation of Campbell County Wind Farm 1.
Environmental Justice	The Proposed Project would not contribute to cumulative environmental justice impacts as no resource effects would be predominantly borne by minority or low-income populations.	The No Action Alternative would not impact minority or low-income populations.

Resource	Cumulative Impacts of the Proposed Action Alternative	Effect from Past, Present, and Reasonably Foreseeable Actions of the No Action Alternative
Transportation and Aviation	Proposed Project construction would contribute incrementally to road traffic and road use along with ongoing farming activities and the operation of Campbell County Wind Farm 1. Contributions to cumulative impacts would be temporary and minor with implementation of proposed conservation measures. Proposed Project operation would contribute incrementally to cumulative effects at a negligible level. Contributions to aviation impacts are unknown. Should FAA coordination indicate impacts to aviation due to Proposed Project operations, CCWF2 and WAPA would coordinate to develop BMPs and mitigative measures, so cumulative impacts would be insignificant.	The No Action Alternative would result in continued ground transportation impacts from ongoing farming activities, and the operation of Campbell County Wind Farm 1.
Noise	Construction and operation of the Proposed Project would contribute incrementally to increased noise at sensitive noise receptors, particularly occupied residences, along with ongoing farming activities, traffic, and wind. Contributions to cumulative impacts would be minor with implementation of proposed conservation measures.	The No Action Alternative would result in continued noise at sensitive noise receptors due to ongoing farming activities, traffic, and wind.
Visual Resources	Proposed Project construction would contribute incrementally to visual impacts in the rural setting of the Proposed Project. Contribution to these cumulative impacts would be minor given that impacts would be localized and temporary. Turbine operation would contribute to existing visual impacts from continued operation of Campbell County Wind Farm 1. Contribution to cumulative impacts could be minimized through use of an Aircraft Detection Lighting System at the Proposed Project, to substantially reduce visual impacts from turbine lighting at night. Cumulative daytime impacts could be moderate to high at occupied residences where > one wind project is visible. Impacts are in the scope of the *2015 UGP PEIS* and would follow applicable conservation measures.	The No Action Alternative would result in continued existing visual impacts from the Campbell County Wind Farm 1.
Cultural Resources	Cultural and Tribal Resources identified during the Class III inventory were not within the Project footprint or are expected to be avoided/mitigated through adjustment of infrastructure, fencing, and monitoring. WAPA is currently consulting with the tribes and State Historic Preservation Office to ensure significant impacts to cultural resources would not occur, such that potential cumulative impacts would be insignificant.	The No Action alternative is not expected to result in cumulative impacts on cultural resources, as Campbell County Wind Farm 1 has completed construction and is not likely to have new impacts on cultural resources.

Resource	Cumulative Impacts of the Proposed Action Alternative	Effect from Past, Present, and Reasonably Foreseeable Actions of the No Action Alternative
Health and Safety	Proposed Project construction would contribute to short-term cumulative impacts from health and safety risks to workers and residents in the four counties from construction equipment, activities, and vehicle travel risks. Contributions to cumulative impacts would be minimized with proposed conservation measures. Proposed Project operation could contribute to long-term cumulative impacts from safety risks to employees and county residents, primarily due to physical and/or electrical hazards from electrical 230-kilovolt overhead transmission lines, the substation, and wind turbines. Implementation of proposed conservation measures, along with industry safety standards, could minimize these impacts.	The No Action Alternative would result in continued long-term health and safety risks to workers and residents in the four counties from ongoing farming activities and operation of Campbell County Wind Farm 1.

5.0 Consultation and Coordination

WAPA held a public scoping comment period from November 2 to December 2, 2022, to provide the public, government agencies, tribal governments, and others to identify issues and alternatives that would help WAPA define the scope of the EA. Both an agency scoping meeting and public scoping meeting were held at separate times on November 2, 2022. Federal, state, and local agencies, and tribal governments were invited to the meetings via letter to provide comments regarding the Proposed Project. Landowners in and adjacent to the Proposed Project Area were invited via letter to attend the virtual public scoping meeting and/or provide comments, as was the public through announcements in the Prairie Pioneer, the newspaper of record for Campbell County.

Twelve comment submittals (written and by voicemail) were received by WAPA from county, state, and federal agencies, as well as landowners in and near the Proposed Project Area. The submittals contained 43 individual comments relating to different aspects of the Proposed Project. The public scoping meeting documentation, scoping comments received, and WAPA's responses are included in Appendix B. Information from scoping comments were reviewed and incorporated into the Draft EA, as applicable.

Following completion of the Draft EA, agencies, the public, and other interested parties will be invited to review and comment on the document during a 30-day public review period.

5.1 Federal Agencies

The federal agencies that were contacted for the purpose of the EA scoping process include the following:

- Advisory Council on Historic Preservation
- U.S. Department of Transportation, FAA, Region 8
- FEMA, Region VIII
- Federal Energy Regulatory Commission, Office of Energy Projects
- Federal Highway Administration, South Dakota Division
- USACE, South Dakota Regulatory Office
- USEPA, Region 8
- USDA, NRCS, South Dakota State Office
- USDA, Rural Utilities Service, Water and Environmental Program
- USDA, South Dakota State FSA
- BLM, South Dakota Field Office
- USGS, Missouri Basin
- USFWS, South Dakota Field Office
- USFWS, Sand Lake Wetland Management District
- Bureau of Indian Affairs, Great Plains Regional Office
- U.S. Senate

- U.S. House of Representatives

The NRCS - South Dakota Office, USFWS South Dakota Ecological Services Field Office, USEPA Region 8, and USFWS - Sand Lake Wetland Management District submitted scoping comments (Appendix B).

5.2 State and Local Agencies

The state and local agencies that were contacted for the purpose of the EA scoping process include the following:

- SDDANR
- SDGFP
- SDDOT, Pierre Region
- South Dakota Public Utilities Commission
- South Dakota SHPO
- South Dakota Department of Tribal Relations
- Governor's Office of Economic Development
- South Dakota School and Public Lands
- South Dakota Office of the Governor
- South Dakota Senate, District 23
- South Dakota House of Representatives, District 23
- Campbell County
- Campbell County Board of Commissioners
- Campbell County Highway Department
- Campbell County Conservation District
- Campbell County Economic Development & Tourism Corporation

South Dakota Game Fish and Parks submitted scoping comments (Appendix B).

5.3 Native American Tribes and Associated Bodies

Pursuant to Section 106 of the NHPA, WAPA initiated tribal consultations with the following Tribes by letter on July 20, 2023:

- Cheyenne River Sioux
- Rosebud Sioux
- Santee Sioux Nation
- Sisseton Wahpeton Oyate
- Standing Rock Sioux

The Cheyenne River Sioux and Sisseton Wahpeton Oyate tribes responded to the consultation request, participated in the Class III Cultural Survey, and are coordinating with WAPA on the Proposed Project.

5.4 Non-governmental Organizations

The non-governmental organizations contacted for the EA scoping process included:

- Sierra Club, South Dakota Chapter
- The Nature Conservancy, Minnesota-North Dakota-South Dakota Field Office
- Ducks Unlimited, Great Plains Regional Office
- Izaak Walton League of America, South Dakota Division
- Missouri Breaks Audubon Society
- American Bird Conservancy
- Pheasants Forever, Inc.

6.0 List of Preparers

Table 6.0-1 identifies the personnel responsible for the preparation of this EA.

Table 6.0-1. List of Environmental Assessment preparers.

Agency/Firm and Staff Name	Title
Western Area Power Administration	
Ashley Jackson-Baillie	National Environmental Policy Act Coordinator; Natural Resources Specialist
John Russell	Environmental Manager
Lisa Meyer	Archaeologist
Staffan Peterson	Archaeologist
Brian Pauly	Biologist
Hilary Morey	Biologist
Western EcoSystems Technology, Inc.	
Andrew Sullivan	Project Manager, National Environmental Policy Act (NEPA) Analyst
Arin Thacker	NEPA Analyst, Wildlife Biologist
Martin Piorkowski	Wildlife Biologist
Casi Lathan	NEPA Analyst
Caroline Brown	NEPA Analyst
Erik Ost	Geographic Information Systems Specialist
Logan Simpson	
Andrew Newman	NEPA Analyst, Logan Simpson Project Manager
Ted Hoefer III	Cultural Resources Specialist
Sarah Smith	Ecologist
Brian Taylor	NEPA Analyst
Kristina Kachur	NEPA Analyst
Steve Sigler	Landscape Architect

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Appendix A. Biological Reports

Appendix B. Scoping Comments and Western Area Power Administration Responses

Appendix C. Campbell County Wind Farm 2 Noise Assessment

Appendix D. Campbell County Wind Farm 2 Shadow Flicker Analysis

Appendix E. Species Consistency Evaluation Forms.

Appendix F. Whooping Crane Operational Contingency Plan

Appendix G. Microwave Study

Appendix H. Best Management Practices and Conservation Measures