Environmental Assessment of the Cotton Plains Wind Project to Supply Energy Under the Renewable Energy Supply Agreement (RESA) for Fort Hood, Texas

August 2015

Prepared for:

Fort Hood Military Reservation
Killeen, Texas

Prepared by:

Ecology and Environment, Inc.

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Draft
Finding of No Significant Impacts for Cotton Plains Wind Project to Supply Energy under the Renewable Energy Supply Agreement (RESA) for Fort Hood, Texas

Introduction

This Environmental Assessment (EA) analyzes the environmental and socioeconomic impacts associated with the Proposed Action and alternatives to procure electricity pursuant to a Renewable Energy Supply Agreement (RESA).

The United States Army Garrison Fort Hood, Texas (Ford Hood) has an estimated on-post population of 68,448 and is comprised of approximately 218,823 acres located in Central Texas, approximately 60 miles from both Austin and Waco, adjoining the cities of Killeen, Copperas Cove, and Gatesville. Fort Hood is located in Bell and Coryell counties, with the majority of its training lands in Coryell County. Fort Hood has approximately 6,299 buildings and structures that provide 35 million square feet (3.3 million square meters) of floor space. Power is currently supplied to Fort Hood by the Electric Reliability Council of Texas (ERCOT) grid; therefore, approximately 77% of its energy is supplied from fossil fuel sources.

In September 2011, the Office of Energy Initiatives (OEI) was established by the Secretary of the Army to serve as the central management office for partnering with Army installations to implement cost-effective, large-scale renewable energy projects, leveraging private sector financing. The OEI focuses on solar, wind, geothermal, and biomass projects that are 10 megawatts (MWs) or greater. The OEI and Fort Hood identified the proposed Cotton Plains Wind Project (Project) as a viable renewable energy project from which to procure renewable power for Fort Hood. The Project would be developed, financed, and constructed by Cotton Plains Wind I, LLC (CPW), an indirect subsidiary of Apex Clean Energy Holdings, LLC. Fort Hood will purchase renewable energy from the Project pursuant to a RESA.

Purpose and Need

The purpose of the Proposed Action is to facilitate the generation of renewable power for use by Fort Hood. The Proposed Action is needed to meet federal and United States Department of Defense (DoD) guidelines for renewable energy. The Proposed Action would increase the Army's use of renewable energy, thereby reducing its reliance on fossil fuels for energy.

Specifically, the Proposed Action would move the Army closer to: (a) complying with the Energy Policy Act of 2005, which requires not less than 7.5% of the total quantity of facility electrical energy the Army consumes come from renewable energy sources; (b) achieving renewable electrical energy procurement in accordance with 10 United States Code (U.S.C.) 2911(e), as amended, which requires that the Army produce or procure not less than 25% of the total quantity of electrical energy it consumes within its facilities during fiscal year 2025 and each fiscal year thereafter from renewable energy sources; and (c) contributing to the Army's goal of generating (or procuring) one gigawatt of renewable electrical energy by 2025. The Army proposes to help meet this purpose and need at Fort Hood by procuring renewable power from the Project.

Description of the Proposed Action and Alternatives

Proposed Action

The Army's Proposed Action is the procurement of electricity from the Project pursuant to a RESA. Under the RESA, Fort Hood would purchase electricity in amounts and for a period of time sufficient to support the financing of construction of the Project. The nameplate capacity of the Project would be approximately 50.6 MWs. The annual production committed to Fort Hood from the Project would equal or exceed approximately 200,000,000 kilowatt-hours (kwh) per year (kwh/yr) for 28 years.

The RESA allows CPW to secure private financing to construct, operate, and maintain the Project. The Project would be constructed, owned and operated entirely on private land under long-term leases held by CPW, and it would input power to the ERCOT grid via the existing White River Substation, owned by Sharyland Utilities, L.P. Fort Hood would receive electricity via existing infrastructure on the ERCOT grid.

Alternatives Considered and Evaluated

The following alternatives were carried through for the analysis throughout the EA for the Proposed Action.

Preferred Alternative.
Under the Preferred Alternative, the Army would secure renewable energy from the proposed Project, which would be located on private land in Floyd County, Texas, approximately 3 miles east of Floydada. The Project would include construction and operation of up to 24 utility-scale wind turbine generators (WTGs) and associated infrastructure. The WTG models under consideration range from 2.1 to 3.3 MWs, with the final number of WTGs based on the model selected and resulting in a Project nameplate capacity of up to 50.6 MWs. The Project's permanent infrastructure would include WTGs, access roads, an underground electrical collection line system, an electrical substation, and one meteorological (MET) tower. Construction is planned to commence in the first quarter of 2016 with commercial operations commencing in the fourth quarter of 2016.

No Action Alternative. Under the No Action Alternative, the Army would not enter into a RESA with the Project entity, and would instead continue to receive electricity from its existing sources. Because Fort Hood is supplied primarily by the ERCOT grid, approximately 77% of its energy was supplied from fossil fuel sources in 2014. Under the No Action Alternative, the Army would not enter into the RESA, would not support the development of renewable energy, and would continue to utilize a higher percentage of electricity generated from fossil fuel sources. Under the No Action Alternative, various near-term federal statutes and Executive Orders (EOs) that mandate changes in energy consumption and production would not be met, and the push for renewable energy production/use and reduction of greenhouse gas (GHG) emissions would be negatively affected.

Environmental Analysis

The EA, which is attached hereto and incorporated by reference to this Finding of No Significant Impact (FNSI), examined the potential effects of the Preferred Alternative and No Action Alternative on 12 resource areas and areas of environmental and socioeconomic concern: land use and visual resources, air quality and GHG, noise, geology and soils, water resources, biological resources, cultural resources, environmental justice and socioeconomics, energy/ utilities, transportation, air space, and hazardous and toxic substances.

The assessment of Preferred Alternative conducted by Fort Hood found that the construction and operation would result in negligible to minor impacts to the existing environmental and socioeconomic resources. The parcels of land under consideration for the Preferred Alternative are currently dominated by rural agricultural activities: cultivated crops and grazing lands. The majority of habitat within the proposed Project area is regular disturbed and very little if any native vegetation communities are present. The biological studies conducted as part of Fort Hood's assessment found that the composition of the floras and fauna communities is representative of an agricultural-dominated landscape. Though the Preferred Alternative would impact the flora and fauna, impacts would be minor in nature. The proposed Project area has a low likelihood to support federally and state-listed threatened and endangered species. Construction and operation of the Preferred Alternative would have no effect on federally and state-listed threatened and endangered species. The Preferred Alternative would result in minor, temporary impacts to the wetlands and waterbodies located within the construction footprint. The implementation the Preferred Alternative would not impact any cultural resources and would result in negligible impacts to environmental justice and socioeconomic resources, existing energy/utility resources, transportation resources, air space, existing air quality, and the existing noise environment.

The EA identifies mitigation measures and best management practices (BMPs) that would be implemented during construction and operation of the Preferred Alternative to avoid and minimize potential impacts.

Cumulative Impacts

The impacts from the Preferred Alternative would be minor and considered *de minimis* when with regard to cumulative impacts on the environment.

Public Review and Comments

The final EA and draft FNSI were made available to Federal, state, and local agencies, and the public for review and comment for 30 days. A notice of Availability for the EA and draft FNSI were published in the Floyd County Hesperian-Beacon and the Killeen Daily Herald newspaper. During the public review and comment period, copies of the EA and draft FNSI were made available at the Killen Public Library (205 East Church Avenue, Killeen, Texas 76543), Floyd County Public Library (111 S. Wall Street, Floydada, Texas 79235) and Floyd County Branch Library (124 S. Main, Lockney, Texas 79241). The EA/draft FNSI was also available electronically through the http://www.hood.army.mil/DPW/ (Public Notices).

Finding of No Significant Impact (FNSI)

Fort Hood has considered the results of the analysis in the EA, comments received, and the needs of Fort Hood. Based on this review, Fort Hood has decided to implement the Proposed Action in which the Army would purchase electricity in amounts, and for a period of time, sufficient to

support the financing of construction of the 50.6 MW wind energy project. The purchase of electricity produced from WTGs will not have a significant impact on the quality of human life or natural environment.

BRIAN L. DOSA
Director, Public Works
Fort Hood, Texas

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Environmental Assessment of the Cotton Plains Wind Project to Supply Energy Under the Renewable Energy Supply Agreement (RESA) for Fort Hood, Texas

This Environmental Assessment has been reviewed by:

BALDWIN.CHARLOTTE.FAY.1267750480

Digitally signed by BALDWIN.CHARLOTTE.FAY.1267750480
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BALDWIN.CHARLOTTE.FAY.1267750480
Date: 2015.08.24 13:40:04 -05'00'

CHARLOTTE F. BALDWIN
NEPA Program Manager
Environmental Division
Fort Hood, Texas

DUTCHUK.TIMI.MARIE.1146509637

Digitally signed by DUTCHUK.TIMI.MARIE.1146509637
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=DUTCHUK.TIMI.MARIE.1146509637
Date: 2015.08.24 13:45:21 -05'00'

TIMI M. DUTCHUK
Chief, Environmental Programs
Directorate of Public Works
Fort Hood, Texas

DENOOYER.LEROY.LEWIS.1096410707

Digitally signed by DENOOYER.LEROY.LEWIS.1096410707
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=DENOOYER.LEROY.LEWIS.1096410707
Date: 2015.08.24 14:27:31 -05'00'

LEROY L. DENNOYER
Environmental Attorney
Office of the Staff Judge Advocate
Fort Hood, Texas

This Environmental Assessment has been approved by:

DOSA.BRIAN.LAWRENCE.1045276682

Digitally signed by DOSA.BRIAN.LAWRENCE.1045276682
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=DOSA.BRIAN.LAWRENCE.1045276682
Date: 2015.08.24 17:47:41 -05'00'

BRIAN L. DOSA
Director, Public Works
Fort Hood, Texas

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Executive Summary

ES.1 Introduction

Ecology and Environment, Inc. has prepared an Environmental Assessment (EA) for the United States Army Garrison Fort Hood, Texas (Fort Hood) to analyze potential environmental and socioeconomic impacts associated with the Proposed Action and alternatives from a proposed off-site wind energy facility.

Fort Hood has an estimated on-post population of 68,448 and is comprised of approximately 218,823 acres located in Central Texas, approximately 60 miles from both Austin and Waco, adjoining the cities of Killeen, Copperas Cove, and Gatesville. Fort Hood is located in Bell and Coryell counties, with the majority of its training lands in Coryell County. Fort Hood has approximately 6,299 buildings and structures that provides 35 million square feet (3.3 million square meters) of floor space. Power is currently supplied to Fort Hood by the Electric Reliability Council of Texas (ERCOT) grid; therefore, approximately 77% of its energy is supplied from fossil fuel sources.

In September 2011, the Office of Energy Initiatives (OEI) was established by the Secretary of the Army to serve as the central management office for partnering with Army installations to implement cost-effective, large-scale renewable energy projects, while leveraging private sector financing. The OEI focuses on solar, wind, geothermal, and biomass projects that are 10 megawatts (MWs) or greater. The OEI and Fort Hood identified the proposed Cotton Plains Wind Project (Project) as a viable renewable energy project from which to procure renewable power for Fort Hood. The Project would be developed, financed, and constructed by Cotton Plains Wind I, LLC (CPW), an indirect subsidiary of Apex Clean Energy Holdings, LLC. Fort Hood will purchase renewable energy from the Project pursuant to a Renewable Energy Supply Agreement (RESA).

ES.2 Purpose and Need

The purpose of the Proposed Action is to facilitate the generation of renewable power for use by Fort Hood. The Proposed Action is needed to meet federal and (United States) Department of Defense (DoD) guidelines for renewable energy. The Proposed Action would increase the Army's use of renewable energy, thereby reducing its reliance on fossil fuels for energy.

Specifically, the Proposed Action would move the Army closer to: (a) complying with the Energy Policy Act of 2005, which requires not less than 7.5% of the total quantity of facility electrical energy the Army consumes come from renewable energy sources; (b) achieving renewable electrical energy procurement in accordance with 10 United States Code (U.S.C.) 2911(e), as amended, which requires that the Army produce or procure not less than 25% of the total quantity of electrical energy it consumes within its facilities during fiscal year 2025 and each fiscal year thereafter from renewable energy sources; and (c) contributing to the Army's goal of generating (or procuring) one gigawatt of renewable electrical energy by 2025. The Army proposes to help meet this purpose and need at Fort Hood by procuring renewable power from the Project.

ES.3 Description of the Proposed Action

The proposed Project would be located on private land in Floyd County, Texas, approximately 3 miles east of Floydada. The Project would include construction and operation of up to 24 utility-scale wind turbine generators (WTGs) and associated infrastructure. The WTG models under consideration range from 2.1 to 3.3 MWs, with the final number of WTGs based on the model selected, resulting in a Project nameplate capacity of up to 50.6 MWs. The Project's permanent infrastructure would include WTGs, access roads, an underground electrical collection line system, an electrical substation, and one meteorological (MET) tower. Construction is planned to commence in the first quarter of 2016 with commercial operations commencing in the fourth quarter of 2016.

ES.4 Environmental Analysis

Section 4 of the EA discusses the potential environmental consequences associated with implementing either the No Action Alternative or the Preferred Alternative. Preliminary analysis determined that implementation of the Preferred Alternative has minimal potential to result in impacts on environmental and socioeconomic resources, which are discussed in Section 4 of the EA. Table ES-1 provides a summary of the potential impacts to environmental and socioeconomic resources. There would be no impacts to environmental and socioeconomic resources if the No Action Alternative were selected.

ES.5 Cumulative Impacts

The impacts from the Preferred Alternative would be minor and considered *de minimis* when with regard to cumulative impacts on the environment.

Table ES-1 Summary of Environmental and Socioeconomic Impacts Resulting from the Implementation of the Preferred Alternative

Valued Environmental Component	Potential Environmental Impacts Resulting from the Preferred Alternative	Mitigation Measure to Minimize Impacts Resulting from the Preferred Alternative
Land Use and Visual Resources	Minor, short-term, and long-term impacts to existing vegetation and land use due to construction and operation of the Preferred Alternative. Permanent loss of vegetation would be limited to the operational footprint of the WTGs and associated access roads, MET tower and access road, and electrical substation.	■ Final design of the layout would minimize extent of the construction footprint. ■ Reclamation of all temporary impacts. Return the land cover to near as possible to "pre-construction conditions."
	Short-term, minor impacts to visual resources during construction.	■ None
	Long-term, minor impacts to visual resources from the installation of the WTGs.	■ None
Air Quality and Greenhouse Gas	Minor, temporary impacts to air quality and GHGs during construction due to fugitive dust production and emissions.	■ Implement dust abatement best management practices
	Operation of the Preferred Alternative would result in the reduction of GHGs associated with electrical energy production for operations on Fort Hood.	■ None
Noise	Minor, temporary impacts to the existing noise environment due to the construction activities	■ Construction to occur during daylight hours
	Minor, long-term impacts to existing noise environment due to the operation of the WTGs	■ None
Geology and Soils	Minor, short-term, and long-term impacts to soils, including prime farmland. Permanent impacts to soils would be limited to the operational footprint of the WTGs and associated access roads, MET tower and access road, and electrical substation.	■ Final design of the layout would minimize extent of the construction footprint. ■ De-compaction of soils during reclamation ■ Implementation of a SWPPP
	Minor, short-term impacts to soils due to inadvertent spills.	■ Implementation of a SPCC Plan

Table ES-1 Summary of Environmental and Socioeconomic Impacts Resulting from the Implementation of the Preferred Alternative

Valued Environmental Component	Potential Environmental Impacts Resulting from the Preferred Alternative	Mitigation Measure to Minimize Impacts Resulting from the Preferred Alternative
Water Resources	Minor, short-term impact to groundwater and surface water resources from the construction activities. No USACE jurisdictional wetlands or waterbodies would be impacted by the Preferred Action.	■ Final design of layout would be adjusted to minimize impacts to surface waters and wetlands. ■ Implementation of SWPPP and SPCC Plan
Biological Resources	Minor, short-term impacts to wildlife species from construction of the Preferred Action. Impacts would include loss of habitat, displacement, and injury or mortality.	■ Reclamation of all temporary impacts. Return the land cover to near as possible to "pre-construction conditions." ■ Clearing of vegetation outside of the bird nesting season ■ Inspection of open trenches and excavations prior to the filling to remove any trapped animals
	No effect to the six federally listed species that have the potential to occur in Floyd County, Texas	■ Section 7 consultation with USFWS
	Minor, potential short-term impacts to state-listed Texas horned lizard during construction	■ Limit speeds of moving equipment to 15 miles per hour or less on Project roads constructed in natural (non-agricultural) habitats during the active period (April 15 through September 30), and allowing Texas horned lizards to safely leave the site if found.
	Minor, long-term impacts to bird and bat species from collision with operational WTGs	■ Conduct bird and bat fatality study during the first year of operation ■ Meet and confer with USFWS to review study results and implement adaptive management if appropriate.
Cultural Resources	No impacts	■ None

Table ES-1 Summary of Environmental and Socioeconomic Impacts Resulting from the Implementation of the Preferred Alternative

Valued Environmental Component	Potential Environmental Impacts Resulting from the Preferred Alternative	Mitigation Measure to Minimize Impacts Resulting from the Preferred Alternative
Environmental Justice and Socioeconomic Resources	The Preferred Alternative would not disproportionally impact minority populations or low-income housing.	■ None
	Short-term and long-term beneficial impacts would accrue from employment associated with Project construction, operation and maintenance, as well as lease revenues payable to site owners.	■ None
Energy/Utilities	The operation of the Preferred Alternative would result in the beneficial long-term impact to the Army by increasing the diversity of electrical energy sources available to Fort Hood, and help the Army comply with the Energy Policy Act of 2005 and other mandates and goals.	■ None
Transportation	Minor, short-term impacts to existing public roads from the travel of construction equipment, including oversized and overweight loads.	■ Maintenance and improvements of public roads within the Project area that are used for the travel of construction equipment
Airspace	None	■ The Project will comply with 14 CFR Part 77. The marking and lighting of WTGs would be in accordance with FAA issued conditions for the Project.
Hazardous and Toxic Substances	Minor, short-term impacts to soils due to inadvertent spills.	■ Implementation of SPCC Plan

Key:

CFR = Code of Federal Regulations
FAA = Federal Aviation Administration
GHG = greenhouse gas
MET = meteorological
WTG = wind turbine generator
SPCC = Spill, Pollution, Control, and Countermeasures
SWPPP = Storm Water Pollution Prevention Plan
USACE = United States Army Corps of Engineers
USFWS = United States Fish and Wildlife Service

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1 Purpose, Need, and Scope

1.1 Introduction

Ecology and Environment, Inc. was engaged by Apex Clean Energy Management, LLC to prepare this Environmental Assessment (EA) for the United States Army Garrison Fort Hood, Texas (Ford Hood) to analyze potential environmental and socioeconomic impacts associated with the Proposed Action and alternatives from a proposed off-site wind energy facility.

This EA has been undertaken in accordance with National Environmental Policy Act of 1969 (NEPA) (Public Law No. 91–190, 42 United States Code [U.S.C.] 4321–4347, January 1, 1970), as amended, and Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 of the Code of Federal Regulations [CFR] Parts 1500–1508); and the Army's regulations set forth at Title 32 CFR, Part 651).

Fort Hood has an estimated on-post population of 68,448 and is comprised of approximately 218,823 acres located in central Texas, approximately 60 miles from both Austin and Waco, adjoining the cities of Killeen, Copperas Cove, and Gatesville. Fort Hood is located in Bell and Coryell counties, with the majority of its training lands in Coryell County. Fort Hood has approximately 6,299 buildings and structures that provide 35 million square feet (3.3 million square meters) of floor space. Power is currently supplied to Fort Hood by the Electric Reliability Council of Texas (ERCOT) grid; therefore, approximately 77% of its energy is supplied from fossil fuel sources (ERCOT 2015).

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1.1.1 Project Overview

The proposed Project would be located on private land in Floyd County, Texas, approximately 3 miles east of Floydada (see Figure 1-1). The Project would include construction and operation of up to 24 utility-scale wind turbine generators (WTGs) and associated infrastructure. The WTG models under consideration range from 2.1 to 3.3 MWs. The final number of WTGs would be based on the model selected, resulting in a Project nameplate capacity of up to 50.6 MWs. The Project's permanent infrastructure would include WTGs, access roads, an underground electrical collection line system, an electrical substation, and one meteorological (MET) tower. Construction is planned to commence in the first quarter of 2016 with commercial operations commencing in the fourth quarter of 2016.

1.2 Purpose and Need

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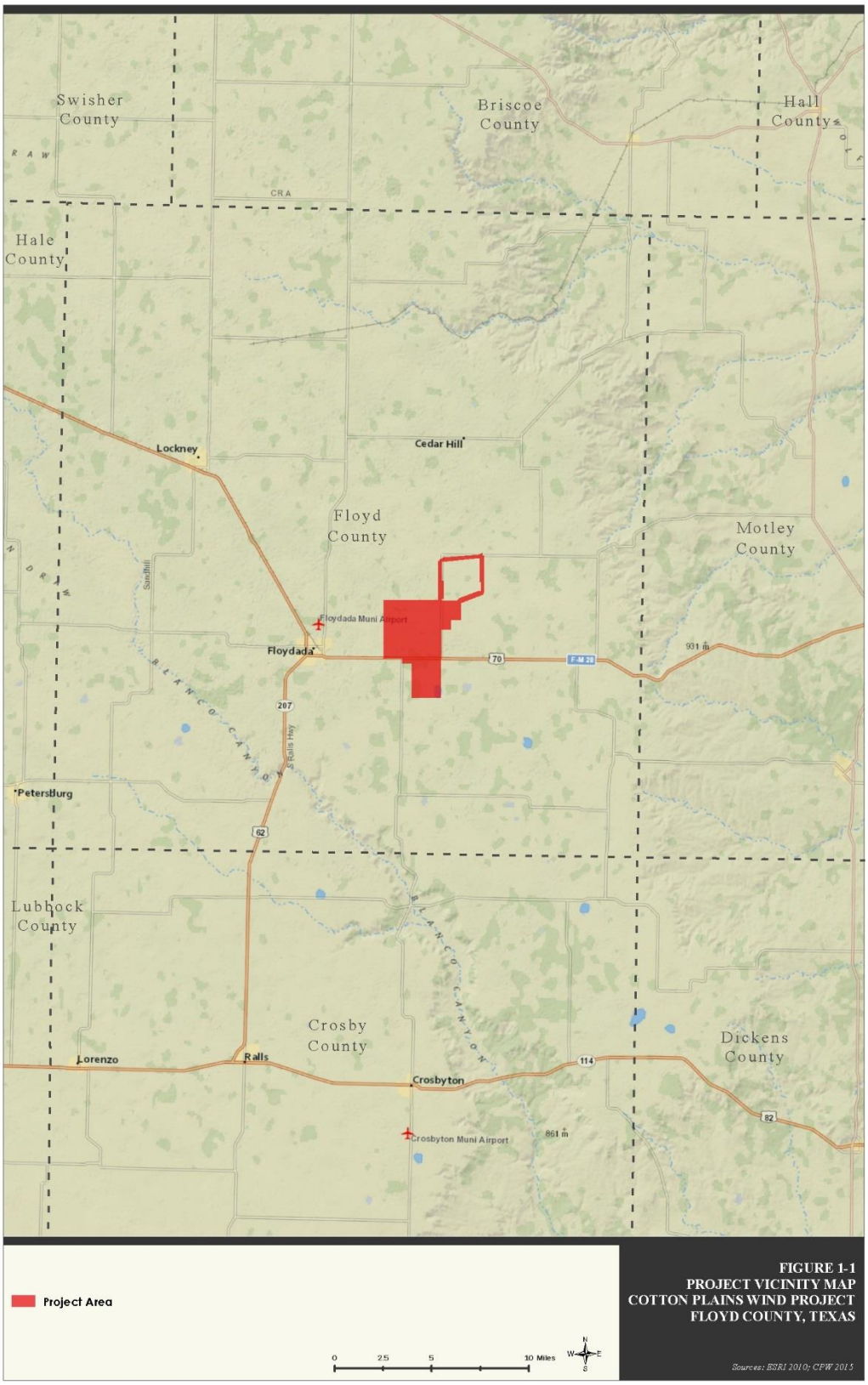
Specifically, the Proposed Action would move the Army closer to: (a) complying with the Energy Policy Act of 2005, which requires not less than 7.5% of the total quantity of facility electrical energy the Army consumes come from renewable energy sources; (b) achieving renewable electrical energy procurement in accordance with 10 U.S.C. 2911(e), as amended, which requires that the Army produce or procure not less than 25% of the total quantity of electrical energy it consumes within its facilities during fiscal year 2025 and each fiscal year thereafter from renewable energy sources; and (c) contributing to the Army's goal of generating (or procuring) one gigawatt of renewable electrical energy by 2025. The Army proposes to help meet this purpose and need at Fort Hood by procuring renewable power from the Project.

1.3 Scope of the Analysis

This EA has been prepared in accordance with the NEPA, the regulations issued by the CEQ, 40 CFR Parts 1500-1508, and the Army's procedures for implementing NEPA, published in 32 CFR Part 651 Environmental Analysis of Army Actions. This EA addresses the Army's proposed procurement of electricity from the Project pursuant to a Renewable Energy Supply Agreement (RESA). The Project would be constructed and operated on private land off site of Fort Hood. This EA provides decision makers with important information regarding potential environmental and socioeconomic impacts associated with the Proposed Action. This information is intended to evaluate the magnitude of the impacts associated with the Proposed Action and will result in either a determination of a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement. The scope of this EA is based solely on the environmental and socioeconomic impacts resulting from the


Swisher County
Briscoe County
Hall County
Hale County
Lockney
Cedar Hill
Floyd County
Motley County
Floydada Muni Airport
Floydada
Petersburg
Lubbock County
Crosby County
Dickens County
Lorenzo
Ralls
Crosbyton
Crosbyton Muni Airport
Project Area
0 2.5 5 10 Miles
FIGURE 1-1
PROJECT VICINITY MAP
COTTON PLAINS WIND PROJECT
FLOYD COUNTY, TEXAS
Sources: ESRI 2010; CPW 2015

construction and operation of the Project facilitated by the RESA, and it does not evaluate any aspects of the operations of Fort Hood or of other projects.

Public notices will be published in the *Floyd County Hesperian-Beacon* and the *Killeen Daily Herald* newspapers. All documents will be posted on the Fort Hood website (http://www.hood.army.mil/DPW/) under the public notices section. Requests for further information on this EA/draft FNSI and comment submissions will be directed to the NEPA Program-ENV Division, Directorate of Public Works, Building 4622 Engineer Drive, Fort Hood, Texas 76544 or email charlotte.f.baldwin.civ@mail.mil or timi.m.dutchuk.civ@mail.mil.

Comments received within the 30-day public review period will be made part of the Administrative Record. The Army will make revisions, as appropriate, to the FNSI based on the comments received.

1.5 Decisions to be Made

The decision maker will consider both the environmental and socioeconomic impacts analyzed in this EA, along with all other relevant information, such as public issues of concern that arise during the comment period, prior to making a final decision. If the decision maker determines there are no significant impacts, that decision will be documented in the final FNSI, which will be signed no earlier than 30 days after the publication of this EA and draft FNSI. If the decision maker determines that the decision could have significant impacts, the Army may initiate a NOI to complete an Environmental Impact Statement to conduct additional analysis.

2 Description of the Proposed Action

2.1 Proposed Action

The Proposed Action is the Army's procurement of electricity from the Project pursuant to a RESA. Under the RESA, Fort Hood would purchase electricity in amounts and for a period of time sufficient to support the financing of construction of the Project. The nameplate capacity of the Project would be approximately 50.6 MWs. The annual production committed to Fort Hood from the Project would equal or exceed approximately 200,000,000 kilowatt-hours (kwh) per year (kwh/yr) for 28 years.

The RESA allows CPW to secure private financing to construct, operate, and maintain the Project. The Project would be constructed, owned and operated entirely on private land under long-term leases held by CPW, and it would input power to the ERCOT grid via the existing White River Substation, owned by Sharyland Utilities, L.P. Fort Hood would receive electricity via existing infrastructure on the ERCOT grid.

2.1.1 Proposed Project Description

The Project would be located in Floyd County, Texas, approximately 3 miles east of the city of Floydada. The Project consists of the following key infrastructure as proposed:

- Twenty-four WTGs;
- One MET tower;
- Permanent access roads;
- Temporary access roads and crane paths;
- Underground electrical collection line system;
- One electrical substation;
- One temporary construction laydown area;
- One temporary concrete batch plant; and
- Eighteen temporary road turnouts.

Figures 2-1 (aerial imagery) and 2-2 (topographical map) illustrate the 9,678-acre Project area and areas of potential ground disturbance and infrastructure locations. CPW would only develop the necessary land to construct and operate the Project, which would be contained within the micrositing corridor shown in Figures 2-1 and 2-2. The micrositing corridor was developed by buffering all of the proposed infrastructure locations by 200 meters. The 200-meter buffer is applied to all sides of each Project component, so for instance there is a circular buffer around each WTG with a 200-meter radius and the there is a 200-meter buffer to each side of the centerline for the linear features (i.e., collection lines and access roads). This micrositing corridor is presented in this EA to evaluate the potential impacts that construction and operation of the Project would have on environmental resources within and adjacent to the Project area. Identification and evaluation of all the resources within the micrositing corridor provides CPW with flexibility to make the necessary micrositing adjustments to the Project infrastructure to respond to potential siting constraints identified during late-stage development and optimize power generation regardless of the WTG selected for the Project.

The layout analyzed in this EA includes a total of 25 potential WTG locations (24 proposed locations and 1 alternate location) as shown in Figures 2-1 and 2-2; however, the final number used will based on the WTG model selected and range from 15 to 24 WTGs. The EA also evaluates the location and operation of one alternate WTG and associated access road and collection line, one alternate location for the temporary concrete batch plant and associated access road, one alternate location for temporary construction laydown area and associated access road, and an alternate collection route system that would connect the Project WTGs to the Project's electrical substation. The integration of these alternate facilities would depend on the type of WTG selected or engineering or environmental constraints identified during development activities. All of alternate locations considered for Project infrastructure are contained within the micrositing corridor.

Table 2-1 provides a description of the temporary and permanent impacts associated with installation of each Project feature and Table 2-2 provides a description of the total ground disturbance that would result from constructing and operating the Project as proposed.

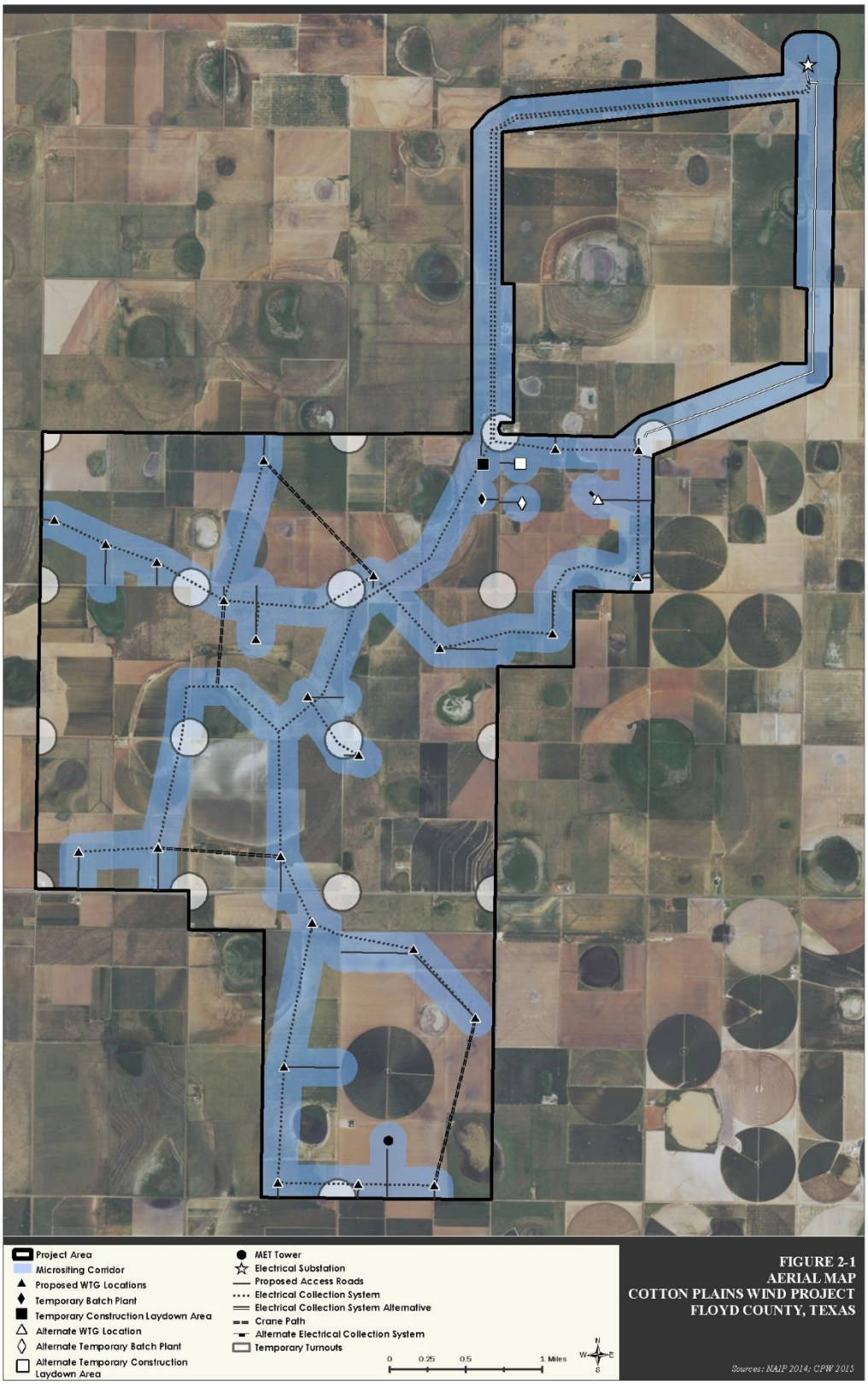


FIGURE 2-1
AERIAL MAP
COTTON PLAINS WIND PROJECT
FLOYD COUNTY, TEXAS

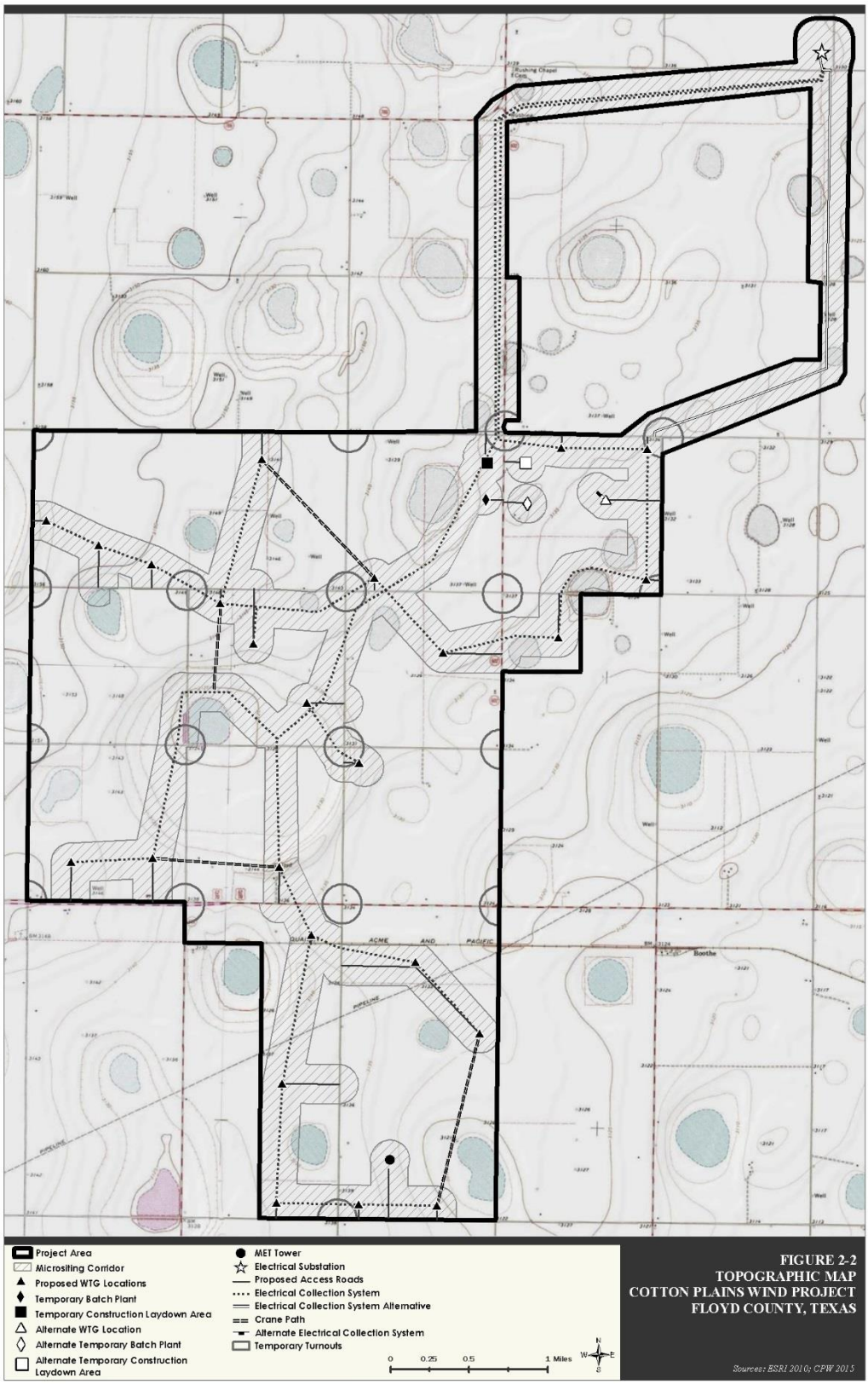


FIGURE 2-2
TOPOGRAPHIC MAP
COTTON PLAINS WIND PROJECT
FLOYD COUNTY, TEXAS

Wind Turbines

The actual number of WTGs that would be installed is dependent on the final WTG technology selected for the Project (see Table 2-3). For the purpose of the analysis of impacts presented in this EA, the proposed Project layout is based on 24 2.1-MW WTGs. Each WTG consists of three main parts: nacelle, tower, and rotor blades. The nacelle houses the generator and gearbox and supports the rotor and blades at the hub. The WTG tower supports and provides access to the nacelle and is secured to the ground via an underground concrete foundation. A typical concrete foundation is an octagon shape with a dimension ranging from 45 to 60 feet wide and 8 to 10 feet deep. Each WTG nacelle contains approximately 50 gallons of glycol-water mix, 85 gallons of hydraulic oil, and 105 gallons of lubricating oil. The proposed Project layout evaluated in this EA, features the Gamesa 2.1 MW WTG; however, impacts associated with other representative WTGs likely to be used for the Project are considered. To assess the potential impacts due to all potential WTGs, this EA has assumed all 24 WTG sites would be used.

Table 2-1 Temporary and Permanent Ground Disturbance Impacts for Construction and Operation of Each Project Component

Project Infrastructure	Temporary Impact[1]	Permanent Impact[2]
WTG	1.94 acres per WTG	0.06 acres per WTG
Electrical Collection System	40 feet wide	None
Electrical Substation	None	9 acres
MET Tower (includes associated permanent access road)	None	0.04 acre for tower pad, plus 16 feet wide for access road
Access Roads		
WTG Access Roads[3]	34 feet wide	16 feet wide
Temporary Access Roads	50 feet wide	None
Crane Path	50 feet wide	None
Temporary Turnouts	0.04 acre per turn	None
Temporary Infrastructure		
Temporary Construction Laydown Area	10 acres	None
Temporary Concrete Batch Plant	3 acres	None

Notes:

1. Temporary impacts represent those areas of the Project footprint that would only be disturbed during construction and would then be fully reclaimed when construction activities are completed
2. Permanent impacts represent those areas of the Project footprint that would be retained during the operation of the Project
3. Total width of the footprint of each WTG access road is 50 feet (34 feet for temporary impacts, plus 16 feet for permanent impacts).

Key:

MET = meteorological
WTG = wind turbine generator

Table 2-2 Total Impacts Resulting from Construction and Operation of the Proposed Project Layout

Project Infrastructure	Temporary Impacts[1] (acres)	Permanent Impacts[2] (acres)
WTGs (24)	45.23[3]	1.44
Electrical Collection System	120.49	0.00
Electrical Substation	0.00	9.00
MET Tower (includes associated permanent access road)	0.00	0.65
Access Roads and Turnouts[4,5]		
Access Roads (permanent and temporary)	18.28	9.73
Crane Path	20.05	0.00
Temp Turnouts	0.51	0.00
Temporary Facilities		
Temporary Construction Laydown Area	9.98	0.00
Temporary Concrete Batch Plant	2.95	0.00
Total	**217.49**	**20.82**
Total Acres Impacted by the Proposed Footprint (temporary + permanent)		**238.31**

Notes:

1. Temporary impacts represent those areas of the Project footprint that would only be disturbed during construction and would then be fully reclaimed when construction activities are completed
2. Permanent impacts represent those areas of the Project footprint that would be retained during the operation of the Project
3. For areas of overlap between the footprints of the construction footprint of the WTG and WTG permanent access road, the impacts were removed from WTG totals and included in the permanent aces road impacts
4. For areas of overlap between the footprints of the collection line system and the WTG access roads; the impacted acres were removed from the collection line impact totals and included in the WTG access roads impacts
5. For areas of overlap between the footprints of access roads and non-road project infrastructure; the impacted acres were removed from the access road impact totals and included in the non-road project component impacts

Key:

MET = meteorological
WTG = wind turbine generator

Table 2-3 Specifications of Representative WTGs under Consideration for Installation at the Project

Manufacturer	WTG Unit	MW/Unit	Required Number of WTGs to Achieve 50.6 MW	Rotor Diameter Height	Hub Height	Total Height	Rotor-Swept Area per WTG (sq. ft.)	Total Rotor-Swept Area (sq. ft.)	Maximum Decibel Output
Gamesa	G114-2.1-93	2.1	24	374 feet (114 meters)	305 feet (93 meters)	492 feet (150 meters)	110,000	2,640,000	107
GE	GE2.4-107-80	2.4	21	351 feet (107 meters)	262 feet (80 meters)	438 feet (133 meters)	96,762	2,032,002	109
Siemens	2.3-108-80	2.3	22	354 feet (108 meters)	262 feet (80 meters)	440 feet (134 meters)	98,423	2,165,306	134
Vestas	V117-3.3-91.5	3.3	15	383 feet (117 meters)	300 feet (91 meters)	492 feet (150 meters)	115,000	1,725,000	150

Key:
MW = megawatt
sq. ft. = square feet
WTG = wind turbine generator

Electrical Collection System and Communications

The electrical collection system would collect the energy generated by each WTG and transmit the power to the Project's electrical substation via direct buried 34.5-kilovolt (kV) electric cables. The proposed Project layout would result in approximately 26 miles of collection lines installed within the micrositing corridor. Four cables - one cable for each electrical phase and a fourth cable as a ground - would be buried in a trench in a manner that minimizes ground disturbance. The trench would be excavated 3 or more feet deep and approximately 2 feet wide.

A network of fiber optic communication cables would also be installed in the trench as part of the Project's Supervisory Control and Data Acquisition (SCADA) system. The SCADA system would monitor the operation of the WTG and allows CPW remote operational control of each WTG. Two collection routes are proposed to provide siting flexibility; the proposed route (western route) and an alternate route (Figures 2-1 and 2-2). The proposed route is 4.20 miles in length compared to the alternate route, which is 3.23 miles long. Both of these proposed routes are included within the micrositing corridor.

Electrical Substation

The energy generated by the WTGs would be delivered via the electrical collection system to the Project's new substation. The proposed substation would support a transformer that would increase the voltage so that generated power can be transmitted to an existing 345-kV transmission line via the existing White River Substation, owned by Sharyland Utilities, L.P.

Access Roads

Access to each WTG would be achieved via a combination of existing public roads and a new permanent access road. Each WTG would be accessed from the existing public road system by a short permanent access road constructed by CPW. Each WTG access road would have 34-foot construction width and a 16-foot permanent width; for a disturbance footprint of 50 feet (see Table 2-1). The length of each road would depend on the WTG's distance from the existing public road; the longest distance is anticipated to be approximately 0.3 miles. The proposed Project layout includes approximately 5.4 miles of access roads (permanent and temporary). Figures 2-1 and 2-2 present WTG access roads for all 25 potential WTG locations.

A permanent access road would also be required for access to the MET tower. This access road would have a construction and permanent width of 16 feet.

A temporary, 50-foot-wide access road would also be required to access the temporary construction laydown area and temporary batch plant.

To facilitate travel on existing public roads by Project construction equipment, temporary road radii and turnouts would be installed on leased land adjacent to the intersection of existing public roads within the Project area as necessary. To

assess the potential impacts due to temporary turnouts, this EA has assumed a temporary turnout would be necessary at all 18 road intersections identified in Figures 2-1 and 2-2.

In addition to the temporary and permanent access roads, construction of the Project would require the movement of construction cranes between specific WTG locations. There are four proposed crane paths that would be used for the overland travel of the cranes between WTG strings (see Figures 2-1 and 2-2). No grading or clearing of vegetation is anticipated along the crane paths unless topological constraints are identified during construction that would prevent travel of the cranes between the WTG strings.

MET Tower

One permanent MET tower equipped with sensors to measure wind speed and direction, temperature, and pressure would be constructed within the Project area to collect data to monitor the wind resources available at the site. The MET tower would be a guyed or self-supporting tower that would be between 262 to 312 feet tall (80 to 95 meters) with bird flight diverters maintained on any guy wires installed. Final design of the MET tower is dependent on WTG selection.

Temporary Construction Laydown Area

A 10-acre temporary construction laydown area would be established to provide space for temporary construction offices, temporary construction facilities (e.g., portable toilet trailer and portable amenities trailer), and materials/supply storage (e.g., WTG components, ancillary equipment and materials, and stockpiled soil from the laydown area).

Temporary Concrete Batch Plant

A temporary concrete batch plant would be utilized to provide the necessary concrete for the foundation of each turbine. A concrete batch plant facility typically consists of loading bays, hoppers and mixing equipment, cement and admixture silos, concrete truck loading areas, aboveground water storage tanks, and bins for aggregate and clean sand storage. The batch plant would be located on a 3-acre site and the required aggregate and water for the mixing of concrete would be obtained from a permitted commercial source located in the region. In the case that no commercial source is available, water may be procured through a local municipality or from a local landowner. Any procurement of water would be conducted in accordance with all applicable regulations and permits. The batch plant operator would hold the appropriate air quality emissions permit for operation.

2.1.2 Construction Methodology and Schedule

Construction of the Project is anticipated to be initiated in the first quarter of 2016. Commercial operation of the Project is expected by the end of the fourth quarter of 2016.

The Project would be constructed using standard construction procedures and equipment used for other wind energy projects and would follow this general process:

- Initial mobilization and civil construction would focus on the construction of the temporary laydown area. Any necessary improvement to existing roads would take place, as well as the construction of turnouts, access roads, and crane pad construction, if necessary. CPW estimates that there would be approximately 75 truck trips to deliver the necessary material for concrete and approximately 25 truck trips for the delivery of the necessary aggregate for each WTG. The estimated duration of this effort is 32 days by a workforce of approximately 20 individuals;
- Once substantial infrastructure is in place, the work would focus on material deliveries, and excavation and construction of the foundations for WTGs, MET tower, and transformers. For the delivery of the WTGs, it is estimated that it would take 10 truck trips for each WTG. The estimated duration of this effort is 93 days by a workforce of approximately 35 individuals;
- The trenching and placement of underground electrical collection and communications cables would be an ongoing effort as WTG foundations are installed. The estimated duration of this effort is 120 days by a workforce of approximately 20 individuals;
- Construction of the substation would begin with grading and foundations, then material deliveries and equipment installations, ending with cable terminations and testing. CPW estimates that there would be approximately 150 truck trips required to deliver the substation and the collection line system components. The estimated duration of this effort is 93 days by a workforce of approximately 20 individuals;
- WTG erection would begin and proceed through the Project in a coordinated manner that minimizes road usage and maximizes crane/crew usage (this would be determined by erection contractor along with delivery schedule). This installation is a multi-step process that utilizes crews for base and mid tower erection; top-off erection that includes setting of the top tower section, nacelle, hub, and blades; and a final crew preps the unit for commissioning and start-up activities. The estimated duration of this effort is 93 days by a workforce of approximately 75 individuals;
- WTG commissioning would begin based on interconnection power availability. This process would allow specific turbines to begin production and deliver electricity to the grid. The estimated duration of this effort is 50 days; and
- As WTGs are brought on-line and into production, all temporary pads/areas would be removed and then de-compaction, seeding, and reestablishment of stabilization efforts would commence. The final road

preparation, erosion control removal, reclamation, and site restoration is anticipated to be completed within 60 days after the end of construction by a workforce of approximately 10 individuals.

Topsoil removed during construction would be replaced in all areas of temporary disturbance and seeded, in non-cropped areas, to promote re-vegetation. Best management practices (BMPs) to control stormwater runoff would be followed at all times during Project construction in accordance with the Texas Pollution Discharge Elimination System Construction General Permit requirements. CPW would work with landowners in cropped areas to determine the appropriate restoration methodologies following Project completion.

The duration of the construction activities provided above are the estimates for each identified activity and do not represent the total construction duration as several of the above construction activities may simultaneously occur within the Project area. In addition to the workforce estimates provided above, there would be the presence a management staff comprised of approximately 14 individuals during the estimated 10-month construction schedule.

2.1.3 Operation and Maintenance

Typical operations and maintenance activities would include regular WTG inspections, implementation of a preventive maintenance schedule, and other maintenance activities, as required. 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. Periodic mowing may also be necessary to maintain previously cleared areas associated with Project infrastructure (e.g., permanent access roads, turbine pads, and bird/bat fatality study plots during the first year of operations).

2.1.4 Decommissioning

At the end of the Project's operating lifespan, CPW would decommission the facility by removing the turbines and bases and substation components to a depth of approximately 3 feet below ground surface. Buried cables would be abandoned in place and roads would be removed if requested by landowners in accordance with lease terms. Impacts of decommissioning would be similar to those presented in construction impacts.

3 Alternatives and Screening Criteria

3.1 Introduction

The comparison of the Proposed Action to alternatives and the assessment of their relative environmental impacts require the application of screening criteria. In order to be considered a viable alternative and carried forward for analysis, the Proposed Action must be evaluated according to the following screening criteria:

- **Mission Compatibility.** Must be compatible with the military missions and training at Fort Hood. Site development and operations may not adversely impact military training or future planned development activities.
- **Grid Access and Electrical Tie-in Potential (Renewable Energy).** The renewable energy facility must be close to existing transmission facilities (e.g., transmission lines and/or substations) or have technical viability and economic justification to building new electrical lines for interconnection into the ERCOT system for distribution. The existing ERCOT grid infrastructure must be capable of transporting, or being upgraded to transport, electricity generated by the Proposed Action.
- **Topographic and Soil Factors:** Must have topography, aspect, slope, and soils compatible with the proposed infrastructure.
- **Environmental Factors.** Must allow acceptable accommodation of cultural or sensitive natural resources.
- **Project Financeability and Use of Proven Technologies.** Must use proven renewable energy technologies that may be financed at reasonable rates.
- **Compliance with Federal Mandates and DoD or Army Goals.** Must enhance compliance with government mandates and DoD and Army goals and objectives regarding renewable energy production, energy security, increased energy efficiency, water conservation, and waste and greenhouse gas (GHG) emissions reduction.
- **Utility Considerations.** Must be reasonably acceptable to the current electric supplier and not unreasonably interfere with their ability to absorb intermittent impacts and variance in peak energy generation.

3.2 No Action Alternative

Under the No Action Alternative, the Army would not enter into a RESA with CPW, and would instead continue to receive electricity from its existing sources. Because Fort Hood is supplied primarily by the ERCOT grid, approximately 77% of its energy was supplied from fossil fuel sources in 2014 (ERCOT 2015). Under the No Action Alternative, the Army would not enter into the RESA, would not support the development of renewable energy, and would continue to utilize a higher percentage of electricity generated from fossil fuel sources. Under the No Action Alternative, various near-term federal statutes and EOs that mandate changes in energy consumption and production would not be met, and the push for renewable energy production/use and reduction of GHG emissions would be negatively affected.

3.3 Alternatives Eliminated from Further Review

The following alternatives including Renewable Energy Credits (RECs), renewable energy technologies, natural gas, and on-site wind production were considered. However, these alternatives were not viewed as economically feasible, geographically appropriate, or fulfilling the needs of Fort Hood and, therefore, have been excluded from further analysis.

3.3.1 Purchase Renewable Energy Credits

The purchase of RECs would not result in incremental renewable energy development and would, therefore, not serve one of the purposes of the proposed Project. Consequently the purchasing of RECs would not move the Army toward the goal of deploying one gigawatt of renewable energy. RECs are purchased on the open market and/or through a REC brokerage. A REC typically represents delivery of one megawatt-hour (MWhr) of renewable energy to the grid and all associated environmental benefits of displacing one MWhr of conventional energy. RECs allow the environmental attributes associated with renewable energy production to be monetized and marketed.

3.3.2 Construct and Operate Other Renewable Energy Technologies

Geothermal

This form of renewable energy was not analyzed by the Project team since there are limited and undeveloped geothermal resources in the region. No large-scale geothermal resource projects have been planned in or near Fort Hood recently or in the near future and have, therefore, been excluded from the scope of the EA.

Biomass

This form of renewable energy was not analyzed by the Project team since data does not support the potential for viable biomass projects in Texas.

Solar PV

The Army OEI identified solar photovoltaic (PV) array as a viable renewable energy technology for development at Fort Hood. Several sites were considered

for solar PV array, and an on-site solar project has been selected for further development, concurrently with the Project. The solar project was analyzed under a separate EA and, thus, is not an alternative project that would be analyzed in this EA.

Landfill Gas

Landfill gas typically requires a landfill to meet the following criteria: one million tons of waste in place, at least 30 feet in depth, contains a high amount of organic material, and recently closed. No landfills on Fort Hood meet these criteria.

3.3.3 Natural Gas Alternatives

This form of energy generation was preliminarily analyzed by the Fort Hood Project Team, but was rejected as not economically feasible. Natural gas does not meet the intent to reduce the percent of Fort Hood's energy currently supplied from fossil fuel sources.

3.3.4 On-site Wind Development

On-site wind development was not considered as a viable alternative due to the potential for negative impacts to Fort Hood's training mission and limited wind energy potential.

4 Affected Environment and Environmental Consequences

4.1 Introduction

This EA addresses the environmental, social, and economic impacts of the Proposed Action. Potential environmental impacts cannot be determined without first understanding the existing conditions in the affected environment. For this reason, the impact analysis process involves two steps.

First, this EA helps the reader develop an understanding of the existing environmental setting and conditions through a discussion of the existing resources, or the "affected environment." The geographic extent of the affected environment is determined by the potential for impacts, due to construction, operations, and maintenance of each alternative on the various resources.

Second, the EA incorporates details of the alternatives (described in Section 3) to enable assessment of their impacts on the existing environment, thus yielding the "environmental consequences." As required by NEPA and Army implementation regulations, this EA addresses impacts associated with the No Action Alternative, as well as the Proposed Action Alternative.

Direct, indirect, and cumulative impacts of the Proposed Action are considered. Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are caused by the action but occur later in time or are farther removed in distance, but are still reasonably foreseeable. Cumulative impacts result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes other such actions (40 CFR Section 1508.7).

When an alternative is determined to result in an environmental impact, the EA provides an analysis of whether that impact is significant or insignificant and whether it is long-term or short-term. Mitigation for potential adverse impacts, when applicable, is also discussed. Mitigation measures, per the Army Regulations for implementing NEPA (32 CFR Part 651 and 40 CFR Section 1508.20), include avoiding the impact; minimizing the impact; repair, rehabilitation, or restoration of the affected environment; reducing the impact over time by means of preservation and maintenance operations during the life of

the action; and/or compensating for the impact by replacing or providing substitute resources or environments.

The potential environmental consequences of the alternatives are presented as follows, with an examination of cumulative impacts discussed in Section 5.

The Army utilized the process in the Army's NEPA Analysis Guidance Manual (Canter et al. 2007) for evaluating impacts to each environmental media area or valued environmental component (VEC). VECs are categories of environmental and socioeconomic effects where categorization is conducted to enable a managed and systematic analysis of these resources. Affected environment and environmental consequences, including cumulative effects, are analyzed and mitigated in this EA, as appropriate, using the VEC categories listed in Section 4.2.

4.2 Valued Environmental Component Impact Ratings

A general description of these VECs is provided in this subsection. Section 4.3 summarizes the VEC ratings and analysis, based on consultation among Fort Hood, other responsible agencies, and subject matter experts.

Land Use and Visual Resources: Includes types of land use, impact on easements, and viewsheds not addressed under cultural resources.

Air Quality and GHG: Includes the Clean Air Act, Clean Air Act Amendments of 1990, conformity, National Ambient Air Quality Standards (NAAQS), Prevention of Significant Deterioration, New Source Review, and Minor Source Preconstruction Permitting.

Noise: Includes noise impacts to community, noise impact to personnel, noise impacts to wildlife, and risks of noise complaints.

Geology, Soils, and Prime Farmland: Includes soil series and properties and soil erosion potential along with potential impacts to prime farmlands as defined by the US Department of Agriculture, Natural Resources Conservation Service.

Water Resources: Includes surface water, groundwater, floodplains, stream banks, wetlands, National Pollutant Discharge Elimination Systems (NPDES) Stormwater Program, and the Clean Water Act (CWA) Section 404 permits.

Biological Resources: Includes vegetation, wildlife, threatened and endangered species, Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and invasive species.

Cultural Resources: Includes the National Historic Preservation Act (NHPA), the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, State Historic Preservation Office consultation,

Native American Tribes consultation, National Register, historic buildings and structures, and historic viewsheds.

Socioeconomics: Includes demographics, housing, economic development, public finance, quality of life, and environmental justice in minority and low-income populations.

Energy/Utilities: Includes potable water, drinking water plants, wastewater, stormwater, the CWA, solid waste, energy, heating, cooling, and communications.

Transportation: Includes traffic, roadways, traffic volume, and level of congestion.

Air Space: Includes controlled airspace and special use airspace.

Hazardous and Toxic Substances: Includes hazardous material, hazardous waste, underground and aboveground storage tanks, asbestos, radon, lead-based paint, polychlorinated biphenyls, petroleum, oil, and lubricants.

4.3 Valued Environmental Components and Thresholds of Significance

VEC ratings are the basis for determining whether the impact is significant. These VEC ratings can range from beneficial to significant:

- **Beneficial** – A positive net impact.
- **No Impact/Negligible** – An environmental impact that could occur, but would be less than minor and might not be perceptible.
- **Minor** – While impacts would be perceptible, they would clearly not be significant.
- **Less than Significant** – An impact that is not significant, but is readily apparent. Additional care in following standard procedures, or applying precautionary measures to minimize adverse impacts, may be called for.
- **Significant but Mitigatable** – A significant impact anticipated, but the Army can implement management actions or other mitigation measures to reduce impacts to less than significant.
- **Significant** – An adverse environmental impact, which, given the context and intensity, violates or exceeds regulatory or policy standards or otherwise exceeds the identified threshold. The significant impact, however, cannot be mitigated with practical means to a level below significance.

A summary of VEC descriptions is provided in Section 4.4.

The duration of the potential impact to the identified VECs was also included in the evaluation. For the purpose of this EA the duration of impacts was defined as:

- **Short-term Effects** – those that may occur only during a specific phase of the Project; such as during construction; and
- **Long-term Effects** – those that would occur over a longer duration, such as the lifetime of Project operation.

The following are the typical types of construction and operation activities that were used in the environmental analysis to describe the duration and significance of the impacts, and determine if the impacts were beneficial or adverse. When applicable, an individual resource may identify specific construction or operational activities as part of the evaluation of effects to the environmental resource.

- **Ground-Disturbance Activities.** Includes, but not limited to, clearing, grading, excavation, and trenching. During construction, ground-disturbance activities would occur during installation of the WTGs, electrical collection lines, permanent infrastructure, crane paths, and access roads. During operations, ground-disturbance activities are not anticipated.
- **Vehicle Traffic.** Travel of construction vehicles on public roads to and from the Project area and the permanent Project access roads. Also includes the travel of operation and maintenance vehicles on permanent access roads.
- **Inadvertent Spills.** Inadvertent spills of fluids used during construction or operation and maintenance activities, such as fuel, lubricants, antifreeze, and herbicides.
- **Herbicide Use.** Use of herbicide for vegetation control (e.g., noxious weed control) during construction and operation.
- **Operation of the Project.** Typical operation of Project would result in the spinning of the wind turbine blades, operational noise, and the visual presence of the turbines.

4.4 Valued Environmental Component Descriptions

This section provides a description of the existing environment, evaluation of impacts, and the identification of BMPs and conservation measures to mitigate the potential impacts to each VEC resulting from the Proposed Action Alternative and the No Action Alternative.

4.4.1 Land Use and Visual Resources

The following paragraphs provide a summary of the general condition and character of land use and visual resources found within the Proposed Action footprint, as well as a description of potential impacts upon more specific

descriptions of the existing conditions of land use and visual resources in the vicinity of the areas where the Proposed Action would be implemented. Expected land use and visual resource impacts are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.1.1 Existing Environment

The Project area consists of private land in Floyd County, Texas, approximately 3 miles to the east of the city of Floydada. The Project area is located in the High Plains ecoregion of Texas. This ecoregion is characterized by smooth to slightly irregular plains that support a high percentage of cropland (Griffith et al. 2004). This region averages 17.75 inches of precipitation per year, and temperatures range from 20 to 47 degrees Fahrenheit in January and 65 to 91 degrees Fahrenheit in July. The primary land use in the region is agriculture, with minimal grasslands for cattle grazing. Agricultural lands within the High Plains ecoregion are typically used for wheat and cotton production (Griffith et al. 2004).

Within the Project area, the native habitat structure is shortgrass prairie consisting of bunch grasses and forbs with very few shrubs and trees. Agricultural activities have replaced much of the native community. Historically, the region contained a large number of seasonal playas, which are lakes that formed in small depressions. Many of these playas have now been hydrologically altered and converted into cropland (Griffith et al. 2004). The plant species most common to the High Plains ecoregion are narrow leaf yucca (*Yucca angustissima*), sideoats grama (*Bouteloua curtipendula*), blue grama (*B. gracilis*), buffalograss (*B. dactyloides*), grassland pricklypear (*Opuntia cymochilai*), sand dropseed (*Sporobolus cryptandrus*), wild buckwheat (*Polygonum convolvulus*), and western ragweed (*Ambrosia psilostachya*) (McMahan et al. 1984).

The following land cover classification based on the publically available 2011 National Land Cover Dataset were identified as present within the micrositing corridor and the proposed layout of the Project (see Figure 4-1).

- Cultivated Crops. Areas used for the production of crops, including actively tilled lands. Typically herbaceous vegetation accounts for approximately 75 to 100% of the cover within this land cover type. The dominant crops in the Project area are wheat, cotton, sorghum, and corn, which are synonymous with “agricultural land.”
- Grassland/Herbaceous. Areas dominated by grasses or forbs. See Table 4-6 for commonly occurring grassland and herbaceous plant species for the Project area.
- Wetland. Wetlands, primarily consisting of perennial herbaceous vegetation where the substrate is periodically inundated with water. See Table 4-6 for commonly occurring plant species associated with playas and ditches within the Project area.

- Barren Land (Rock/Sand/Clay). Areas of bedrock, non-vegetated ground, and other accumulations of earthen material. Vegetation is sparse in these areas.
- Developed. Areas of developed land contain a mixture of constructed materials and vegetation. Impervious surfaces include, but are not limited to, buildings, roads, and railroads.
- Shrub/Scrub. Areas dominated by trees or shrubs, including true shrubs, young trees in early successional stage, or stunted by environmental stressors, mature forests, and windbreaks. See Table 4-6 for commonly occurring tree and shrub species for the Project area.

Based on communication with affected landowners, the micrositing corridor, including WTG locations currently overlaps some lands enrolled in the Conservation Reserve Program (CRP). The CRP is a voluntary program administered by the Farm Service Agency that involves a long-term agreement to conserve vegetative cover on eligible farmland. By agreement, each registered parcel has been planted with a specific seed mix and has specific management and use restrictions. Section 1233 of the 2014 Agricultural Act of 2014 (i.e., 2014 Farm Bill) defines the installation of WTGs and associated access roads as potential a compatible land use with CRP lands based on evaluation of the type of impacts from the WTGs (e.g., number of turbines and total acreage) and the quality of the land within CRP enrollment. Depending on the outcome of the evaluation, a reduction in the rental rate payment would be required if the installation of the WTGs and associated access roads was deemed compatible with the CRP goals, or if the infrastructure was deemed incompatible then the land would be removed from the CRP. CPW would work with affected landowners and the Farm Service Agency to mitigate any impacts to CRP lands from the construction and operation of the Project. This could include working with the affected landowner to offset any financial reductions that could result from the installation of Project infrastructure on CRP land. No additional conservation easements were identified within the Project area based on a desktop review of publically available data and communication with state and federal agencies and affected landowners.

The Project area is situated in a rural agricultural dominated landscape that is generally characterized by an open and unobstructed viewshed for moderate distances. The viewshed within and directly adjacent to the Project area is dominated by agricultural fields, local electrical utility poles, and sparsely distributed residences and agricultural structures. Other dominant features in the greater viewshed are the city of Floydada, an existing wind energy facility (Whirlwind Energy, 26 WTGs) located approximately 6 miles to the northeast of the Project, and an existing wind energy facility (South Plains Wind Farm, 100 WTGs) located approximately 14 miles to the north of the Project area. There are no federal parks or state wildlife management areas within Floyd County. The closest state park is Caprock Canyons State Park located approximately 30 miles

to the northeast, and the closest state wildlife management area is Matador Wildlife Management Area located approximately 48 miles to the east.

4.4.1.2 Environmental Consequence of the Proposed Action

Impacts to terrestrial vegetation would be largely be short-term and minor, and due the clearing and grading activities associated with the construction of the Project.

The Project will be located within the micrositing corridor as shown in Figures 2-1 and 2-2 with final acreages of temporary and permanent impacts to be determined after final micrositing and ultimately affecting a small percentage of this area. The micrositing corridor is comprised of 2,654.0 acres of cultivated cropland and 1,178.6 acres of grassland/herbaceous habitat, and small amounts of developed lands, wetlands, and shrub/scrub habitats (see Table 4-1 and Figure 4-1).

Table 4-1 Summary of Lands within the Micrositing Corridor

Land Cover Type[1]	Acres
Cultivated Crops	2,654.0
Developed	189.0
Wetlands	131.0
Grasslands/ Herbaceous	1,178.6
Open Water	11.4
Shrub/Scrub	1.8
Total	4,165.8

Note:
1. Land classifications based on NLCD 2011

This EA has been conducted on the basis of the larger facility comprised of 24 WTGs, in the proposed layout configuration depicted on Figures 2-1 and 2-2, to ensure consideration of the maximum impacts due to ground disturbance. Additionally, this EA has considered potential impacts that would result from the selection of any of the proposed alternative infrastructure locations within the micrositing corridor, to ensure that foreseeable Project options have been considered. The final selection of WTG technology would influence the footprint as a function of the number of WTGs used (see Table 2-3). Ground disturbance impacts associated with construction and operational impacts would be less for a smaller footprint of as few as 15 WTGs when compared to the footprint of the proposed layout (24 WTGs) and are thus adequately assessed for all potential WTG options by evaluating impacts for the proposed layout within the context of the micrositing corridor.

Construction Impacts

Project construction of the proposed Project would impact a total of 238.31 acres. Temporary impacts due to ground-disturbance activities and utilization of the crane paths would impact approximately 217.49 acres of this total (see Table 2-2)

and the remaining 20.82 acres would be permanent impacts discussed in the operational impacts subsection below. Though the crane paths (20.05 acres) are not anticipated to require clearing or grading to allow for the overland travel of cranes between the WTG strings, their acreage is included in the calculations of temporary impacts.

Temporary impacts would be comprised of 138.55 acres of cultivated cropland, 70.90 acres of grassland/herbaceous, 5.68 acres of developed lands, and less than 1.0 acre of shrub/scrub (see Table 4-2). For the discussion and calculation of wetland impacts see Sub-Section 4.4.5. The wetland impacts described in Sub-Section 4.4.5 are based on US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) data, which tends to be more accurate for wetland identification than the National Land Cover Dataset that was used to calculate Table 4-2. All of the temporary impacts would be reclaimed to as near as possible to "pre-construction conditions." The use of fewer WTGs would result in a decrease to the Project's construction footprint; therefore, reducing the impacts to existing land cover within the Project area

The anticipated recovery for each land cover may differ with respect to the type of vegetative regrowth. For example, cultivated croplands are expected to recover during the next growing season and grassland/herbaceous lands in approximately one to three years following reclamation depending on precipitation amount and timing. Cultivated croplands are typically disturbed every year during planting operations; therefore, the impacts due to the Project construction would be similar in nature to the already annual disturbance due to agricultural practices. Cultivated cropland would return to annual cropping the following growing season following construction.

Noxious weed infestations may result in short-term to long-term minor impacts to the Project area and adjacent lands. Equipment traveling from weed-infested areas into weed-free areas could disperse noxious weed seeds or propagules, resulting in the establishment of noxious weeds in previously weed-free areas. All of the area where construction would occur is adjacent to grasslands/herbaceous lands and cultivated croplands that are already disturbed from grazing and cultivated cropland use practices and provide favorable habitat for spreading noxious weed populations. Impacts to the terrestrial vegetation due to noxious weeds would be mitigated by the implementation of noxious weed control measures, such as the target application of approved herbicides.

The construction of the Project would result in temporary, minor impacts to the visual resources due the presence of construction equipment. The construction equipment would be operational during daylight hours and would be localized on those portions of the construction footprint under active construction.

Operational Impacts

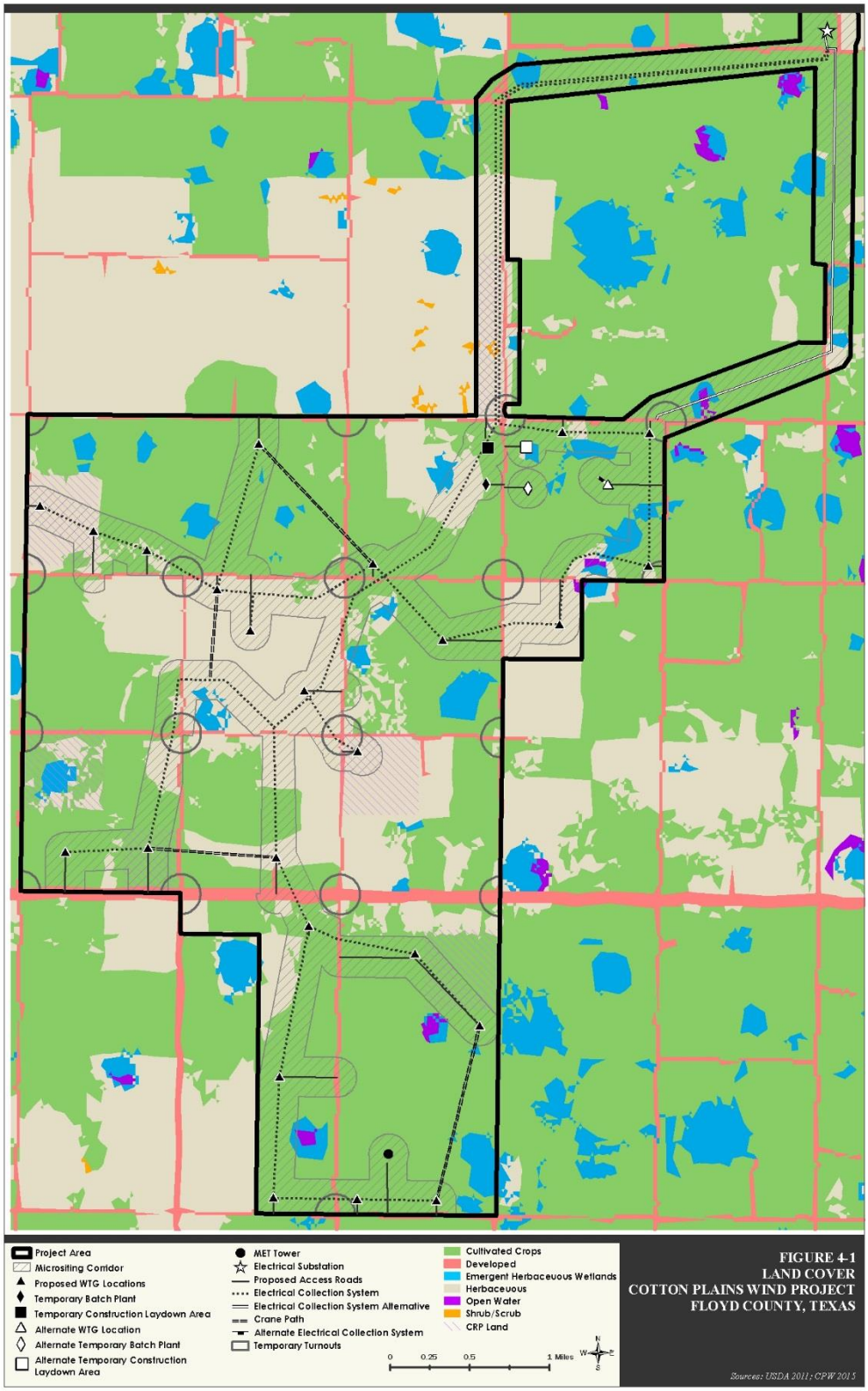
The operation of the Project based on the proposed Project layout would result in the permanent loss of 20.82 acres, including; 16.87 acres of cultivated crops, 3.28

acres of grasslands/herbaceous lands, and 0.67 acres of developed lands (see Table 4-2). As proposed, no permanent loss of wetlands are anticipated. The permanent loss of terrestrial vegetation would result in negligible, long-term impacts due to the current management of the land in agriculture, and the relatively small size of the area impacted compared to the abundant availability of similar land cover types in the surrounding landscape. The severity of the impacts to terrestrial vegetation would not differ significantly based on the final configuration of the Project. The final selection of WTG model would ultimately dictate the total acreage of land cover that would be permanently lost due to the operation of the Project. If the final WTG selection was of a model that was larger than the 2.1 MW WTGs utilized in the proposed Project layout, then the total number of WTGS needed would be fewer than the 24 WTGs included in the proposed Project layout. The use of fewer WTGs would result in a decrease to the Project's operational footprint; therefore, reducing the impacts to existing land cover within the Project area.

Operation of the Project would result in minor long-term impacts to visual resources. The electrical substation, access road traffic, and MET tower would cause minor, permanent visual obstructions. Installation of the WTGs would contribute the most to long-term, minor impacts to the viewshed. Based on the WTGs being considered, WTG maximum height could range between 438 and 492 feet. The final number and spatial distribution of WTGs within the micrositing corridor would also be dependent on WTG selected. Though final selection of a WTG would result in a specific visual configuration, the visual dimensions of each WTG and required layout would result in similar impacts to the visual landscape of the Project area and would be consistent with the existing viewshed of Floyd County and Project vicinity, which includes existing WTGs.

4.4.1.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, no impacts to land use or visual resources would occur from activities associated with the Proposed Action. The land would continue to be utilized for the present land uses.


Project Area
Micrositing Corridor
Proposed WTG Locations
Temporary Batch Plant
Temporary Construction Laydown Area
Alternate WTG Location
Alternate Temporary Batch Plant
Alternate Temporary Construction Laydown Area
MET Tower
Electrical Substation
Proposed Access Roads
Electrical Collection System
Electrical Collection System Alternative
Crane Path
Alternate Electrical Collection System
Temporary Turnouts
Cultivated Crops
Developed
Emergent Herbaceuous Wetlands
Herbaceuous
Open Water
Shrub/Scrub
CRP Land
0
0.25
0.5
1 Miles
N
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S
FIGURE 4-1
LAND COVER
COTTON PLAINS WIND PROJECT
FLOYD COUNTY, TEXAS
Sources: USDA 2011; CPW 2015

Table 4-2 Summary of Lands[1] Affected by Construction and Operation of the Proposed Project and Alternate Infrastructure

	Construction Impacts (acres)						Operational Impacts (acres)						
Project Component	Cultivated Crops	Developed	Wetlands	Grasslands/ Herbaceous	Open Water	Shrub/ Scrub	Cultivated Crops	Developed	Wetlands	Grasslands/ Herbaceous	Open Water	Shrub/ Scrub	Total Acres Impacted
WTGs (24)[2]	28.73	0.00	0.00	16.50	0.00	0.00	0.90	0.00	0.00	0.54	0.00	0.00	**46.67**
Electrical Collection[3] System	72.62	3.33	1.87	42.59	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	**120.50**
Electrical Substation	0.00	0.00	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	**9.00**
MET Tower (includes associated access road)	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.00	0.00	**0.65**
Access Roads[4]													
Access Roads (temporary and permanent)	11.77	1.63	0.00	4.88	0.00	0.00	6.32	0.67	0.00	2.74	0.00	0.00	**28.01**
Crane Path[5,6]	13.28	0.28	0.41	6.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**20.05**
Temporary Turnouts	0.05	0.44	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.51**
Temporary Facilities													
Temporary Construction Laydown Area	9.96	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**9.98**
Temporary Concrete Batch Plant	2.14	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.95**
Total	**138.55**	**5.68**	**2.28[7]**	**70.90**	**0.00**	**0.08**	**16.87**	**0.67**	**0.00**	**3.28**	**0.00**	**0.00**	**238.31**
Alternate Infrastructure													
Alternate WTG (1) (includes associated electrical collection line)	2.11	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	**2.11**
Alternate Electrical Collection System	13.03	0.33	1.43	0.63	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**15.69**
Alternate Temporary Construction Laydown Area	4.37	0.00	4.22	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**9.87**
Alternate Temporary Concrete Batch Plant	2.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.96**

Table 4-2 Summary of Lands[1] Affected by Construction and Operation of the Proposed Project and Alternate Infrastructure

	Construction Impacts (acres)						Operational Impacts (acres)						
Project Component	Cultivated Crops	Developed	Wetlands	Grasslands/ Herbaceous	Open Water	Shrub/ Scrub	Cultivated Crops	Developed	Wetlands	Grasslands/ Herbaceous	Open Water	Shrub/ Scrub	Total Acres Impacted
Alternate WTG Access Road	0.66	0.09	0.00	0.00	0.00	0.00	0.46	0.03	0.00	0.00	0.00	0.00	**1.24**
Alternate Temporary Access Roads[8]	1.28	0.04	0.00	0.00	0.00	0.00	0.65	0.01	0.00	0.00	0.00	0.00	**1.98**

1 Land classifications based on National Land Cover Database 2011.

2 For areas of overlap between the footprints of the construction footprint of the WTG and WTG permanent access road, the impacts were removed from the construction impacts of the WTG and included in the permanent aces road impacts.

3 For areas of overlap between the footprints of the collection line system and the WTG access roads; the impacted acres were removed from the collection line impact totals and included in the WTG access roads impact totals.

4 For areas of overlap of between the footprints of access roads and non-road Project infrastructure; they impacted acres were removed from the access road impact totals and included in the non-road project component impact totals.

5 There would be no grading or clearing of vegetation along the crane paths unless topological constraints are identified during construction that would require grading for the overland travel of the cranes.

6 Crane path estimates are based on a 50-foot-wide path.

7 The estimate of wetlands impacted by the construction of the Project presented in Table 4-3 is based on a query of the 2011 NLCD. This total differs from the wetland impacts presented in Section 4.4.5, which were determined from a query of the USFWS NWI dataset. There difference between the presented acres of impacts to wetlands is function of the individual characteristics of each desktop data set that was utilized. The exact acres of wetland impacts, if any, will depend on the final configuration of the Project.

8 Includes the footprint of the temporary access road for the alternate temporary construction laydown area and the alternate temporary concrete batch plant

Key:
MET = meteorological
WTG = wind turbine generator

4.4.2 Air Quality and Greenhouse Gas

The following paragraphs provide a summary of the general condition and character of the ambient air-quality conditions found within the Proposed Action footprint, as well as a description of potential impacts to the existing conditions of the ambient air-quality conditions in the vicinity of the areas where the proposed Project would be implemented. Expected impacts to the existing to the ambient air-quality conditions are identified and evaluated for each alternative, including the No Action Alternative.

4.4.2.1 Existing Environment

The US Environmental Protection Agency (USEPA) has established NAAQS for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Areas that do not meet NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. Floyd County is in an attainment area for NAAQS (USEPA 2015).

The annual average baseline level of particulate matter less or equal to 2.5 micrometers in diameter ($PM_{2.5}$) from Texas Commission of Environmental Quality's (TCEQ's) $PM_{2.5}$ monitor site in Lubbock, Texas, is 8.25 micrograms per cubic meter (2011-2014; TCEQ 2015). The annual NAAQS for $PM_{2.5}$ is 12 micrograms per cubic meter (primary) and 15 micrograms per cubic meter (USEPA 2015). Fugitive dust created by the Project would be considered $PM_{2.5}$.

GHGs are chemical compounds in the earth's atmosphere that allow incoming short-wave solar radiation but absorb long-wave infrared radiation re-emitted from the earth's surface, trapping heat. Most studies indicate that the earth's climate has warmed over the past century due to increased emissions of GHGs, and that human activities affecting emissions to the atmosphere are likely an important contributing factor.

Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are examples of GHGs that have both natural and manmade sources, while other GHGs, such as chlorofluorocarbons are exclusively man-made. In the US, most GHG emissions are attributed to energy use. Such emissions result from combustion of fossil fuels used for electricity generation, transportation, industry, heating, and other needs.

The principal GHGs that enter the atmosphere due to human activities are:

- CO_2: CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- CH_4: CH_4 is emitted during the production, transport, and combustion of coal, natural gas, and oil. CH_4 emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- N_2O: N_2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone (O_3)-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global warming potential gases.

4.4.2.2 Environmental Consequence of the Proposed Action

The construction and operation of the Project would not result in any emissions that would require the issuance of any federal or state air permits beyond the state air quality permit associated with the temporary concrete batch plant.

Construction Impacts

Construction activities, including the operation of the temporary concrete batch plant and the mobile equipment on the Project area would result in the generation of negligible amounts of GHGs. The operation of the batch plant would be in compliance TCEQ's Standard Permit for Concrete Batch Plants. Impacts would be minimized by meeting TCEQ's concrete production limits outlined in the Standard Permit for Concrete Batch Plants, and through the implementation of the Best Available Control Technology as identified by TCEQ available at: http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/bact/bact_concrete.pdf. Impacts to air quality from the production of emissions from the temporary concrete batch plant during construction would be negligible and short-term.

Fugitive dust is a source of respirable airborne particulate matter that could result from ground-disturbance activities and vehicle traffic on unpaved access roads during construction. Ground-disturbance activities would be limited to the final construction footprint, which is relatively small in size compared to the acreage of cultivated crops in the surround landscape that are annually cleared and planted. The fugitive dust created during construction would be similar in nature to the dust created by local traffic and agricultural equipment. The use of dust

abatement BMPs (e.g., dampening dirt roads) would reduce the amount of dust created during the construction of the Project, resulting in only minor, short-term impacts due to the creation of fugitive dust.

Operational Impacts

The operation of the Project would result in the reduction of GHGs associated with electrical energy production for operations on Fort Hood. It is estimated that wind energy would offset approximately 1,300 pounds (0.6 metric tons) of CO_2 for every MWhr of wind energy produced (American Wind Association 2015). Based on this estimation the Project would be offsetting approximately 260,000,000 pounds (12,000 metric tons) of CO_2 per year of operation. This offset is equal to approximately the annual production of CO_2 from 20,500 cars (American Wind Association 2015).

Typical maintenance and repair activities and the operation of the WTGs would result in negligible impacts due to fugitive dust.

The final configuration of the Project infrastructure would result in impacts similar to or indistinguishable from the impacts of the proposed Project layout, and could be less, depending on whether the number of WTGs is reduced. The described construction and operational impacts to the existing air quality and GHG in terms of type, magnitude, and duration would be as described above for the proposed layout.

4.4.2.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no construction activities would take place. No changes to the ambient air-quality conditions would occur. The selection of the No Action Alternative would not contribute to increased air emissions and would, therefore, have no impacts on air quality.

4.4.3 Noise

The following paragraphs provide a summary of the general condition and character of noise resources found within the Proposed Action footprint, as well as a description of potential impacts upon more specific descriptions of the existing conditions of noise resources in the vicinity of the areas where the Proposed Action would be implemented. Expected noise resource impacts are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.3.1 Existing Environment

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies, depending on the type and characteristics (intensity and frequency) of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day. The unit used to describe

sound intensity is the decibel (dB). An A-weighted decibel (dBA) approximates the human frequency response to sounds to help express the perception of sound by people. A scale relating sounds encountered in daily life to approximate decibel values is provided in Table 4-3. Generally, a change in noise level of 3 dBA is barely perceptible to most listeners. Sound intensity rapidly attenuates with distance from the source, so that a 90 dBA noise is perceived as approximately 44 dBA at 600 feet.

Table 4-3 Common Noise Levels

Outdoor Sounds	Sound Level[1] (dBA)	Indoor Sounds
Aircraft	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998.

1. The sound level provided is that generally perceived by an operator or a close observer of the equipment or situation listed.

Sources of existing background noise at the Project area include vehicular traffic along US Highway 70 and country roads in addition to operation of agricultural equipment. Typical daytime background noise levels as represented by the level exceeded for the 90% of the time under consideration (i.e., LA90) ranges from 18 dBA LA90 in a remote rural areas, through 30 to 40 dBA LA90 in “typical” or “quiet” suburban areas, to 50 to 60 dBA LA90 for busy urban areas. The Project area currently falls in the range of 18 to 30 dBA LA90.

4.4.3.2 Environmental Consequence of the Proposed Action

Construction Impacts

The Proposed Action Alternative would require construction activities. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (see Table 4-4). With multiple pieces of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of no more than 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience appreciable levels of construction noise.

There are a total of 19 residences within one mile of the micrositing corridor, with nine of these residences located on the land leased for the Project. Of these 19 residences, 16 of the residences are within one mile of the 25 possible WTG

locations, including all nine of the residences located on the land leased for the Project. The residences range between 1,305 to 6,742 feet from the WTG locations within the proposed Project layout. Given the temporary nature of proposed construction activities and the distance to the nearest residence, noise impacts resulting from the Project would be minor.

Table 4-4 Noise Levels Associated with Outdoor Construction

Construction Phase	L_{eq} at 50 feet from Source(dBA)
Ground clearing	84
Excavation and grading	89
Foundations	78
Structural construction	85
Finishing	89

Source: USEPA 1971.

Key:
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level

Construction activities and associated vehicle traffic would generate interim increases in noise levels, resulting in temporary annoyance to proximate residences and disturbance of nearby wildlife. These changes are expected to result in only minor, short-term impacts. Construction activities would be restricted to daylight hours in order to reduce the impact of noise on residents. Under the standards set out by US Department of Housing and Urban Development (2009) in the noise regulation 24 CFR Section 51B, day-night average levels for construction noise 65 dBAs or less is considered “acceptable,” levels exceeding 65 dBAs but not exceeding 75 dBAs are considered “normally unacceptable,” and levels exceeding 75 dBAs are considered “unacceptable.”

Operation Activities

During the operation of the Project, long-term increases in noise levels from WTG operation are expected to be minor. The final selection of WTG manufacturer would influence the noise output of the Project, with the range of potential maximum outputs from each WTG at 107 to 150 dBAs (see Table 2-3). The final configuration would also influence the spatial distribution and magnitude of noise levels due to the operation of WTGs within the Project area. The Project is designed with WTGs sited to result in noise levels reaching at most 47 dBAs at residences adjacent to Project area and not on land leased for the Project, which ensures no significant change or impact to the current sound profile of the Project vicinity and operational noise of the turbines would not exceed “acceptable” levels. This conclusion applies to any of the representative WTG models identified in Table 2-3.

Also, occasional repair activities may require the use of heavy equipment, such as cranes, to assist in the repairs of components such as the rotor, WTG blades, and

nacelle components, which would results in minor, temporary increases in noise levels.

The final configuration of the Project infrastructure would result in similar impacts to the existing noise environment in terms of type, magnitude, and duration as is described above for the proposed Project layout.

4.4.3.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to the noise environment would occur with this alternative.

4.4.4 Geology and Soils

The following paragraphs provide a summary of the general condition and character of geological and soil resources found within the Proposed Action footprint, as well as a description of potential impacts upon more specific descriptions of the existing conditions of geological and soil resources in the vicinity of the areas where the Proposed Action would be implemented. Expected geological and soil resource impacts are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.4.1 Existing Environment

Topographically, the High Plains ecoregion is considered upland, as it overlies the Permian Basin. The basin is a part of the Great Plains geosyndine, a linear trough that was created by the accumulation of sedimentary rock strata deposited in the basin and subsequently compressed, deformed, and uplifted into a mountain range. Although the surface of the High Plains consists of a veneer of deposits that are geologically recent, the region is underlain by a thick agglomeration of Permian deposits, below which are still older beds of the Early Paleozoic, which in turn rest on the pre-Cambrian basement.

The High Plains ecoregion is characterized by a constructional topography formed on thick deposits of wind-blown materials that blanket the region. Most of the High Plains country lies in the black earth or Cheronzem soils zone - a belt of country extending from the lower Rio Grande and the southern portion of the Texas Gulf coast northward across the middle and northern Great Plains well into western Canada. The Texas portion of the black earth makes up most of the southern third of this soils zone as it occurs in the US.

The predominant soil within the micrositing corridor (approximately 74%) consists of Pullman clay (NRCS 2014). This is consistent with the larger extent of Floyd County, where Pullman clay loam is also the predominant soil (approximately 65%). Pullman clay loam soils consist of clayey eolian deposits from the Blackwater Draw Formation of Pleistocene age and are well drained, slowly permeable soils suitable for cultivating with irrigation, especially for

dryland cotton, corn, grain sorghum, and winter wheat (NRCS 2014). Pullman clay soils are considered Prime Farmland (NRCS 2014).

The micrositing corridor also contains Drake soils, Estacado clay loam, Lofton clay loam, Lockney clay, McLean clay, Olton clay loam, Portales clay loam, and Randall clay (NRCS 2014). Table 4-5 describes the general characteristics of the soils within the micrositing corridor, which are the same soils that occur in the footprint of the proposed Project layout.

Table 4-5 Soils of the Micrositing Corridor and the Proposed Project Layout

Soil Type	Drainage Class	Prime Farmland	Typical Use	Percent Composition of the Micrositing Corridor
Pullman clay loam	Well drained	Yes	Crop production	73.8
Drake soils	Well drained	No	Grasslands for livestock/wildlife	1.8
Estacado clay loam	Moderately well drained	Yes	Crop Production	3.8
Lofton clay loam	Moderately well drained	Yes	Crop Production	6.7
Lockney clay	Moderately well drained	Yes	Crop Production	4.0
McLean clay	Somewhat poorly drained	No	Grasslands for livestock/wildlife	2.8
Olton clay loam	Well drained	Yes	Crop Production	5.0
Portales clay loam	Well drained	No	Crop Production	0.4
Randall clay	Poorly drained	No	Grasslands for livestock/wildlife	1.6

Playa lakes are considered the most significant ecological feature in the Texas High Plains. Playas are shallow, circular-shaped wetland depressions that are primarily filled by rainfall. Compared to other wetlands, playas go through frequent, unpredictable, wet/dry cycles. In wet years they support the production of annual plants, such as smartweeds and millets. Due to the low drainage density of the caprock comprising the uppermost layer of the plain, water within the playa lakes can persist throughout much of the year if there is adequate precipitation.

4.4.4.2 Environmental Consequence of the Proposed Action

Construction Impacts

Impacts to soils from the construction of the Project area could result from ground-disturbance activities, vehicle travel, and inadvertent spills. These

impacts would be range between negligible to minor in nature and would be short-term in duration.

Ground-disturbance activities during construction of the proposed Project layout would result in impacts to 238.31 acres. These activities would disrupt agricultural crops and other natural land cover and temporarily increase erosion potential. Based on the temporary nature of construction and the small scale of the Project based on the size of the construction footprint, soil erosion impacts would be short-term, minor, and localized to the construction footprint. Topsoil would be removed and segregated during construction and would be replaced in all areas of temporary disturbance and seeded, in non-cropped areas, to promote re-vegetation. De-compaction of soils would occur prior to seeding efforts to increase the probability of the reestablishment of vegetation. Erosion would be prevented and controlled, and temporarily disturbed areas would be revegetated according to the Project's Storm Water Pollution Prevention Plan (SWPPP), which would be prepared in accordance with the Texas Pollution Discharge Elimination System Construction General Permit requirements.

Within the micrositing corridor there are 3,890 acres of prime farmland, which comprises 93% of the micrositing corridor. Within the footprint of the proposed Project layout there are 228.89 acres of prime farmland that would be temporarily impacted. The disturbance to the prime farmland soils within the construction footprint would be minor and short-term due to the brief construction schedule of the Project and most of the impacted soils would be reclaimed following construction activities. Additionally, construction activities would result in negligible impacts to hydric soils due to the small amount present within the construction footprint (0.15 acres). Similar impacts to soils would be expected in conjunction with any changes to the layout within the micrositing corridor, based on the general homogeneity in the distribution of soils within the micrositing corridor (see Figure 4-2).

Inadvertent spills of fluids such as fuel, lubricants, antifreeze, and herbicides used during construction or operation and maintenance activities, could also result in short-term, minor impacts to soils. Impacts due to inadvertent spills would be mitigated by measures outlined in the Project's Spill, Pollution, Control, and Countermeasures (SPCC) Plan, which would be developed by the selected construction contractor. The SPCC Plan would be completed prior to the initiation of construction and would be in accordance with the appropriate state and federal regulations.

The operation of the temporary concrete batch plant would have minor impact on soil resources within the Project area, such as possible soil compaction and soil mixing due to rutting from the use of heavy construction equipment. Impacts would be minimized by implementation of topsoil removal and segregation and de-compaction of soils prior to re-seeding. All necessary material for making concrete would be secured by CPW from a permitted commercial source located

in the region and a defined concrete washout area will be used and removed with the batch plant.

The use of dust abatement BMPs would reduce the amount of dust created during construction activities for the Project, resulting in minor, short-term impacts due to the creation of fugitive dust.

CPW does not anticipate that blasting would be required during construction for the installation of the WTG foundations.

Operational Impacts

The operation of the proposed Project layout would result in the long-term minor impact to soils due to the permanent loss of 16.88 acres. Of this total, 4.99 acres are classified as prime farmland. The loss of prime farmland would result in a minor impact due to the relatively small amount of prime farmland impacted when compared to its availability in the surrounding landscape. No hydric soils would be impacted by the operational footprint of the proposed Project layout. No additional impacts to soils would result due to the operation of the Project, as not additional ground-disturbance activities are anticipated.

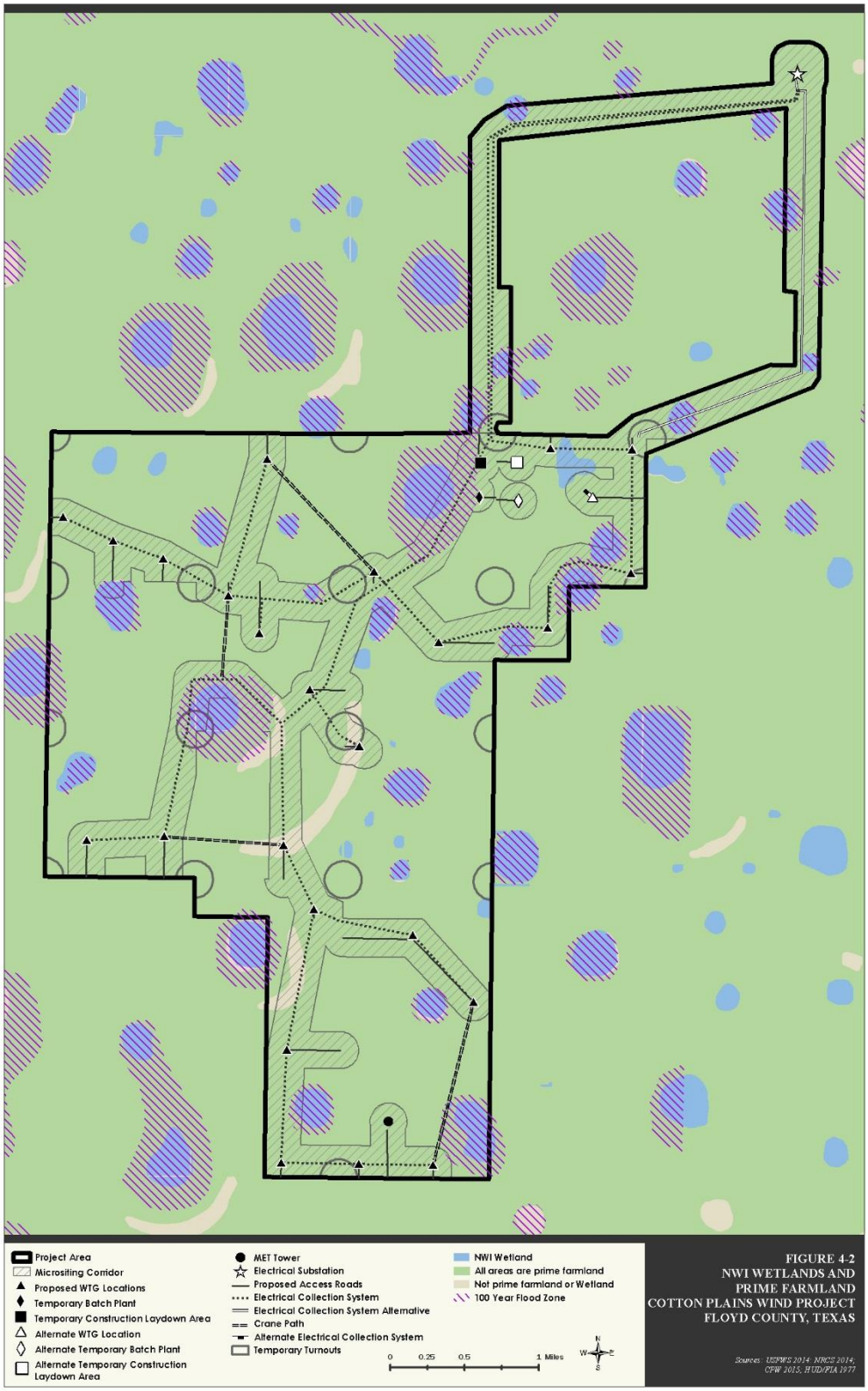
Operation of the Project would result in negligible long-term impacts to the geological resources and soils due to the small footprint of each turbine's sub-surface foundation.

During the operation and maintenance of the Project there is the potential for inadvertent spills and leaks that could adversely impact soils. Impacts due to inadvertent spills and leaks would be minor and short-term and would be mitigated by measures outlined in the Project's SPCC Plan. The SPCC Plan would be completed prior to the initiation of construction and would be in accordance with the appropriate state and federal regulations.

If the infrastructure of the Project is moved within the micrositing corridor as the Project designs are finalized, the environmental impacts of the final configuration of the Project infrastructure would result in similar impacts to the existing geological and soil resources in terms of type, magnitude, and duration, as described above for the proposed Project layout presented.

4.4.4.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to the geological and soils resources would occur with this alternative.


Project Area
Micrositing Corridor
Proposed WTG Locations
Temporary Batch Plant
Temporary Construction Laydown Area
Alternate WTG Location
Alternate Temporary Batch Plant
Alternate Temporary Construction Laydown Area
MET Tower
Electrical Substation
Proposed Access Roads
Electrical Collection System
Electrical Collection System Alternative
Crane Path
Alternate Electrical Collection System
Temporary Turnouts
NWI Wetland
All areas are prime farmland
Not prime farmland or Wetland
100 Year Flood Zone
0 0.25 0.5 1 Miles
N
W
E
S
FIGURE 4-2
NWI WETLANDS AND
PRIME FARMLAND
COTTON PLAINS WIND PROJECT
FLOYD COUNTY, TEXAS
Sources: USFWS 2014, NRCS 2014,
CPW 2015, HUD/FIA 1977

4.4.5 Water Resources

The following paragraphs provide a summary of the general condition and character of water resources found within the Proposed Action footprint, as well as a description of potential impacts upon more specific descriptions of the existing conditions of water resources in the vicinity of the areas where the proposed Project would be implemented. Expected water-resource impacts are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.5.1 Existing Environment

Groundwater

No major aquifers are located under the Project area. The Project is located above the Dockum Minor Aquifer. The Dockum Aquifer is comprised of gravel, sandstone, siltstone, mudstone, shale, and conglomerate. The water within the Dockum Aquifer is recoverable, but the water quality is generally poor and generally in excess of the state's primary drinking water standard due to the naturally occurring radioactivity from uranium (Texas Water Development Board 2015a). Groundwater from the aquifer is typically used for irrigation, municipal water supply, and oil field waterflooding operations. The depth of six sampling wells located within the Texas Panhandle recorded a water depth that ranged between 250 feet to 1,000 feet below ground level (Bradley and Kalaswad 2003). Water depth from existing wells near the Project area (within a 0.5 miles) ranged between 240 and 326 feet below ground level (Texas Water Development Board 2015b [State Wells 1162903, 2306303, 230602, and 230601]).

Surface Water and Wetlands

Surface water features in the Project area are limited to internally drained playas. Playa lake features are locally important for groundwater recharge, livestock and wildlife hydration, wildlife habitat, and erosion control. Each playa feature or playa complex, representing a depressions within a broad landscape with flat topography, is typically located within its own drainage basin with no outlet, forming a hydraulically isolated system. Larger, deeper playa lakes may hold water for extended periods of time. For most of the year, smaller playa features lack ponded water and support upland grassland communities, holding water for brief periods after precipitation events. The majority of the playa features within the Project area would characterized by the latter; small features that lack ponded water most of the year.

Based on a review of the US Geological Survey National Hydrography Dataset (NHD) there are no streams or rivers present within the Project area. The USFWS NWI data identifies four classifications of wetlands within the micrositing corridor; freshwater emergent wetlands (wetlands associated with playa lakes), freshwater ponds, lakes (playa lakes), and palustrine wetlands that have been farmed (USFWS 2014).

Within the micrositing corridor there are 199.1 acres of wetlands; 77.8 acres of freshwater emergent wetlands, 74.8 acres of lakes, 36.2 acres of palustrine wetlands that have been farmed, and 10.4 acres of ponds. The lakes and freshwater emergent wetlands comprise the majority of the wetland features within the micrositing corridor and the adjacent landscape.

Within the construction footprint of the proposed Project layout there are 0.80 acres of wetlands; 0.52 acres of freshwater emergent wetlands, 0.14 acres of palustrine wetlands that have been farmed, and 0.13 acres of ponds.

Floodplains

Floodplains do not constitute a resource themselves but rather a hazard to any development that occurs within them. EO 11988, *Floodplain Management*, was signed into law on May 24, 1977, to discourage federal agencies from supporting development in floodplains set guidelines to avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Floodplains are defined by EO 11988 as the lowland and relatively flat areas adjoining inland and coastal waters that are subject to a 1% or higher chance of flooding in any given year (i.e., the area that the 100-year flood would inundate). The 1%-annual-chance (100-year) flood has been adopted by the Federal Emergency Management Agency (FEMA) as the "base flood" for floodplain management purposes. Proposed alternatives should not create, maintain, or extend the useful life of any structures or facilities that may become lost or inoperative during flood and storm events. FEMA manages the National Flood Insurance Program (NFIP), which provides flood insurance, reduces flood damages through floodplain management regulations, and identifies and maps the nation's floodplains.

Some of the playa lake features within the Project area are designated as Zone A, approximate flood zones according to NFIP Insurance Rate Map for Floyd County (Community Map Panel No. 480817 0008 A, dated May 17, 1977). Zone A flood zone is applied to areas that are floodplains located in sparsely populated areas or in places with little previous floodplain work. The Zone A areas delineate areas that are estimated to be within the 100-year floodplain. The extent of the Zone A flood zones within the micrositing corridor are limited to the general boundary of the non-farmed playa lake features (see Figure 4-2).

4.4.5.2 Environmental Consequence of the Proposed Action

Construction Impacts

Construction of the Project would result in temporary negligible impacts to the groundwater resources that underlie the Project area. The collection line trench and excavations for the turbine foundations would not directly come in contact with the Dockum Aquifer due to its depth below ground level. It may be necessary to dewater the collection line trench or WTG foundation excavations during construction. Dewatering could potentially result in the temporary

lowering of groundwater in the immediate vicinity of the trenches or excavations. Due to the relatively small volume that would be pumped, short duration of the activity, and local discharge of the water, it is anticipated that groundwater levels would quickly recover when the pumping stops. It is anticipated that any potential impacts to groundwater from trench dewatering would be short-term and negligible. Additionally, blasting is not anticipated to be required during construction for the installation of the WTG foundations.

Based on a review of NWI maps (see Figure 4-2), construction of the Project based on the proposed layout would result in the temporary impact to 0.80 acres of potential wetlands: 0.80 acres of wetlands; 0.52 acres of freshwater emergent wetlands; 0.14 acres of palustrine wetlands that have been farmed; and 0.13 acres of ponds; however, the Project footprint would be modified within the micrositing corridor to avoid or minimize these impacts. Of these totals, the 0.13 acres of freshwater pond is associated with one of the proposed crane paths; we anticipate that the crane path will be modified to avoid the pond for ease of travel. The remaining 0.67 acres would be impacted by installation of the collection line system; thus the impacts would be temporary. Restoration activities at wetland areas following construction would reestablish pre-construction contours, which would allow wetland conditions to reestablish. It is likely that the actual total acres of wetlands impacted by construction of the final Project layout would be less than 0.67 acres due to avoidance and minimization through micrositing adjustments of the collection lines.

Prior to initiation of construction, a wetland and waterbody delineation would be completed within the construction footprint of the Project. Results of the field survey would allow micrositing of Project infrastructure if necessary to avoid or minimize impacts, or to achieve compliance with Section 404 of the CWA. If impacts are necessary to potential waters of the US, these would be limited to utility line crossings and associated access roads designed and constructed so that each single and complete crossing would be authorized under USACE's Nationwide Permit 12-Utility Line Activities without Preconstruction Notification requirements.

Construction of the Project based on the proposed Project layout could result in ground-disturbance activities within designated floodplain areas identified in Figure 4-3. CPW would adjust the final Project layout to avoid and/or minimize impacts to designated floodplains during construction.

For the construction of the proposed Project layout, CPW estimates that 488,000 gallons of water would be required. The operation of the temporary concrete batch plant is estimate to require approximately 312,000 gallons, based on the assumption that each of the 24 WTGs would require 13,000 gallons. And the remaining 176,000 gallons of water would be used for dust abatement, based on the assumption of 2,000 gallons per day for 88 work days. The operation of the temporary concrete batch plant and dust abatement activities are not anticipated to impact on water resources within the Project area, as the necessary water for both

construction activities would be obtained from a permitted commercial source located in the region. However, in the case that no commercial source is available, water may be procured through a local municipality or from a local landowner. Any procurement of water would be conducted in accordance with all applicable regulations and permits.

To further mitigate any potential impacts to water resources within the Project area resulting from construction, a SPCC Plan would be developed to prevent contamination of surface waters with fuel or other hazardous materials associated with Project construction and a SWPPP would be utilized to minimize the off-site transport of sediment laden runoff.

Operational Impacts

During operation, none of the Project's aboveground permanent infrastructure (i.e., WTGs and associated access roads, electrical substation, MET tower and associated access road) would be located within wetlands or waterbodies; therefore, there would be no permanent impacts to wetlands and waterbodies. Additionally, none of the Project's aboveground permanent infrastructure would be within a designated floodplain; therefore, there would be no above-grade fill within a designated floodplain. Routine operation and maintenance activities would not result in any impacts to any wetlands or waterbodies.

The final configuration of the Project infrastructure, if modified within the micrositing corridor would result in similar impacts to water resources in terms of type, magnitude, and duration as is described above for the proposed Project layout.

4.4.5.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur. There would be no impacts, either beneficial or adverse, to groundwater, surface water, or storm water as a result of the No Action Alternative.

4.4.6 Biological Resources

The following paragraphs provide a summary of the general condition and character of biological resources found within the Proposed Action footprint, as well as a description of potential impacts upon more specific descriptions of the existing conditions of biological resources in the vicinity of the areas where the proposed Project would be implemented. Expected biological resource impacts are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.6.1 Existing Environment

Biological resources discussed in this EA include flora and fauna, including threatened, endangered, or special-status species potentially affected by the Proposed Action.

Flora

As described in Section 4.4.1.1, the dominant land covers within the Project area, the micrositing corridor, and the proposed Project layout are cultivated crops and grasslands primarily used for livestock grazing. Due to these dominant land uses, the majority of the vegetation within the Project area is subject to a high level of disturbances due to anthropocentric activities. Table 4-6 identifies the common vegetation that was observed within the upland areas (e.g., fallow fields, field borders, roadsides [excludes cultivated crop land]) and lowland areas (e.g., playas) with the micrositing corridor.

The Project area does not overlap with the range of any federally or state listed threatened or endangered plant species (USWFS 2015a and Texas Parks and Wildlife Department [TPWD] 2012) or any rare plant communities as defined by the TPWD (2015a).

Table 4-6 Common Vegetation of the Micrositing Corridor

Upland Areas (fallow fields, field borders, roadsides)[1]	
Common Grasses	caucasian bluestem (*Bothriochloa bladhi*i), sideoats grama (*B. curtipendula*), silver bluestem (*B. laguroides*), silver bluestem (*B. laguroides*), Johnsongrass (*Sorghum halepense*), bermudagrass (*Cynodon dactylon*), white tridens (*Tridens albescens*), cane beard-grass (*Bothriochloa barbinodis*), western wheatgrass (*Pascopyrum smithii)*, purple three-awn (*Aristida purpurea*), windmill grass (*Chloris verticillata*), tumble-grass (*Schedonnardus paniculatus*), and hairy crab-grass (*Digitaria sanguinalis*)
Common Forbs	horse-weed (*Conyza canadensis*), field bindweed (*Convolvulus arvensis*), purple groundcherry (*Quincula lobata*), Nuttall's sensitive briar (*Mimosa nuttallii*), goathead (*Tribulus terrestris*), snow on the mountain (*Euphorbia marginata*), narrow-leaf milkweed (*Asclepias fascicularis*), broad-leaf milkweed (*Asclepias latifolia*), Illinois bundleflower (*Desmanthus illinoensis*), bush morning glory (*Ipomoea leptophylla*), silver-leaf nightshade (*Solanum elaeagnifolium*), Patagonia plantain (*Plantago patagonica*), Heller's plantain (*Plantago helleri*), buffalo gourd (*Cucurbita foetidissima*), western ragweed (*Ambrosia psilostachya*), Arkansas lazy-daisy (*Aphanostephus skirrhobasis*), western mugwort (*Artemisia ludoviciana*), wavyleaf thistle (*Cirsium undulatum*), Canadian horseweed (*Conyza canadensis*), Engelmann's daisy (*Engelmannia peristenia*), curly-cup gumweed (*Grindelia squarrosa*), common sunflower (*Helianthus annuus*), woolly paper-flower (*Psilostrophe tagetina*), prairie coneflower (*Ratibida columnifera*), prickly lettuce (*Lactuca serriola*), and prairie broomweed (*Amphiachyris dracunculoides*). Common shrub species include Great Plains yucca (*Yucca glauca*), fireweed (*Kochia scoparia*), Russian thistle (*Salsola kali*), and tuberous-rooted pricklypear (*Opuntia macrorhiza*)
Common Shrub/Tree	sugar hackberry (*Celtis laevigata*)

Table 4-6 Common Vegetation of the Micrositing Corridor

Lowlands (playas) [1]	
Common Grasses	creeping spikerush (*Eleocharis palustris*), Umbrella sedge (*Cyperus involucratus*), barnyardgrass (*Echinochloa crusgalli*), and southern cat-tail (*Typha domingensis*).
Common Forbs	bur ragweed (*Ambrosia grayii*), cocklebur (*Xanthium strumarium*), rough pigweed (*Amarathus retroflexus*), western ragweed, tooth-cup (*Ammania auriculata*), plains ironweed (*Vernonia marginata*), lance-leaf frogfruit (*Phyla lanceolata*), Texas frogfruit (*Phyla nodiflora*), water smartweed (*Persicaria amphibia*), Pennsylvania smartweed (*P. pensylvanica*), curly dock (*Rumex crispus*)
Common Trees	black willow (*Salix nigra*) and sugar hackberry

[1] Blanton and Associates LLC 2015a

Fauna

Wildlife studies were completed by Western Ecosystems Technology, Inc. (WEST) in 2013 to characterize the bird and bat community, to assess risk, and to inform siting of the Project. These 2013 studies surveyed an "initial assessment area," which included the northern half of the Project area as well as a substantial area immediately north and east-northeast of the Project area that is characterized by similar topography and habitat. The "initial assessment area" consisted of approximately 40,200 acres. In 2014, CPW identified the current Project area as the preferred location for the Project. The Project area was selected to minimize risk to birds and bats based on the results of the 2013 studies to focus development in areas with more disturbed agricultural lands and smaller and fewer playas that may attract wildlife during wet periods. Additional studies to assess eagle nests, bird use, and prairie dog distribution were completed by Blanton and Associates, Inc. in 2014 and 2015 to inform siting and to further refine risk determinations within the Project area. The pre-construction studies and initial siting considerations are consistent with the Tier 1, 2 and 3 processes recommended by the USFWS Land-Based Wind Energy Guidelines (WEG; USFWS 2012a). A list and description of wildlife studies completed for the Project are presented in Table 4-7.

Due to lack of perennial streams and waterbodies within the Project area, there are no fishery resources present within the Project area, and therefore are not assessed in this EA.

Table 4-7 Wildlife Surveys Completed for the Project

Study Type	Study Period	Reference
Tier 1 and Tier 2 Studies	August 2013	WEST 2013a
Avian Use Baseline Survey	March 2013 through October 2013	Lyon et al. 2013
Raptor Nest Survey	May 2013	WEST 2013b
Prairie Dog Town Mapping	July 2013	Lyon 2013
Bat Acoustic Survey	April 2013 through October 2013	Poe 2015
Large Bird/Avian Use Survey	September 2014 through April 2015	Blanton and Associates, Inc. 2015b
Eagle Nest Survey	March 2015	Blanton and Associates, Inc. 2015c
Prairie Dog Colony Survey	April 2015	Blanton and Associates, Inc. 2015d

The Project area is inhabited by a diversity of wildlife, including large and small mammals, reptiles, amphibians, raptors, waterfowl, and nongame birds. The Project area is dominated by cultivated crops with grasslands (much of which is grazed) with small playas. The playa lakes serve as wildlife habitat for species associated with these features due to the fertile soil, wet/dry nature, potential high plant production, and potential suitability to support an abundant variety of invertebrates. This potential productivity makes playas attractive for birds and other wildlife, particularly during wet periods. Some species of invertebrates (e.g., water fleas, fairy shrimp, and tadpole shrimp) are playa specialists and have evolved to survive the cyclical wet and dry periods characteristic to playas. Other fauna, such as birds or mammals, are opportunistic users of playas, especially when water is a present.

Due to the high percentage of cultivated crops and grassland/ herbaceous land within the micrositing corridor (see Table 4-1), the typical wildlife community that occurs within the Project area is generally comprised of species that exhibit the following characteristics: habitat generalists, tolerant of human disturbance and habitat fragmentation, and species that are regionally common. The following describes the wildlife species that are likely to occur in the Project area. Federally and state-listed threatened and endangered species are discussed independently from the non-special status wildlife species.

Bird Species

The majority of the bird species identified during the bird surveys are protected under the MBTA. The MBTA, enacted in 1918, "*prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and does not require intent to be proven." Section 703 of the MBTA states that "unless and except as permitted by regulations it shall be unlawful at any time, by any means or in any manner, to take, capture, kill, attempt to take, capture, or kill, or possess any migratory bird, any part, nest, or eggs of any such bird…"* In

short, the MBTA prohibits the taking of migratory birds without authorization from USFWS.

In general, the Project area supports a bird community that is characteristic of an agricultural setting due to prevalent abundance of cultivated cropland and grassland/herbaceous lands, with some exceptions including waterbirds associated with the playas. The results of bird surveys conducted for the Project indicated that the bird community of the Project area is comprised of species that are abundant or common in the region (Lyon et al. 2013; Blanton and Associates Inc. 2015b).

During the 2014 and 2015 bird studies that were specific to the Project area, 27 bird species were identified from September 2014 to April 2015. Of the 27 species, eight were comprised of large bird species (e.g., birds of prey and large wading birds). The most common large bird species observed was the sandhill crane (*Grus canadensis*), which migrates in large, transient groups through the Panhandle region of Texas. The observations of this species made during the fall were consistent with this migratory trend, as sandhill cranes comprised 88% (210 of 238 observations) of all large bird observations during, yet were only recorded at five out of the 21 counts conducted (Blanton and Associates Inc. 2015b). The remaining 19 bird species were categorized as small birds (e.g., songbirds and small shorebirds) or waterfowl. The most commonly observed small bird species included western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), mourning dove (*Zenaida macroura*), savannah sparrow (*Passerculus sandwichensis*), red-winged blackbird (*Agelaius phoeniceus*), and brown-headed cowbird (*Molothrus ater*). Individuals of these six species constituted approximately 91% of all small bird individuals observed. These six species are common to an agricultural landscape. The bird use surveys conducted in the "initial assessment area" recorded a bird assemblage (Lyon et al. 2013) consistent with the results record during the 2014 and 2015 surveys (Blanton and Associates LLC 2015b).

Three species of waterfowl were observed during the 2014 and 2015 surveys: American coot (*Fulica americana*), blue-winged teal (*Anas discors*), and northern shoveler (*Anas clypeata*). The detection of waterfowl was directly related to the presence of a playa lake near the survey points. Waterfowl were only recorded at one survey point and only during two of the eight surveys. The occurrence of waterfowl within the Project area is dependent on the availability and timing of water within the existing playa lakes.

During the 2013 raptor nest survey, one active Swainson's hawk nest was observed within the northeastern portion of the Project area and one other active Swainson's hawk nest was observed approximately 3.2 miles to the west of the Project area. During the 2015 nest survey conducted for the Project, no active raptor nests were observed, although several unoccupied stick nests were recorded. No eagles or eagle nests were reported within the Project area during bird studies conducted 2013 through 2015. In addition to the results of the raptor

nest surveys, no burrowing owls were observed within the Project area during the 2013 or 2015 prairie dog colony surveys (Lyon 2013; Blanton and Associates, Inc. 2015c). The results indicate the absence of burrowing owls nesting within the prairie dog colonies within the Project area.

Bald and Golden Eagles

In addition to the protection offered by the MBTA, bald and golden eagles are also protected by the BGEPA (16 USC Sections 668-668d). The BGEPA prohibits the killing, selling, or harming eagles or their nests, and protects eagles from disturbances that may injure them, decrease productivity, or cause nest abandonment.

Golden eagles are uncommon year-round residents in the Texas Panhandle and are known to regularly nest in the Trans Pecos as well as in a few areas of the Rolling Plains (Arnold and Kennedy 2007; Seyffert 2001). However, nesting in the Texas Panhandle has generally been concentrated in the Palo Duro-Caprock Canyon Complex and the Canadian River breaks (Boal and Haralson 2007). Caprock Canyon is approximately 25 miles north of the Project area, and Palo Duro Canyon is approximately 50 miles north of the Project area. During surveys in 1979-1983, Rideout et al. (1984) found one active golden eagle nest in Floyd County approximately 10 miles north of the Project area. However, Rideout et al. (1984) classified this nest as occupied, but not breeding. In 2005 and 2006, Boal and Haralson (2007) surveyed some of the areas that Rideout et al. (1984) surveyed in the 1980s, but they did not locate the nest in Floyd County. The survey results also suggested that the golden eagle population in the region was declining. The nearest eBird golden eagle records are approximately 4 miles south of the Project on January 23, 2011, and 4 miles northwest on February 6, 2005. Consistent with these findings, Blanton & Associates biologists observed a golden eagle approximately 1-mile east of the Project on February 11, 2015 and one approximately 3 miles east of the Project on December 17, 2014. No golden eagles were recorded within the Project area and no nests were found within 10 miles of the Project area during studies completed for the Project. Although there is the potential for transient individuals to pass through the Project area, golden eagles are not anticipated to commonly occur on Project area, because the Project area does not support high quality habitat to attract golden eagles.

The bald eagle is listed as threatened by the TPWD and found in portions of the state throughout the year. The breeding season occurs between October and July, and primary concentrated in eastern portion of Texas along the coastal counties. Preferred breeding season habitat is characterized by areas with large trees or cliff for nesting sites that are adjacent to large bodies of water (lakes, pond, rivers, wetlands) that provide sustainable food source. The wintering population is located in small populations in the Panhandle, Central, and East Texas. Winter habitats are also concentrated around large bodies of water. Bald eagles' primary prey is fish, but may also include small mammals, waterfowl, and carrion. According to the TPWD's bald eagle specialist, there are no bald eagle nests recorded in Floyd County (Ortego 2015). However, bald eagles are known to

overwinter in the region (Arnold and Kennedy 2007). Numerous winter sightings have been recorded near White River Reservoir, approximately 33 miles south of the Project area, and near MacKenzie Reservoir, approximately 37 miles northwest of the Project area (eBird 2015), and Blanton & Associates biologists observed two bald eagles approximately 4.8 miles east of the Project area on December 17, 2015 and one individual on February 12, 2015 in the same area. No bald eagles or nests were observed during any of the biological surveys conducted for the Project, and it is unlikely that bald eagles would commonly use the Project area, due to lack of large bodies of water and wetlands needed for food, and the absence of tall mature hardwood trees that are preferred as roosting sites.

Bat Species

Acoustic surveys were conducted at six sites within the initial assessment area from April 3 to October 17, 2013, using eight acoustic AnaBat SD-2 detectors (Poe 2015). Three AnaBat SD2 detectors were paired at one MET tower (three detectors total) located within the Project area, with one detector at ground level (approximately 3.3 feet above ground level [AGL]) and the other two within the rotor-swept heights (approximately 148 feet and 246 feet AGL). The other five AnaBat units were placed at ground level. One of the units is located within the eastern side of the Project area and one is located approximately one mile north of the Project. Units were placed within representative habitats, and the three units located in and near the Project allow effective characterization of bat use within the Project area.

A total of 1,340 detector-nights were recorded between April 3 and October 17, 2013, for all unites combined. AnaBat units at fixed ground stations recorded 6,990 bat passes on 998 detector-nights for a mean (± standard error) of 7.07 ± 0.54 bat passes per detector-night, while raised stations recorded 971 bat passes on 342 detector nights for a mean of 2.84 ± 0.4 per detector-night (Poe 2015).

Approximately 96% of passes recorded were by low-frequency bats, likely comprised of big brown bats (*Eptesicus fuscus*), hoary bats (*Lasiurus cinereus*), Mexican free-tailed bats (*Tadarida brasiliensis*), and silver-haired bats (*Lasionycteris noctivagans*). The remaining percentage of passes recorded were by high-frequency bats, likely comprised of eastern red bats (*Lasiurus borealis*), tri-colored bats (*Perimyotis subflavus*), and Myotis species. The highest bat activity recorded during this study occurred during the summer and fall. Peak activity occurred in late August, with high peaks of low-frequency bats in late July and high-frequency bats in September. The spike recorded in low-frequency bat activity during late-July through August is likely due to the onset of post-breeding dispersal and migration; however, passage rates do not suggest unique levels of concentrated migratory bats.

Mexican free-tailed bats, a low-frequency species, are known to commonly occur across the Panhandle region. The nearest known bat roost is the Clarity Tunnel, a Mexican free-tailed bat maternity colony located approximately 15 miles to the

northeast of the Project. Additional suitable habitat for bat roosting occurs within the rocky outcrops and cliffs associated Caprock Canyon.

Bat pass rates in the spring were relatively low compared to the rest of the survey period, except for one relatively small peak during mid-May. Though the results of the acoustical survey do indicate that there is some migratory movement of bats through the Project area, the Project area does not contain any topographic features (e.g., river valleys/riparian corridors or ridgeline) that would funnel large movements of migrating individuals through the Project area and is not in close enough proximity to known hibernacula to cause concern. The Project area does contain playa lakes, which can provide suitable foraging habitat for bats when water is present. However, playa lake features are not unique to the Project area as they occur abundantly in the local landscape, and WTGs are intentionally sited away from the playas to reduce potential for bat collision.

No federal or state-listed bats were recorded during the study (Poe 2015). None of the bat species detected or expected in the area are protected by any state or federal regulatory statute.

Black-tailed Prairie Dogs

The March 2015 field survey for black-tailed prairie dog (*Cynomys ludovicianus*) colonies identified two active and four inactive prairie dog colonies within the Project area (Blanton and Associates, LLC 2015c). In addition, two active and one inactive prairie dog colonies and one inaccessible potential prairie dog colony were identified within one mile of the Project area. The one potential prairie dog colony site outside of the Project area was identified on aerial photography but could not be field verified due to lack of access. The results of the 2013 prairie dog surveys identified the same two active prairie dog colonies within the Project area. No additional active prairie dog colonies were observed within the portion of the 2013 survey area that overlapped with the Project area (Lyon 2013). Wind turbine generators are intentionally sited away from the prairie dog colonies to minimize risk of impact to foraging raptors potentially associated with these colonies.

Threatened and Endangered Species

The following is a discussion of the federally and state-listed threatened and endangered species that have the potential to occur in Floyd County, Texas (see Table 4-8).

Federally Listed Species. The ESA, as administered by the USFWS, mandates protection of species federally listed as threatened or endangered and their associated habitats. The ESA makes it unlawful to “take” a listed species without special exemption. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct.” Significant modification or degradation of listed species’ habitats is also considered “harm” under ESA.

Based on USFWS Information for Planning and Conservation system four federally listed endangered species (whooping crane, interior least tern, sharpnose shiner, and smalleye shiner) and two federally listed threatened species (piping plover and red knot) have the potential to occur Floyd County (USFWS 2015a; see Table 4-4).

Table 4-8 Federally Listed Threatened and Endangered Species that have the Potential to Occur in Floyd County, Texas

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Likelihood of Occurring within the Project Area
Bald eagle	*Haliaeetus leucocephalus*	DL	T	Low
American peregrine falcon	*Falco peregrinus anatum*	DL	T	Low
Whooping crane	*Grus americana*	E	E	Low
Interior least tern	*Sterna antillarum*	E	E	Low
Red knot	*Calidris canutus rufa*	T	T	Low
Piping plover	*Charadrius melodus*	T	T	Low
Sharpnose shiner	*Notropis oxyrhynchus*	E	--	Not present
Smalleye shiner	*Notropis buccula*	E	--	Not Present
Palo Duro mouse	*Peromyscus truei comanche*	--	T	Not Present
Texas horned lizard	*Phrynosoma cornutum*	--	T	Low

1. USFWS 2015a
2. TPWD 2012

Key:
DL = delisted
E = endangered
T = threatened

Whooping Crane. The whooping crane was grandfathered into the ESA when it became law in 1973 and was first listed as threatened and then endangered in 1967 and 1970, respectively. The only migratory population, the Aransas-Wood Buffalo population, migrates from their breeding grounds in Wood Buffalo National Park in Canada to their winter grounds in Aransas National Wildlife Refuge along the Texas coast (USFWS 2007).

The Project is located approximately 68 miles from the western edge of the US Central Flyway Whooping Crane Migration Corridor (USFWS 2012b). The delineated corridor identifies where 95% of all confirmed whooping crane migration sightings have occurred through fall 2010. Whooping cranes migrate through Texas each spring (April) and fall (October through November). The birds generally migrate during the day and stop nightly to roost in shallow wetlands, using adjacent or nearby cultivated cropland to feed during the day (USFWS 2007). The Project area is not within the breeding or wintering range of

the whooping crane and there is no designated critical habitat for this species Floyd County.

Within the Project area, seasonally flooded playas and cultivated crop fields could present potential stopover habitat for migrating whooping cranes. However, based on the distance from the migration corridor and the ephemeral nature of their occurrence during migration, the potential occurrence of whooping cranes within or near the Project area would be extremely rare and would be limited to transient individuals or small groups of migrant birds and for a very short duration. No whooping cranes where observed during any of the biological surveys conducted for the Project and none have been documented as colliding with WTGs throughout their migratory range.

Interior Least Tern. The interior population of the least tern was listed as an endangered species in 1985. Historically, the least tern was found on the Atlantic, Gulf of Mexico, and California coasts and on the Mississippi, Missouri, and Rio Grande river systems. In Texas, interior least terns are found at three reservoirs along the Rio Grande River, on the Canadian River in the northern Panhandle, on the Prairie Dog Town Fork of the Red River in the eastern Panhandle, and along the Red River (Texas/Oklahoma boundary) into Arkansas (TPWD 2015a).

The Project area is not within the wintering or breeding range of the interior least tern, but does occur within the potential migratory path of the species. Suitable stopover habitat for the least tern during spring (March through May) and fall (July through September) migration is described as sandbars of major rivers, salt flats, and mudflats of reservoirs (TPWD 2015a). The Project area does not support suitable stopover habitat; therefore, the species is not expected to use the Project area as stopover habitat during its spring and fall migration. No interior least terns where observed during any of the biological surveys conducted for the Project, and no documented wind fatalities of the species are known to have occurred throughout the migratory range of the species.

Red Knot. The red knot is a medium-sized, migratory shorebird, which was listed as threatened under the ESA on December 11, 2014 (USFWS 2015b). The Project overlaps with a lesser used migratory path of the red knot. The majority of the species migrates along the Atlantic Coast and Gulf Coast; however, the red knot is considered a casual or irregular migrant through central flyway, which includes the Texas Panhandle.

The Project area is not within the wintering or breeding range of the red knot, but does occur within the potential migratory path of the species. Suitable stopover habitat for the red knot during spring (March through May) and fall (July through September) migration is described as beaches, mudflats, large reservoirs, and potholes where mollusks or gastropods could be available (Central Flyway Council 2013). The Project area does not support suitable stopover habitat; therefore, the species is not expected to use the Project area as stopover habitat during its spring and fall migration. No red knots where observed during any of

the biological surveys conducted for the Project and no documented wind fatalities of the species are known to have occurred throughout the migratory range of the species.

Piping Plover. The piping plover is federally listed as endangered in the Great Lakes watershed, where it breeds, and is federally listed as threatened in all other areas that it is known to occur. Piping plovers are migratory birds that breed in the northern US and Canada during spring and summer and spend fall and winter along the Gulf Coast (USFWS 2001). Piping plovers are known to nest in three general areas in North America: the shores of the Great Lakes, the Atlantic Coast, and the rivers and lakes of the Great Plains (USFWS 2001).

The Project area is not within the wintering or breeding range of the piping plover, but does occur within the potential migratory path of the species. Suitable stopover habitat for the piping plover during spring (March through May) and fall (July through September) migration is described as in sandbars of major rivers, salt flats, and mudflats of reservoirs (USFWS 2003). The Project area does not support suitable stopover habitat; therefore, the species is not expected to use the Project area as stopover habitat during its spring and fall migration. No piping plovers were observed during any of the biological surveys conducted for the Project, and no documented wind fatalities of the species are known to have occurred throughout the migratory range of the species.

Sharpnose Shiner and Smalleye Shiner. Historically, both the sharpnose and smalleye shiner occurred along most of the Brazos River and parts of its major tributaries. Currently, the range of both species is limited to the Upper Brazos River and its major tributaries (USFWS 2015b). Additionally, the Project area lacks suitable habitat (perennial streams) to support the sharpnose shiner and the smalleye shiner. Based on the lack of suitable habitat and the current distribution of the two species, neither the sharpnose shiner nor smalleye shiner would not to occur in the Project area and that the construction and operation of the Project would have no effect on either species.

State-listed Species. Section 68.015 of the Texas Parks and Wildlife Code states that no individual may capture, trap, take, or kill, or attempt to capture, trap, take or kill, state-designated endangered wildlife. Take is defined by Section 1.101(5) of the Texas Parks and Wildlife Code as "*Take, except as otherwise provided by this code, means collect, hook, hunt, net, shoot, or snare, by any means or device, and includes an attempt to take or pursue in order to take.*"

Based on a review of the TPWD's occurrence data for state-listed species and excluding federally listed species, four state-listed threatened species (bald eagle, peregrine falcon, Palo Duro mouse, and Texas horned lizard) were identified to have the potential to occur Floyd County (TPWD 2012; see Table 4-4).

American Peregrine Falcon. The American peregrine falcon, a subspecies of the peregrine falcon, is listed as endangered by the TPWD. The American peregrine

falcon nests in western Texas in the Trans-Pecos region, and winters along the Gulf Coast, and may potentially be found throughout Texas during migration (TPWD 2012). It is unlikely that a peregrine falcon would be in the Project area during its spring or fall migration except possibly during wet periods with waterfowl concentration associated with playas. No peregrine falcons where observed during any of the biological surveys conducted for the Project.

Bald Eagle. The bald eagle is listed as threatened by the TPWD. The discussion of bald eagles is included prior in this EA under the discussion of BGEPA earlier in Section 4.4.6.1.

Palo Duro Mouse. The Palo Duro mouse is listed as threatened by the TPWD. The Palo Duro mouse is found in steep, rocky, canyon walls typically having only a few juniper trees and very little grass (TPWD 2012). Due to lack of suitable habitat within the Project area to support the Palo Duro mouse, the species is not expected to occur within the Project area.

Texas Horned Lizard. The Texas horned lizard is listed as threatened by the TPWD. The Texas horned lizard is found throughout Texas with its range extending from northern Mexico through the south-central US. The preferred habitat of the Texas horned lizard is arid and semiarid habitats, characterized by open areas with sparse plant cover and loose sandy or loamy soils (TPWD 2012). Texas horned lizards are generally active in the Panhandle of Texas from mid-April through September. Though the Project area does not support typical habitat for the species, there is the potential for marginal habitat to be present in non-farmed areas. Due the potential presence of marginal habitat to support the Texas horned lizard, there is low potential for the species to occur within the Project area.

4.4.6.2 Environmental Consequence of the Proposed Action

Construction Impacts

Potential impacts to wildlife species from the construction of the Project area could result from ground-disturbance activities, vehicle travel, and inadvertent spills. These impacts would range between negligible to minor in nature and would be temporary to short-term in duration.

Ground-disturbance activities would result in small, localized reductions of cover, foraging, breeding, and nesting habitat for some wildlife. The impact on species that commonly inhabit cultivated croplands would be relatively minor and short-term because these areas are regularly disturbed and would be replanted during the growing season following construction in all areas not occupied by Project's aboveground permanent infrastructure (i.e., WTGs and associated access roads, electrical substation, MET tower, and associated access road). In addition, the amount of wildlife habitat disturbed during construction would constitute a very small percentage of available similar habitats in the adjacent landscapes.

To mitigate the impacts resulting from ground-disturbance activities, CPW would clear all of the nonagricultural crop vegetation within the construction footprint prior to or after the bird nesting season, which is approximately mid-March through August in this region, or if the clearing of vegetation would occur during bird nesting season, CPW would conduct nest clearance surveys prior to ground-disturbance activities to avoid impacts to nesting birds. Based on the current Project schedule, CPW would clear vegetation (grading, stripping or mowing) of nonagricultural habitats in late February. Additionally, the Project has been designed to minimize the acreage of land that would be impacted.

Trenching and excavation activities during construction could create potential traps for wildlife species, as wildlife could fall in and be trapped within trenches or excavations resulting in injury or mortality. To mitigate this impact, trenches and excavations left open overnight will be inspected prior to filling to remove any trapped wildlife. WTGs have been sited to avoid direct impact to prairie dog colonies and other Project infrastructure would be microsited in the field to avoid or minimize impacts to black-tailed prairie dog colonies. Impacts to wildlife from trenching and excavation activities would be short-term and minor.

The temporary increase in noise and visual activity due to construction activities could result avoidance and displacement of wildlife from the landscape within and adjacent to the Project area. Due to the short duration of the construction activities and the availability of similar habitat in the adjacent landscape, impacts to wildlife from the avoidance and displacement would be short-term and minor.

Traffic on paved and unpaved roads during construction could cause an increase in wildlife vehicle collisions. Highly mobile species could experience an increase in direct mortality from increased vehicle traffic on roads that would be used during construction. Due to the short timeframe of construction, impacts on wildlife from increased vehicular traffic are expected to be minor.

Additional mitigation measures that would be implemented by CPW during construction to avoid or minimize impacts to wildlife species are:

- Dispose wildlife carrion and livestock carcasses detected onsite, as practical. This measures minimizes availability of food to scavenging birds,
- Restore disturbed areas to native vegetation or agricultural use, consistent with landowner directives. This measure minimizes habitat conversion, spread of non-native vegetation, and duration of habitat loss,
- Store food-related trash and waste in containers and remove on a regular basis. This measure reduces the attractiveness of the Project to avian scavengers and their prey, and
- Adhere to federal and state measures for handling toxic substances. This measure will minimize danger to water and wildlife resources from spills.

Operational Impacts

The operation of the Project could result in the injury or mortality of bird and bat species due to collision with the spinning WTGs. A number of factors affect the probability of a bird colliding with a turbine, such as flight height, weather, and turbine avoidance behaviors. The National Wind Coordinating Collaborative (NWCC) has compiled overall bird fatality rates (number of fatalities/MW/year) of 63 wind energy facilities across North America that provide published post-construction fatality data (Strickland et al., 2011). Based on this compilation, overall bird fatality rates are relatively similar across North America (bird fatality was less than or equal to three fatalities/MW/year in 42 of the 63 studies), though passerine fatality rates may be higher in the Midwestern and Eastern US (Strickland et al. 2011). Overall bird fatality rates were found to be similar across land cover types (agricultural: 37 facilities, 2.80 birds/MW/study period; grassland: 20 facilities, 2.41birds/MW/study period; forested landscapes: nine facilities, 3.27birds/MW/study period) (Strickland et al. 2011).

The results of the pre-construction bird surveys conducted between 2013 and 2014 found that the composition of the bird community for the Project area is representative of an agricultural dominated landscape. The results of the surveys indicate that there is a low abundance of raptor species, the Project area is not within a major migratory pathway, and that the majority of bird observations were individuals located below the rotor-swept area. In general, migrating birds would pass over the Project area at heights much greater than the height of the any of the WTGs under consideration (see Table 2-3). In general, songbirds migrate between 500 and 6,000 feet AGL, shorebirds from 1,000 to 13,000 feet AGL, waterfowl from 200 to 4,000 feet AGL, and raptors from 700 to 4,000 feet AGL (Smithsonian Institution 2009). Based on these conclusions and the incorporation of the estimated fatality rate for agricultural and grassland habitats that the bird use of the Project area does not represent a high risk for collision events (Strickland et al. 2011). This evaluation would apply to any of the potential WTG models that are under consideration by CPW (see Table 2-3). Additionally, waterfowl and waterbirds are rarely documented as collision fatalities at operating wind projects (Strickland et al. 2011).

The results of the Project's eagle surveys, results of regional studies, and the general topography and habitat of the Project area and its distance from the canyon like topographic features to the west of the Project area indicate that the long-term impacts to eagles from the operation of the Project would be negligible.

The varying models would result in changes to the total rotor-swept area of the Project due to any combination of the total number of turbines, total height of the WTG, and blade length, as well as the overall rotational speed of the blades. However, the difference due to WTG model specification would have a negligible change in the anticipated risk of bird impacts due to collisions.

Additional mitigation measures that would be implemented by CPW during construction to avoid or minimize impacts to bird species are:

- Site WTGs in upland agricultural habitats, away from playas and prairie dog towns. This measure reduces attractiveness of the site to birds and minimizes risk of collision-related impact,
- Bury collection lines between WTGs and to the substation to the maximum extent practicable. This measure minimizes collision risk and electrocution hazards within the Project area,
- Mark permanent MET tower guy wires with bird flight diverters. This measure minimizes collision risks,
- Use existing roads to the maximum extent practicable. This measure minimizes conversion of natural areas to Project infrastructure (habitat loss),
- Maintain a minimum separation distance between individual WTGs of approximately 0.2 mile to minimize turbulence effects and allow clear passage for birds using the area. This measure reduces collision risk for birds by allowing ample space for birds to fly between the WTGs and avoid hazardous areas,
- Install downward projecting lights that are activated by motion sensors on electrical substation and inside WTGs towers. This measure minimizes attractants,
- Ensure that lights inside WTGs are turned off at night. This measure minimizes attractants to birds,
- Utilize current FAA recommendations for WTG lighting of red strobes at night with long off intervals. This measure minimizes attractants to nocturnal birds,
- Dispose wildlife carrion and livestock carcasses detected onsite as practical and store food related waste in self-closing containers and remove on a regular basis. This measures minimizes availability of food to scavenging raptors, and
- Train operation and maintenance staff regarding the importance of minimizing impacts to wildlife. This measure helps increase awareness of potential impacts and inadvertent creation of hazardous conditions (e.g., accidently leaving lights on).

Compared to the data collected on bird collisions with WTGs, the effect of bat fatalities due to WTGs on populations as a whole is largely not well understood. Patterns of bat fatality have shown that wind energy facilities in the eastern US have reported the highest fatality rates, while Midwestern developments generally report lower rates, although these rates vary (Miller 2008; Strickland et al. 2011). The NWCC compiled the results of 63 studies that provide annual estimates of post-construction bat fatalities at wind energy facilities (Strickland et al. 2011). Most of these studies (54) found bat fatality rates of less than 10/MW/study period (Strickland et al. 2011). However, the mechanism(s) behind these fatality

patterns have not been definitively defined. There are various hypotheses that consider bats to be potentially attracted to wind turbines for foraging, roosting, or because of visual or auditory curiosity (Arnett et al. 2008; Strickland et al. 2011). Fatality studies have shown that bat fatality from WTGs occurs most frequently during late summer (mid-July through September), within the fall migration period for many bat species. For the three bat species with the highest fatality rates (i.e., hoary bat, eastern red bat, and silver-haired bat), the spring migration period is generally between early April and mid-June and the fall migration period is from mid-July through November (Cryan 2003; Arnett et al. 2008). Although bat activity measured at the Project is relatively moderate, CPW has sited WTGs away from playas where bats are likely to feed more prevalently and will feather WTG blades up to manufacture's recommended cut-in speed from sunset to sunrise from July 15 to October 30, which is documented to reduce risk to bats (Horn et al. 2008; Arnett et al. 2011).

The results of the acoustical bat surveys concluded that the Project area indicate that bats do use the Project area and the rate of bat calls recorded are similar to those rates recorded at other wind energy facilities with the region (Poe 2015). The documented fatality rates of bats at wind energy facilities within the region of the country have been low (Poe 2015). The operation of the Project would result in long-term risk of bird and bat collision with the spinning blades; however, the results of the Project's acoustical surveys, results of regional fatality studies (Poe 2015), and the general topography of the Project area and its distance from the canyon like topographic features to the west of the Project area indicate that the long-term impacts would be minor.

This evaluation would apply to any of the potential WTG models that under consideration (see Table 2-3) by CPW. The varying models would result in changes to the total rotor swept area of the Project due to any combination of the total number of turbines, total height of the WTG, and blade length, as well as the overall rotational speed of the blades. However, these differences due to WTG model specification would have a negligible change in the anticipated risk of bat impacts due to collision.

Based on the results of field surveys and the habitat and behavioral characteristics of the federally listed species that have the potential to occur in Floyd County, the construction and operation of the Project is not anticipated to result in adverse impacts to federally listed threatened and endangered species or their habitat. Therefore, formal Section 7 consultation may not be required. The construction and operation of the Project would have no effect on the whooping crane, interior least tern, red knot, piping plover, sharpnose shiner, and smalleye shiner.

The construction and the operation of the Project is not anticipated to impact any of the state-listed threatened and endangered species identified as having the potential to occur in Floyd County, except possibly for the Texas horned lizard. To mitigate the potential impacts to the Texas horned lizard, CPW will adhere to TPWD recommendations by limiting speeds of moving equipment to 15 miles per

hour or less on Project roads constructed in natural (non-agricultural) habitats during the active period (April 15 through September 30), and allowing Texas horned lizards to safely leave the site if found.

Based on the low risk conclusions for bird and bat risk during operation of the Project, CPW would conduct a bird and bat fatality study during the first year of operation in accordance with the Decision Framework for Tier 4a Fatality Monitoring of Species of Concern outlined in the WEG and with industry standards (USFWS 2012a). The scope of the fatality studies would include general bird and bat fatality and injury surveys consisting of transect surveys at approximately 15% of the WTGs twice per month, and visual inspection of roads and turbine pads twice per month at approximately 50% of WTGs. Additionally, opportunistic discovery of fatalities by operations personnel would be recorded. The fatality studies would be conducted year-round to ensure the assessment of both the spring and fall migratory periods for birds and bats, bird nesting season, summer, and winter. A summary of results will be presented to the USFWS for review and discussion.

Based on the results of the fatality study, adaptive management would be developed and implemented to address identified Project specific causes of mortality, and if necessary, to further avoid, minimize, and mitigate for unexpected impacts. The following adaptive management framework would be implemented if appropriate based on findings:

- CPW would meet and confer with the USFWS and TPWD to discuss monitoring results.
- Adaptive management measures, if necessary, would be determined from the site-specific assessment and would focus on impacts that may be reasonably considered to cause significant population-level impacts.
  - In response to any potentially significant impacts, CPW, USFWS, and TPWD would evaluate the data to determine if practicable measures to address impacts are necessary.
  - In the response to any mass casualty event, CPW, USFWS, and TPWD would determine the appropriate corrective action.
- Adaptive management responses or mitigation would be commensurate with identified impacts, and would be limited to activities that do not affect wind energy production.

If species protected under the federal ESA or BGEPA are discovered at the Project area, CPW or its representatives will contact the USFWS within one business day, or as soon as possible thereafter in the event of unique circumstances that would prevent such immediate contact.

4.4.6.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, no impacts to vegetation, fish and wildlife, or threatened, endangered, or other species of concern would occur from activities associated with the Proposed Action. The land would continue to be utilized for agricultural purposes.

4.4.7 Cultural Resources

The following paragraphs provide a summary of the general condition and character of cultural resources found within the Proposed Action footprint, as well as a description of potential impacts upon more specific descriptions of the existing conditions of cultural resources in the vicinity of the areas where the proposed Project would be implemented. Expected cultural resource impacts are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.7.1 Existing Environment

The NHPA and its implementing regulations (36 CFR Part 800) created the National Register of Historic Places (NRHP) and the Advisory Council for Historic Preservation (ACHP). Section 106 of the NHPA requires that all federal agencies take into account the effect of an undertaking on cultural resources listed or eligible for listing on the NRHP (known as historic properties). Therefore, the Proposed Action is subject to review under Section 106 of the NHPA.

For the Section 106 review of the Project, the Area of Potential Effects (APE) was defined based on consultation with the Texas Historic Commission (THC). The APE for archeological resources is defined as the construction footprint and for infrastructure facilities with a height of over 400 feet; the APE is 1.5 miles from the structure.

The archaeological record of the Texas High Plains indicates that the region has played host to human activity for well over 15,000 years. During the prehistoric period, Paleo and Archaic habitations sites were concentrated on the higher elevated mounds and ridges surrounding playa lakes and other seasonal and permanent bodies of water where wild game was largely plentiful.

During the early historic period, the Project area was frequented by members of the Comanche, Kiowa, and Apache tribes. These inhabitants were linked to the Athapaskan (Apache), Uto Aztecan (Comanche), and Tanoan (Kiowa) linguistic groups. The earliest written accounts of these tribes occurred in the 17th to 18th centuries when the French and Spanish began to slowly encroach upon the region. With these European inroads, horses, metal weapons, firearms, and small pox were introduced for the first time.

Based on a search of previously identified cultural resources within and adjacent to the Project area identified one recorded archaeological site within the Project area (Site 41FL22) and three additional recorded archeological sites within one

mile of the Project boundary (Sites 41FL36, 41FL40, and 41FL98). None of four sites have been formally evaluated for their eligibility to the NRHP and would be avoided through Project design; therefore, the sites would not be impacted by the construction or operation of the Project.

The desktop review also identified two NRHP-listed sites located within the general vicinity of the Project area. The Quitaque Railway Tunnel is located approximately 19 miles to the northeast and the Traweek House is located approximately 24 miles to the east. Both of these sites are located outside of the APE. Additionally, the Floydada Cemetery is located 4.2 miles west of the Project area, but outside of the APE.

4.4.7.2 Environmental Consequence of the Proposed Action

The construction and operation of the Project is not anticipated to impact known NRHP registered or unevaluated cultural resources.

Discoveries of previously unidentified resources during construction would follow the procedures outlined in the Project's Unanticipated Discovery Plan to be prepared for the Project in coordination with the THC.

4.4.7.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to cultural resources would occur with this alternative

4.4.8 Environmental Justice and Socioeconomic Issues

An Environmental Justice evaluation consists of identifying minority and low-income populations, conducting an analysis of environmental effects on minority and low-income communities (to include social, economic, and human-health effects), and proposing measures to avoid, minimize, and/or mitigate disproportionately high and adverse environmental and public-health effects and related socioeconomic effects for communities, neighborhoods, and individuals affected by federal programs, policies, and activities. Where possible, alternatives that would result in avoiding or minimizing disproportionately high and adverse human-health or environmental impacts were considered throughout the project-planning process. As required by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, this section discusses project-related socioeconomic impacts for the Proposed Action and the No Action Alternative. EO 12898 is intended to promote a review of the distribution of minority and low-income communities within a project area to determine whether these neighborhoods would be disproportionately affected by a proposed project. The intent of assessing environmental justice is to identify and thereby avoid, minimize, or mitigate significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities. For the purpose of this EA, United States Census data were used to identify areas with high minority and low-income population concentrations.

4.4.8.1 Existing Environment

According to the 2010 census Floyd County had a population of 6,446, and population estimated models indicate that the County's population is decreasing with a 2014 estimate of 5,949 people, a 7% decrease (U.S. Census Bureau, 2015a). The closest city to the Project area is the city of Floydada, which had an estimated population of 2,942 people in 2013.

The majority of the population in Floyd County (54.4%) is between the ages of 18 and 65. Residents of Floyd County from 2009 through 2013 have a mean household income of $42,279, and 20.3% of the population is below the poverty level (U.S. Census Bureau 2015b).

The population of Floyd County is comprised of approximately 6% by minority populations (all people of color, exclusive of white non-Hispanics) with black or African American accounting for the large percentage (3.9 %; U.S. Census Bureau 2015b). Of the County's total population, 54.6% of the individuals are of Hispanic heritage.

4.4.8.2 Environmental Consequence of the Proposed Action

Construction and Operational Impacts

Negligible adverse impacts to socioeconomics are anticipated from the construction and operation of the Project. The construction and operation of the Project is not anticipated to disproportionally impact minority populations or low-income housing.

Short-term and long-term beneficial impacts would accrue from employment associated with Project construction, operation and maintenance, as well as lease revenues payable to site owners. During construction, there would be the short-term influx of construction staff that would generate income for the local business and communities.

4.4.8.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to environmental justice and socioeconomics issues would occur with this alternative.

4.4.9 Energy/Utilities

The following paragraphs provide a summary of the general condition and character of the utility systems found within the Proposed Action footprint, as well as a description of potential impacts to the existing conditions of the utility systems in the vicinity of the areas where the Proposed Action would be constructed. Expected impacts to existing utility systems are identified and evaluated for each alternative, including the No Action Alternative.

4.4.9.1 Existing Environment

The existing utility infrastructure within the Project area is comprised of the necessary components to serve the existing residences and agricultural facilities.

The White River Substation, owned by Sharyland Utilities, L.P. is located on the northeastern boundary of the Project area along County Road 200, just east of the proposed location of the Project's electrical substation.

4.4.9.2 Environmental Consequence of the Proposed Action

Construction and Operational Impacts

The construction and operation of the Project would not burden the existing utilities within the Project area or those associated with the city of Floydada or Floyd County. The Project would not use or require any upgrades to local wastewater treatment plants, potable water systems, natural gas or electrical infrastructure.

The operation of the Project would require the construction of a new substation in order to collect the energy from the Project WTGs and deliver it the ERCOT grid. There would be no additional aboveground transmission lines constructed to interconnect the WTG collection line system to the Project's proposed electrical substation, as all of the new 34.5 kV line would be installed underground. The potential environmental impacts due to the installation and operation of the collection line system are addressed as part of the analysis of the relevant VECs.

The operation of the Project would result in the beneficial long-term impact to the Army by increasing the diversity of electrical energy sources available to Fort Hood, and help the Army comply with the Energy Policy Act of 2005. The nameplate capacity of the Project would be approximately 50.6 MWs, with the annual production committed to Fort Hood from the Project would equal or exceed approximately 200,000,000 kwh/yr for 28 years.

4.4.9.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to existing utilities would occur with this alternative. If the No Action Alternative were selected, the Army would need to seek other renewable energy opportunities to diversify the electrical energy sources to Fort Hood to offset the approximately 50.6 MWs of renewable energy that would be produced by the Proposed Action.

4.4.10 Transportation

The following paragraphs provide a summary of the general condition and character of the transportation systems found within the Proposed Action footprint, as well as a description of potential impacts to the existing conditions of the transportation systems in the vicinity of the areas where the proposed Project would be implemented. Expected impacts to existing transportation systems are identified and evaluated for each alternative, including the No Action Alternative.

4.4.10.1 Existing Environment

There is an existing network of roads within the Project area. The largest road through the Project area is US Highway 70, which run east to west through the

southern portion of the Project area. This road would likely be the primary road used by the construction staff and management residing in the city of Floydada and by the delivery of construction equipment and project components (e.g., turbines, substation components) arriving to the Project area from the east. From US Highway 70, incoming construction equipment and Project infrastructure would likely head north along Farm-to-Market (FM) Road 602, then west on County Road 220 to arrive at the temporary laydown area. Access to the Project would also occur from multiple county roads that traverse the Project area in a grid format. All of the county roads within the Project area are unpaved, dirt roads.

4.4.10.2 Environmental Consequence of the Proposed Action

Impacts to the local traffic during construction would be short-term and minor. During construction, there would be an increase in off-site traffic, with some oversized and overweight loads (delivery of WTG components and large cranes) on US Highway 70, FM 602, and the multiple county roads with the Project area, which may require traffic management considerations such as flaggers, escort vehicles, and travel time restrictions. These activities would not be expected to cause sufficient change in traffic to result in more than a temporary inconvenience to adjacent landowners, or the users of US Highway 70, FM 602, and the multiple county roads with the Project area. The following is an estimate of the number of trucks trips that would occur to deliver the needed Project infrastructure to the Project area:

- WTG components - 10 trucks trips for each WTG;
- Concrete - 75 truck trips per each WTG;
- Road aggregate - 25 truck trips; and
- Electrical substation and collection system - 150 truck trips.

The road infrastructure would be inspected prior to construction to ensure that the roads, bridges, and cattle guards would be able to withstand oversized vehicle use during construction. Road improvements, if needed, such as blading and filling, would generally be restricted to the existing road footprint; however, some roads may require widening in some areas. During construction to accommodate the turning requirement of the oversized loads, CPW would modify existing intersections as necessary to allow for extra turnout space. To assess the potential impacts due to temporary turnouts, this EA has assumed a temporary turnout would be necessary at all 18 road intersections identified in Figures 2-1 and 2-2. The total temporary impact due to the necessary ground-disturbance activities for the temporary turnouts would be 20.05 acres (see Table 2-2).

To the extent CPW is required to conduct maintenance of any county or state roads and required to utilize oversized or overweight loads to transport Project infrastructure, the work would be done in compliance with all required county and

state transportation permits and with any future bond agreements with Floyd County.

Operation of the Project would have negligible impacts transportation resources within or adjacent to the Project during to routine maintenance activities.

4.4.10.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to transportation systems would occur with this alternative.

4.4.11 Air Space

The following paragraphs provide a summary of the general condition and character of the existing air space found within the Proposed Action footprint, as well as a description of potential impacts to the existing conditions of the air space in the vicinity of the areas where the proposed Project would be implemented. Expected impacts to existing airspace are identified and evaluated for each alternative, including the No Action Alternative.

4.4.11.1 Existing Environment

The closest airport to the Project area is the Floydada Municipal Airport, a small, single runway airport located approximately 3.4 miles to the west of the Project area. Federal Regulation Title 14 Part 77 (14 CFR Part 77) requires that any new or modified structure with a height of greater than 200 feet AGL, be evaluated by the Federal Aviation Administration (FAA) to ensure that the structure does not adversely impact navigable airspace. To be in compliance, CPW would file Form FAA 7460-1 (*Notice of Proposed Construction or Alteration*) for the proposed turbine locations, followed by Form FAA 7460-2 (Supplemental Notice) within 10 days prior to construction to no more than five days after the structure reaches maximum height. Upon review, the FAA would determine that the location of the WTGs does not adversely impact navigable airspace. Form 7460-1 is planned for submittal in mid-August 2015.

4.4.11.2 Environmental Consequence of the Proposed Action

Negligible impact to airspace navigation would result from the construction and the operation of the Project. The Project will comply with 14 CFR Part 77. The marking and lighting of WTGs would be in accordance with FAA issued conditions for the Project.

4.4.11.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, the Proposed Action would not occur; therefore, no impacts to the existing airspace would occur with this alternative.

4.4.12 Hazardous and Toxic Substances

The following paragraphs provide a summary of the general condition and character of hazardous and toxic substances found within the Proposed Action footprint, as well as a description of potential impacts that hazardous and toxic substance could have on resources in the vicinity of the areas where the proposed

Project would be implemented. Expected impacts resulting from hazardous and toxic substances are identified and evaluated for each alternative, including the No Action Alternative. Measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are also discussed when applicable.

4.4.12.1 Existing Environment

A hazardous substance is any material or agent (biological, chemical, or physical) that has the potential to cause harm to humans, animals, or the environment, either on its own or through interaction with other factors. These materials are identified with terms such as the terms "hazardous material," "toxic substance," and "hazardous waste" can be used to emphasize that they are all hazardous substances that may present a substantial threat to public health, welfare, and the environment.

Hazardous substances are defined and regulated in the United States primarily by laws and regulations administered by the U.S. Occupational Safety and Health Administration (OSHA); the USEPA; and the U.S. Department of Transportation. Each agency incorporates hazardous-substance terminology in accordance with its unique Congressional mandate; therefore, the OSHA regulations categorize substances in terms of their impacts on employee and workplace health and safety; the U.S. Department of Transportation regulations categorize substances in terms of the safety in transportation; and the EPA regulations categorize substances in terms of protection of the environment and public health.

Subsurface contamination and waste materials are regulated according to several federal and state statutes, including USEPA regulations under the CWA (administered by TCEQ); Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation and Liability Act; and regulations concerning asbestos-containing materials. OSHA regulates the protection of worker safety and health in the workplace. OSHA regulations, including regulations pertaining to Hazardous Waste Operations and Emergency Response, asbestos, and lead-based paint, may apply to workers involved in construction. The TCEQ regulations regarding the Land Recycling Program, Storage Tank and Spill Prevention Act, Solid Waste Management Act and groundwater discharge are also applicable to construction actives.

Based on a review of aerial imagery, the Project area lacks typical land use such as oil and gas exploration or industry that can result in the contamination of the land. There is no known presence of hazardous materials, other than those that may be naturally occurring. Prior to the construction of the Project, CPW would conduct a Phase I Environmental Site Assessment of the site to identify potential man-made conditions that could pose a threat to the environment, health, or safety. Responsibilities regarding hazardous materials and hazardous wastes generated in the construction or operation of the Project or located within the Project area would belong to CPW and their contractors.

4.4.12.2 Environmental Consequence of the Proposed Action

Inadvertent spills during construction could result in the contamination of soils. Mitigation and remediation measures outlined in the Project's SPCC Plan would be implemented if an inadvertent spill occurs. Impacts from such spills impacts would be short-term and negligible to minor. The SPCC Plan would also apply to the storage or use of any relevant hazardous material onsite during construction. The SPCC Plan would be completed prior to the initiation of construction and would be in accordance with the appropriate state and federal regulations.

During the operation of the Project, each WTG nacelle contains approximately 50 gallons of glycol-water mix, 85 gallons of hydraulic oil, and 105 gallons of lubricating oil. During normal operations, there is the potential for small leaks of these operating fluids from the nacelle. Any inadvertent leak could result in minor, short-term impacts if the fluids were to come in contact with soil, plant, water or wildlife resources. The potential impact of inadvertent leaks would be mitigated by the regular maintenance inspections of the Project and the monitoring of the WTGs. Typical maintenance activities would include the monitoring of the WTG nacelle fluid levels and topping off fluids based on the manufacturer maintenance manual. Routine monitoring of operational fluids in the nacelle would reduce the likelihood of inadvertent spills.

The use of any of the alternate Project infrastructure identified in Table 2-1 would result in no changes to the type, magnitude, or duration of the described impacts due to hazardous materials or wastes used for the construction and operation of Project.

4.4.12.3 Environmental Consequence of the No Action Alternative

With the No Action Alternative, items detailed within the Proposed Action would not occur therefore, no impacts resulting from the introduction of new hazardous and toxic substance to the existing environment would occur with this alternative.

5 Cumulative Impacts

5.1 Introduction

Cumulative impacts, both positive and negative, represent the incremental impact of a proposed action when added to other past, present, and/or reasonably foreseeable future actions, regardless of what agency, organization, or person undertakes such other actions (CEQ 1997; see 40 CFR Section 1508.7). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a given time period. Analyses of cumulative impacts can be used to modify actions if impacts are avoidable, determine if additional or more appropriate mitigation is warranted, or identify effective monitoring for any impacts of concern.

This cumulative impacts analysis describes potential cumulative impacts that could result from construction of the Project. As part of this analysis, past, present, and/or reasonably foreseeable future wind projects were identified. The analysis considered activities within the Areas of Interest (AOI), which is defined as Floyd County, and the directly adjacent counties; and Swisher, Briscoe, Motley, Dickens, Crosby, Lubbock, and Hale counties.

5.1.2 Past, Present, and Reasonably Foreseeable Projects

Substantial existing, under construction, proposed, or announced wind projects that were considered in the cumulative impacts analysis are listed in Table 5-1. The identified wind projects in the AOI are not anticipated to have cumulatively significant impacts (40 CFR Section 1508.25(a)(2)) with the Project. A summary of potential cumulative impacts by resource is provided below.

Table 5-1 Cumulative Impacts Past, Present, and Reasonably Foreseeable Projects

Type	Name	Company	Location	Total MWs	Area (acres)	Constructed (Y/N/IP)	Initial Date of Operation	Projected Construction Start
Wind	Hale Community Energy	Tri Global Energy, LLC	Hale County	1,100 MW	120,000	N	N/A	Late 2015
Wind	Lubbock Wind Ranch	Cielo Wind Power	Lubbock County	7.5 MW	80	Y	2011	N/A
Wind	PYCO Industries	PYCO Industries	Lubbock County	10 MW	N/A	Y	2008	N/A
Wind	McAdoo	Invenergy	Dickens County	150 MW	N/A	Y	2008	N/A
Wind	Whirlwind Energy Center	RES Americas	Floyd County	60 MW	N/A	Y	2007	N/A
Wind	Longhorn North Wind Project	RES Americas	Briscoe County	200 MW	N/A	Y	2015	N/A
Wind	Bull Creek Wind Farm	RES Americas	Borden County	180 MW	N/A	Y	2008	N/A
Wind	South Plains Wind Energy	Tri Global Energy, LLC	Floyd County	500 MW	50,000	IP	2015	2014
Wind	Cone Renewable Energy Project	Tri Global Energy, LLC	Crosby and Floyd Counties	250 MW	33,512	N	N/A	2017
Wind	Crosby County Wind Farm	Tri Global Energy, LLC	Crosby County	160 MW	16,000	N	N/A	2016
Wind	Fiber Winds Energy Project	Tri Global Energy, LLC	Crosby County	80 MW	11,195	IP	N/A	Fall 2015
Wind	Ralls Wind Farm	Ralls Corp	Ralls County	10 MW	N/A	Y	2011	N/A
Wind	Old Settler Wind Project	Old Settler Wind, LLC	Floyd County	150 MW	N/A	N	N/A	2016

Key:
MW = megawatt
Y = yes
N = no
IP = in progress
N/A = not available

The proposed Old Settler Wind Project identified in Table 5-1 is a 150 MW nameplate capacity middle-stage development wind project located in Floyd County, Texas that is expected to be located in close proximity to the Project. The Old Settler Wind Project will interconnect into the White River 345 kV substation on the newly energized competitive renewable energy zone (CREZ) Silverton-to-Cottonwood 345 kV line, which is owned by Sharyland Utilities, L.P. The Old Settler Wind Project is located within both the ERCOT and the Southwest Power Pool transmission organization territory and would interconnect into the ERCOT grid pursuant to a Generator Interconnection Agreement with ERCOT and Sharyland Utilities, L.P. that has been fully negotiated and executed by Old Settler Wind, LLC. The Old Settler Wind Project is expected to have all required discretionary permits for its construction and operation by the end of 2016.

5.1.3 Potential Cumulative Impacts by Valued Environmental Component

5.1.3.1 Land Use and Visual Resources

Impacts to terrestrial vegetation from the construction and operation would largely be short-term and minor. Most of the acreages disturbed during construction would be returned to the original condition of cultivated crops or grasslands. For the long-term impacts of the Project, only the 15.13 acres required for the footprint of the facilities (i.e., turbines, permanent access roads, MET tower, and substation) would be disturbed. This loss of habitat would result in negligible impacts due to the current management of the land in agriculture, and the relatively small size of the area of impacted compared to the abundant availability of similar land cover types in the surrounding landscape.
The incremental impact of the Project on land use, when added to those from actions of a similar nature, would be minor.

Operation of the Project would result in minor long-term impacts to visual resources. The topography in the region is relatively flat, and man-made objects can generally be seen at moderate distances. Installation of the 21 wind turbines would be the primary contributing impact to the viewshed. The surrounding viewshed of Floyd County as well as the AOI is already populated by existing wind energy facilities. Therefore, the Project would contribute to a cumulative change to the existing visual characters of the region.

The incremental impact of the Project on visual resources, when added to those from actions of a similar nature, would be moderate.

5.1.3.2 Air Quality and GHG

Emissions produced as a result of the construction and operation of Project would result in negligible and short-term impacts to air quality. Fugitive dust would be created during construction. The use of dust abatement BMPs would reduce the amount of dust created during the construction of the Project, resulting in only

minor, short-term impacts. Operation of the Project would not result in impacts due to fugitive dust.

The incremental impact of the Project on Air Quality and GHGs, when added to those from actions of a similar nature, would be negligible.

5.1.3.3 Noise

Noise generated during construction would be temporary and localized to those locations where construction activity occurs. The operation of the Project would result in a long-term increase to ambient noise levels of the Project area and the adjacent landscape.

The incremental impact of the Proposed Action on noise, when added to those from actions of a similar nature, would be minor. To address potential long-term impacts to noise sensitive receptors resulting from turbine operation, wind turbine locations were designed such that turbines are a sufficient distance from a occupied residence that the attenuation of turbine noise at this distance would result in noise levels reaching at most 47 A-weighted dBA at nonparticipating residences.

The incremental impact of the Project on existing noise environment, when added to those from actions of a similar nature, would be minor.

5.1.3.4 Geology and Soils

Impacts to geology and soils from the construction and operation would largely be short-term and minor. Based on the temporary nature of construction and the overall scale of the Project, soil erosion impacts would be short-term, minor, and localized to the construction footprint. BMPs would be implemented to minimize impacts due to erosion and the areas of temporary disturbance would be reclaimed following construction. For the long-term impacts of the Project, only the 15.13 acres required for the footprint of the facilities (i.e., turbines, permanent access roads, MET tower, and substation) would be lost. This would result in a loss of a relatively small amount of prime farmland impacted when compared to its availability in the surrounding landscape.

The incremental impact of the Project on geology and soils, when added to those from actions of a similar nature, would be minor.

5.1.3.5 Water Resources

The operation of the Project would have no impacts to ground or surface waters; therefore, there will be no incremental impact of the Project.

5.1.3.6 Biological Resources

Overall, the construction and operation of the Project would result in a negligible loss of wildlife habitat due to the small size of the construction footprint. Additionally, the majority of the habitat that will be temporarily disturbed or

permanently removed is cultivated crops, which is not considered prime wildlife habitat.

The operation of the Project, combined with the operation of the other wind energy projects in the AOI, would impact bird and bat species likely to collide with WTGs, transmission lines, and MET towers and reduce habitat at a level commensurate with project footprints; however, it is not likely to result in adverse cumulative impacts. The results of the pre-construction bird surveys indicate that the bird use of the Project area does not represent a high risk for collision events. Surveys on the Project site indicate that there is a low incidence of raptor use, the Project area is not within a major migratory pathway, and the majority of bird observations were of individuals located below the rotor-swept area. Additionally, no golden or bald eagles were recorded, even on a transient basis, within the Project boundaries. Data from the surrounding area indicate occasional use by bald and golden eagles in the vicinity. Based on these data, the other wind projects] in the region may also present very low risk to eagles, and effects, if any, are expected to be negligible at the local or regional population level, and would not contribute to any adverse impacts. The results of the acoustical bat surveys indicate that bats use the Project area and the rate of bat calls recorded are similar to those rates recorded at other wind energy facilities. The documented fatality rates of bats at wind energy facilities within the region of the country have been low. Due to the small size of the Project and low risk to rare or special status species, incremental cumulative impacts from construction and operations of the Project on wildlife would be minor.

The construction and operation of the Project is not anticipated to result in adverse cumulative impacts to federally or state-listed threatened and endangered species or habitats that were identified as having the potential to occur within Floyd County. Therefore, there would be no incremental impact of the Project on biological resources, when added to those from actions of a similar nature.

5.1.3.7 Cultural Resources

The operation of the Project would have no impacts to historic properties, or such impacts would be mitigated in accordance with Fort Hood recommendations following consideration to the THC and Tribal Stakeholder comments; therefore, there will be no incremental impact of the Project.

5.1.3.8 Socioeconomics

Negligible impacts to socioeconomics from the construction and operation of the Project are anticipated. Short-term and long-term beneficial impacts would accrue from employment associated with Project construction, operation and maintenance, as well as lease revenues payable to site owners. During construction, there would be the short-term influx of construction staff that would generate income for the local business and communities. Similar benefits would be expected to result from the construction and operation of the other Projects in the AOI, and there would likely be a cumulative, beneficial impact to the counties within the AOI.

The incremental impact of the Project on socioeconomic resources, when added to those from actions of a similar nature, would be beneficial, though minor.

5.1.3.9 Energy/Utilities

The operation of the Project, when added to other Projects in the AOI, would have a positive long-term cumulative effect on the generation and availability of an alternative, renewable electrical energy resource.

The incremental impact of the Project on energy/utilities, when added to those from actions of a similar nature, would be beneficial, and moderate.

5.1.3.10 Transportation

Impacts to the local traffic during construction would be short-term and minor, while operational impacts would short-term and negligible. A cumulative impact could potentially occur if several of the proposed and planned projects were to be constructed at the same time. However, the spatial distance between these Projects would mean that most projects would utilize different haul routes, which would dilute the cumulative impacts for any one area.

The incremental impact of the Project on transportation, when added to those from actions of a similar nature, would be negligible.

5.1.3.11 Air Space

Due to the FAA regulatory requirements for permitting structures greater than 200 feet tall, the Project and projects within the AOI will have or will need to be issued a determination of not adversely impacting air space. Due to the lack of large commercial airports or military airports in the AOI, and due to this required FAA approval, it is not likely that the cumulative total of wind turbines would not significantly limit the future flight paths of aircraft in the region.

The incremental impact of the Project on air space, when added to those from actions of a similar nature, would be negligible.

5.1.3.12 Hazardous and Toxic Substances

During normal operations, there is the potential for leaks of operating fluids from the nacelle. Any inadvertent leak could result in minor, short-term impacts if the fluids were to come in contact with soil, water, or wildlife resources. The potential impact of inadvertent leaks would be mitigated by regular maintenance inspections of the Project and turbine monitoring. It is assumed that the operation of maintenance activities at other wind energy facilities in the AOI would implement similar measures to mitigate any impacts from inadvertent spills or leaks.

The incremental impact of the Project on hazardous and toxic substances, when added to those from actions of a similar nature, would be negligible.

6 List of Preparers

Table 6-1 List of Preparers

Name	Organization
Jason Zoller	Ecology and Environment, Inc.
Mike Donnelly	Ecology and Environment, Inc.
Katherine Guttenplan	Ecology and Environment, Inc.
Owen Wright	Ecology and Environment, Inc.

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8 Persons Consulted

8.1 Fort Hood – Directorate of Public Works

Timi Dutchuk, Chief
Environmental Division
Fort Hood, Texas

Riki Young, Chief
Environmental Management Branch
Fort Hood, Texas

Charlotte Baldwin, Program Manager
NEPA Program
Environmental Division
Fort Hood, Texas

Robert Kennedy, Program Manager
Air Quality / Noise
Environmental Management Branch
Fort Hood, Texas

Tim Buchanan, Chief
Natural/Cultural Resources Management Branch
Fort Hood, Texas

Brett M. Moule, PhD, Program Manager
Threatened & Endangered Species Team
Natural Resources Management Branch
Fort Hood, Texas

Amber L. Preston Dankert, EdD Program Manager
Wildlife Management Team
Natural Resources Management Branch
Fort Hood, Texas

Richard Jones, Archeologist Team Leader
Cultural Resources Team
Cultural Resources Management Branch
Fort Hood, Texas

Charles Pekins, Wildlife Biologist
Wildlife Management Team
Natural Resources Management Branch
Fort Hood, Texas

Ricky Robinson, Archeologist
Cultural Resources Team
Cultural Resources Management Branch
Fort Hood, Texas

Vicki Dean, Wetlands Biologist
Wildlife Management Team
Natural Resources Management Branch
Fort Hood, Texas

Kevin Cagle, Wildlife Biologist
Wildlife Management Team
Natural Resources Management Branch
Fort Hood, Texas

Sunny Wood, Archeologist
Cultural Resources Team
Cultural Resources Management Branch
Fort Hood, Texas

8.2 Reviewing Agencies

Ms. Yvonne Tyler
HQ IMCOM/G4 Environmental Division
2405 Gun Shed Road, Bldg 2261
Fort Sam Houston, TX 78234-2645

Mr. Michael P. Jansky
Regional EIS Coordinator, Office of Planning and Coordination
U S Environmental Protection Agency Region 6
1445 Ross Avenue
Suite 1200
Dallas, TX 75202-2733

Ms. Tiffany Osburn / Mr. Mark Denton
State Historic Preservation Officer
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276

Rick Hanson
Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
1702 Landmark Lane, Suite 3
Lubbock, TX 79415
Office: (806) 761-4936
Richard.Hanson@tpwd.texas.gov

Mr. Omar Bocanegra
US Fish and Wildlife Service
Ecological Services
WinSystems Center Building
711 Stadium Drive, Suite 252
Arlington, TX 76011

9 Acronyms and Abbreviations

ACHP	Advisory Council for Historic Preservation
AGL	above ground level
AOI	Area of Interest
APE	Area of Potential Effects
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO_2	carbon dioxide
CPW	Cotton Plains Wind I, LLC
CRP	Conservation Reserve Program
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOD	(United States) Department of Defense
EA	Environmental Assessment
EO	Executive Orders
ERCOT`	Electric Reliability Council of Texas
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FM	Farm-to-Market
FNSI	Finding of No Significant Impact
Fort Hood	United States Army Garrison Fort Hood, Texas
GHG	greenhouse gas

kV	kilovolt
kwh	kilowatt-hours
kwh/yr	kilowatt-hours per year
MBTA	Migratory Bird Treaty Act
MET	meteorological
MW	megawatt
MWhr	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NFIP	National Flood Insurance Program
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWCC	National Wind Coordinating Collaborative
NWI	National Wetland Inventory
O_3	ozone
OEI	Office of Energy Initiatives
OSHA	U.S. Occupational Safety and Health Administration
$PM_{2.5}$	particulate matter less or equal to 2.5 micrometers in diameter
Project	Cotton Plains Wind Project
PV	photovoltaic
REC	Renewable Energy Credits
RESA	Renewable Energy Supply Agreement
SCADA	Supervisory Control and Data Acquisition
SPCC	Spill, Pollution, Control, and Countermeasures
SWPPP	Storm Water Pollution Prevention Plan
TCEQ	Texas Commission of Environmental Quality
THC	Texas Historic Commission
TPWD	Texas Parks and Wildlife Department
US	United States

U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VEC	valued environmental component
WEG	Wind Energy Guidelines
WTG	wind turbine generator
WEST	Western Ecosystems Technology, Inc.