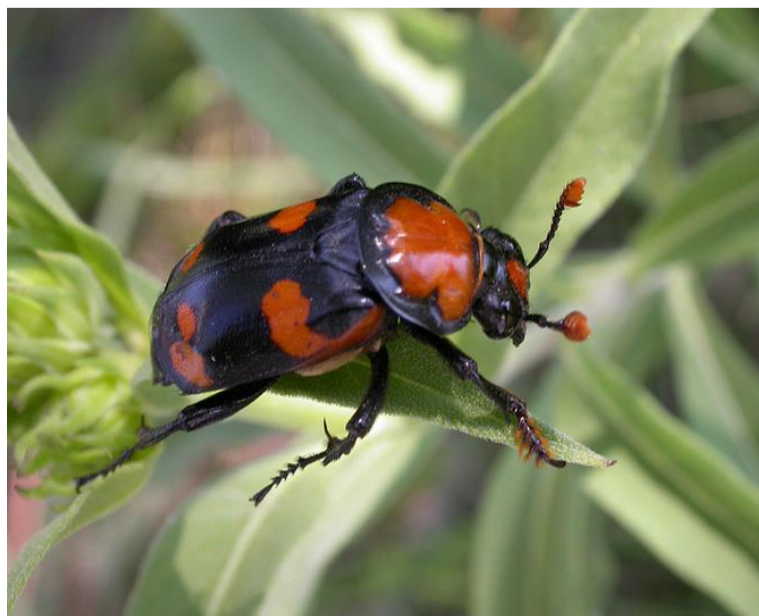


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ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED SECOND ATOKA PIPELINE PROJECT HABITAT CONSERVATION PLAN



U.S. Fish and Wildlife Service
Southwest Region
Albuquerque, New Mexico

May 2020

<u>Estimated Costs to Develop and Produce this EA</u>	
Lead Agency	\$TBD
Applicant (Contractor)	\$1,520,000
Total Costs	\$TBD

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Acronyms and Abbreviations

%	percent
°F	degrees Fahrenheit
ABB	American burying beetle
AMM	Avoidance and Minimization Measures
APE	Area of Potential Effects
BMP	Best Management Practice
CAS	Cojeen Archaeological Services, LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CPA	Conservation Priority Area
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DNL	day-night average sound level
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
Enercon	Enercon Services, Inc.
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
ESM	Environmental Statement Memorandum
FEMA	Federal Emergency Management Agency
FR	Federal Register
GIS	Geographic Information System
HCP	Habitat Conservation Plan
HUC	Hydrologic Unit Code
ITP	Incidental Take Permit

MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOI	Notice of Intent
NRHP	National Register of Historic Places
OCWUT	Oklahoma City Water Utilities Trust
ONHI	Oklahoma Natural Heritage Inventory
Project	Second Atoka Pipeline Project
Service	U.S. Fish and Wildlife Service
SHPA	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
U.S.C.	U.S. Code
USD	U.S. Dollars

1.1 Introduction

The United States (U.S.) Fish and Wildlife Service (Service) is responding to the Oklahoma City and Oklahoma City Water Utilities Trust's (OCWUT; the Applicants) request for incidental take authorization pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (ESA), for the proposed Second Atoka Pipeline Project (Project)—a public water supply pipeline—which will be partly located within suitable habitat for the endangered American burying beetle (*Nicrophorus americanus*; ABB). The Applicants prepared a Habitat Conservation Plan (HCP) to address incidental take of the ABB from the Applicants' proposed construction of the Project. Oklahoma City owns and operates OCWUT and leases and finances a 100-mile public utility water pipeline system connecting Atoka Reservoir in Atoka County to Lake Stanley Draper in Cleveland County, Oklahoma (Figure 1-1). This pipeline system is known as the Atoka pipeline and is one of three pipeline systems planned or in existence. These pipeline systems comprise Oklahoma City's Southeast Oklahoma Raw Water Supply System. The Applicants are investing approximately \$700 million in upgrades to the Southeast Oklahoma Raw Water Supply System in the coming years. Expansion of the existing Atoka pipeline is part of this program.

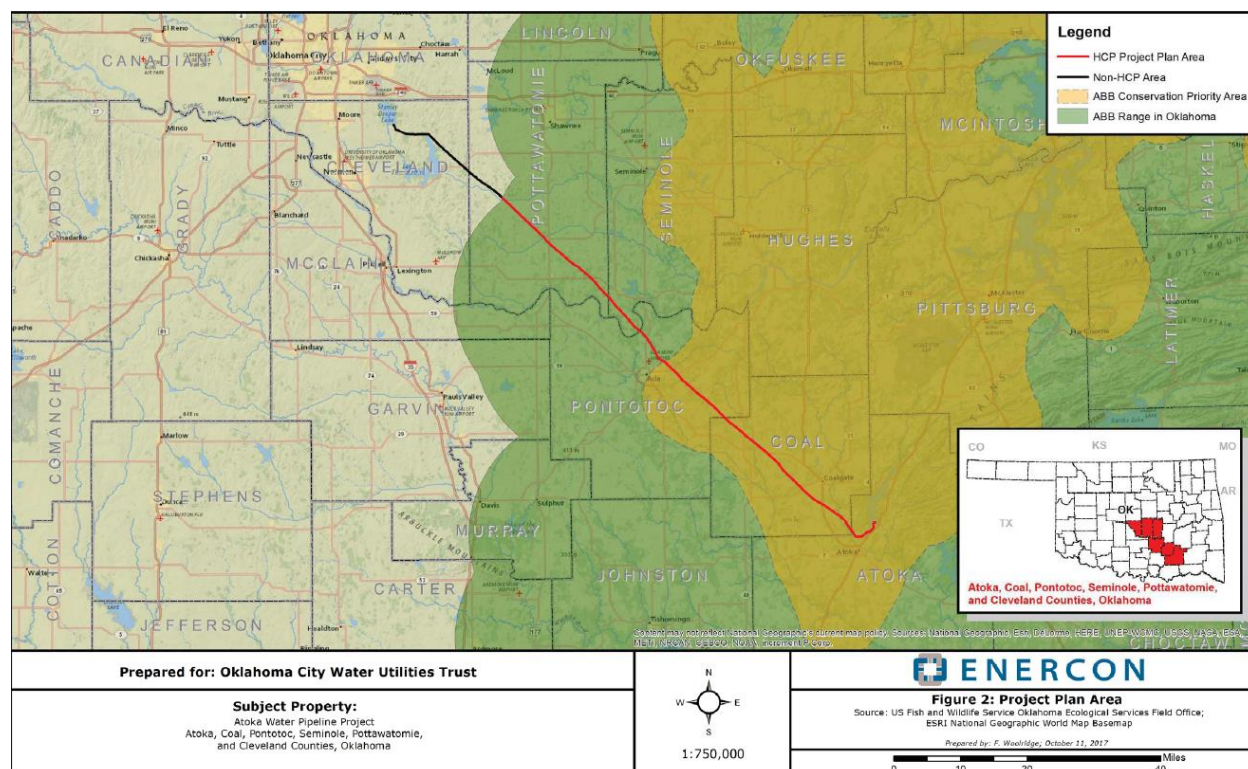
The Project Area includes portions of the following six Oklahoma counties: Atoka, Coal, Pontotoc, Pottawatomie, Seminole, and Cleveland (Figure 1-1). The *Plan Area* for the HCP encompasses a 78.4-mile portion of the Project Area that lies within the current range of the ABB. The Plan Area does not include Cleveland County and westernmost Pottawatomie County, but crosses central and eastern Pottawatomie County and portions of Atoka, Coal, Pontotoc, and Seminole counties. The Plan Area is the area where impacts to the ABB potentially could occur, based on the species' range. The *Permit Area* is a subset of the Plan Area and is the area where ABB take from Covered Activities might occur, as indicated by current ABB presence-absence surveys. *Covered Activities* are those parts of the Project that may result in take and for which the Applicants are seeking take authorization via an incidental take permit (ITP). Covered Activities under the HCP include site preparation of the pipeline easement, pipeline construction and hydrostatic testing of the installed pipeline, construction of pump stations and other ancillary facilities, use of temporary work areas, construction of contractor yards, construction and maintenance of access roads, and post-construction restoration activities. These Covered Activities may result in impacts that lead to take of the ABB, as defined under the ESA.

The proposed ITP term is 8 years, which the Applicants chose because it covers the expected timeline for construction of the pipeline with additional time to restore temporary habitat impacts. The Applicants do not anticipate taking ABBs during operation and maintenance of the pipeline. For typical maintenance activities conducted after the pipeline is in operation, the Applicants will address ABB impacts according to standard protocols in place at the time of impact. Appropriate mitigation, as needed, will be addressed at that time. For emergency repairs where surveys are not practical, any effects to the ABB will be mitigated appropriately. Therefore, the Applicants are not requesting take coverage for operation and maintenance. The Applicants could apply to renew or amend the HCP and extend the ITP prior to the permit's expiration.

We prepared this environmental assessment (EA) according to the requirements of the National Environmental Policy Act (42 U.S. Code [U.S.C.] §§ 4321-4370, et seq; NEPA), Council on Environmental Quality (CEQ) NEPA-implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508), the

U.S. Department of the Interior's NEPA Procedures (43 CFR 46), Secretarial Order 3355 and related guidance, and our guidance for compliance with those regulations, including the 2016 *Habitat Conservation and Planning and Incidental Take Permit Processing Handbook*. Additional information on the proposed action, including a copy of the HCP and this EA, is available on our Oklahoma Ecological Services Field Office website (<https://fws.gov/southwest/es/Oklahoma/>).

Figure 1-1. Plan Area



Source: Habitat Conservation Plan for the Second Atoka Pipeline Project.

1.2 Proposed Federal Action

The proposed federal action being evaluated in this EA is our approval of the Applicants' HCP and issuance of an ITP under Section 10(a)(1)(B) of the ESA. The ITP will authorize incidental take of the ABB that is likely to result from Covered Activities in the Plan Area over the 8-year ITP term. Chapter 2, *Alternatives*, provides a description of the proposed action.

1.3 Purpose and Need for Federal Action and Decision to be Made

The purpose of the federal action is to address the application for an ITP to authorize take of the federally listed ABB for the Covered Activities in the Plan Area. The HCP must provide the information necessary to obtain an ITP under the ESA. The need for federal action is to provide the Applicants with a mechanism to comply with the ESA, while allowing current and future Covered Activities in the Plan Area where effects that rise to the level of take cannot be avoided.

The purpose and need establish the basis for determining whether other viable alternatives to issuing an ITP may meet the intended purpose and reduce potential effects from the action. Section 10 of the ESA specifically directs the Service to issue ITPs to non-federal entities for take of endangered and threatened species when the applicant satisfies the criteria in ESA section 10(a)(2)(B) and regulations at 50 CFR 13 and 17. Once we receive an application for an ITP, we review the application to determine if it meets the issuance criteria.

Our decision on whether to issue an ITP to the Applicants will be based on the statutory and regulatory criteria of the ESA. In applying these criteria, we will analyze the effects of Covered Activities on the ABB, as well as the effectiveness of the proposed conservation strategy in avoiding, minimizing, and mitigating impacts on the ABB. We will make our determination after the public has had an opportunity to comment on the EA and HCP. We will document our determination in an ESA Section 10 findings document, ESA Section 7 Biological Opinion, and NEPA findings document developed at the conclusion of the NEPA and ESA compliance processes. Under the ESA, the Service may implement one of the following options in evaluating an application for an ITP under Section 10(a)(1)(B):

- Issue an ITP conditioned on implementation of the HCP;
- Issue an ITP conditioned on implementation of the HCP and other specified measures; or
- Deny the ITP application.

1.4 Public Involvement

As part of the NEPA review process for issuance of an ITP, the EA and HCP will be made available for public review and comment by the Service. During preparation of this draft EA, we consulted the following entities. The final EA will include responses received from these entities.

- Oklahoma Historical Society, State Historic Preservation Office
- Oklahoma Archaeological Survey
- Absentee Shawnee Tribe
- Chickasaw Nation
- Choctaw Nation of Oklahoma
- Citizen Potawatomie Nation
- Kickapoo Tribe of Oklahoma
- Sac and Fox Nation
- Seminole Nation of Oklahoma
- Bureau of Indian Affairs, Eastern Oklahoma and Southern Plains regional offices
- Bureau of Reclamation, Oklahoma-Texas Area Office
- U.S. Army Corps of Engineers, Tulsa District
- Natural Resources Conservation Service
- Oklahoma Department of Environmental Quality

- Oklahoma Department of Wildlife Conservation
- Oklahoma Water Resources Board
- Central Oklahoma Master Conservancy District
- Lake Atoka Reservation Association
- McGee Creek Authority
- County commissioners of Atoka, Cleveland, Coal, Pontotoc, Pottawatomie, and Seminole counties, Oklahoma
- Cities of Ada, Atoka, Coalgate, Konawa, Norman, and Stonewall, Oklahoma

This chapter describes the alternatives considered in this draft EA, including the no action alternative (Section 2.1), proposed action (Section 2.2), and alternatives considered but eliminated from further consideration (Section 2.3).

2.1 No Action Alternative

NEPA requires that an EA alternatives analysis include consideration of a no action alternative, which serves as a baseline with which to compare the impacts of the proposed action and other alternatives. Under the no action alternative, the Applicants will not request and we will not issue an ITP for the proposed Second Atoka Pipeline Project described in Section 2.3.2.2, *Covered Activities*, and the Applicants will not submit the HCP. The Applicants could choose to not construct the second Atoka pipeline as proposed because they might not be able to do so without taking ABB. The Applicants will continue to use the existing water supply pipeline and associated facilities to provide water to their customers in the Plan Area, an activity which does not result in take of ABB. The projected future water needs of Oklahoma City and central Oklahoma communities might not be met under the no action alternative.

2.2 Proposed Action

Under the proposed action, we will approve the HCP and issue an 8-year ITP to the Applicants for incidental take of the ABB from the Covered Activities. The Applicants will implement the HCP, which is summarized here. The full draft of the HCP can be found on the Oklahoma Ecological Services Office website: <http://www.fws.gov/southwest/es/Oklahoma/>. The HCP is incorporated by reference into this EA.

2.2.1 Plan Area and Permit Area

The Plan Area is the area to which the ITP applies and the approved HCP will be implemented over the 8-year permit term, including where all conservation actions, impacts, and monitoring will occur. The Plan Area includes portions of the following five Oklahoma counties: Atoka, Coal, Pontotoc, Pottawatomie, and Seminole (see Figure 1-1). The length of the proposed pipeline is approximately 99 miles long and includes a 100-foot wide right-of-way; the portion within the current ABB range is approximately 78 miles long. Therefore, the Plan Area is approximately 78 miles long by 100 feet wide and also includes additional areas for pump stations, ancillary facilities, contractor yards, and construction access roads (a total of approximately 992 acres).

The Permit Area is a subset of the Plan Area and is the area where ABB take might occur. Ultimately, the Permit Area will include all areas of suitable habitat that are occupied by ABBs based on the results of presence-absence surveys, which will be completed during the ABB active season prior to the start of ground-disturbing activities. The Permit Area could potentially include all areas within the Plan Area with suitable ABB habitat (approximately 777 acres). That scenario is unlikely because the ABB is endangered and relatively rare across its range. ABB surveys across the range in Oklahoma typically result in no more than approximately 20 percent positive surveys. However, for purposes of analysis in

the HCP and this EA, the Permit Area is assumed to include the entire portion of the Plan Area containing suitable ABB habitat (approximately 777 acres).

2.2.2 Covered Activities

The proposed action includes issuance of an ITP for Covered Activities with the potential to result in take of ABB. The Covered Activities, as documented in the HCP, include the following and are summarized in this section.

- Site preparation of the pipeline easement
- Pipeline construction and hydrostatic testing of the installed pipeline
- Construction of pump stations and other ancillary facilities
- Use of temporary work areas
- Construction of contractor yards
- Construction and maintenance of access roads
- Post-construction restoration activities

As noted in Section 1.1, *Introduction*, the Applicants are not requesting take coverage for operation and maintenance activities. Therefore, operation and maintenance activities are not Covered Activities.

2.2.2.1 Easement Site Preparation

Easement site preparation activities will clear or modify vegetation and disturb soil within the Plan Area to install the pipeline. The current easement contains a mixture of open grassland and shrubby or early successional forested habitat. The Applicants will clear the easement of woody vegetation prior to construction. Easement clearing will occur either mechanically or manually and will typically involve cutting and removing woody-stemmed vegetation (clearing) followed by stump removal (grubbing). For purposes of the HCP, the Applicants assume the entire Plan Area (992 acres) could be subject to activities that will disturb vegetation and soil. However, only the portion of the Plan Area supporting suitable ABB habitat (777 acres) could potentially require take coverage via the ITP.

2.2.2.2 Pipeline Construction and Hydrostatic Testing

Pipeline construction procedures will consist of six basic steps:

1. **Trenching** – Trench excavation will be completed using heavy equipment, such as tracked excavators and bulldozers. Topsoil will be reserved and placed to one side of the easement. Upon completion, the top of the pipe will be at a minimum of five feet below ground surface and six feet below the 100-year scour depth at stream crossings.
2. **Placement of pipe segments in trench** – Pipe segments will be off-loaded from a truck directly into the trench or near the location they will be placed into the trench.
3. **Welding pipe joints** – Once the pipe is in the trench, welders will weld the joints together.
4. **Hydrostatic testing** – Once the pipe is welded, it will be tested to ensure the joints are watertight. Water for hydrostatic testing will be obtained from OCWUT reservoirs and transported to testing sites via the existing pipeline. After hydrostatic testing is completed,

water will be discharged into a temporary retention basin with appropriate best management practices (BMPs) employed to reduce or eliminate sedimentation of receiving waters or erosion of upland areas.

5. **Backfilling and covering pipe** – The pipe will be covered using soil. Reserved topsoil will be added to the uppermost portion of the fill.
6. **Final clean up** – After the pipe is buried, the easement will be graded and seeded to restore vegetation.

In addition to standard pipeline construction methods, special construction techniques will be used where warranted by site-specific conditions. For example, the pipeline will cross the Canadian River, which is critical habitat for the Arkansas River shiner (*Notropis girardi*). In order to avoid impacts to aquatic and aquatic-dependent species, the new pipeline will pass beneath the channel using a technique called micro tunneling.¹ This approach involves tunneling under the river and pulling pipe through the tunnel to complete the crossing.

2.2.2.3 Construction of Pump Stations and Ancillary Facilities

The Applicants propose to install and operate aboveground facilities in the Plan Area. These facilities consist of three pump stations and three intermediate surge facilities (facilities located along the pipeline designed to alleviate surges in water pressure). All of these facilities will be located within the permanent easement or on property owned by the Applicants (refer to HCP Appendix B, Figures 4.1-4.50). Additional off-site facilities, such as power lines required for the pump stations and remotely operated valves, will be installed and operated by local power providers, not by the Applicants.

2.2.2.4 Temporary Work Areas

In addition to the typical construction easement, the Applicants have identified types of additional temporary work areas that might be required. These include areas requiring special construction techniques (e.g., river, wetland, and road/rail crossings; tunnel entry and exit points; steep slopes; and rocky areas), construction staging areas, and access routes not within the existing easement.

2.2.2.5 Construction of Contractor Yards

Extra storage areas for Project materials (i.e., contractor yards) will be required outside the construction easement. To the extent practicable, the Applicants will use existing commercial or industrial sites or sites that previously were used for construction and currently do not support ABB habitat. Similarly, existing public or private roads will be used to access each contractor yard when possible. Contractor yards will be used on a temporary basis and will be restored, as appropriate, upon completion of construction. A land survey of contractor yards will be completed prior to construction. The boundaries of these sites will be clearly marked to ensure that inadvertent use of additional areas will not occur.

If possible, contractor yards will either (1) use existing facilities that do not support ABB habitat, or (2) construct the facilities in areas that do not support ABB habitat. Under either scenario, take coverage will not be required or requested by the Applicants. If the yards must be constructed in suitable and occupied ABB habitat, impacts will be mitigated and the areas restored to suitable habitat following construction, in accordance with the HCP.

¹ As opposed to horizontal directional drilling, which is not possible at this time for 72-inch diameter pipe.

2.2.2.6 Construction and Maintenance of Access Roads

The Project will use public and existing private roads to provide access to most of the construction easement. Paved roads are not likely to require improvement or maintenance prior to or during construction. Gravel and/or dirt roads may require maintenance during the construction period due to high use or to expand/widen the roads. Road improvements, such as grading and gravelling, will generally be restricted to the existing road footprint. Widening of roads might also be required in some areas. Private roads and any new temporary access roads will be used and maintained only with permission of the landowner or land management agency.

2.2.2.7 Post-Construction Restoration Activities

Following completion of construction or soil-disturbing activities, the Applicants will restore vegetation in temporary impact areas to conditions equal to or better than pre-project conditions. For cover change impact areas (i.e., areas where habitat was converted from forested habitat to open habitat), the Applicants will restore these areas to conditions equal to or better than open habitats in the immediate area. In most cases, both temporary and cover change impacts will be restored using native warm season grasses and/or other native species naturally occurring in the surrounding area. Some areas, such as mixed grass pastures, will be restored to pre-project conditions that might feature a mixture of native and non-native species with the goal of restoring to equal or better habitat conditions for the ABB.

Additionally, the Applicants will disk (typically 6 inches deep) temporary work sites, laydown areas, and other heavily used or traveled areas in the Permit Area where soil compaction occurs. In cases of severe soil compaction, these areas may be ripped to a depth of up to 24 inches. Disking will relieve soil compaction and promote restoration of vegetation. These post-construction restoration activities have the potential to take the ABB.

2.2.3 Covered Species

Incidental take coverage will be provided only for the ABB for the Covered Activities. Though other federally listed species are present in the Plan Area, the Applicants have not requested take authorization for those species, and thus those species are not addressed in the HCP. The HCP notes that other federally listed species were considered for coverage, but the Applicants do not expect any take of those species to result from the Covered Activities. Information on other federally listed species that occur or have the potential to occur in the Plan Area is available in Chapter 3, *Affected Environment and Environmental Consequences*, as well as HCP Section 1.2.3, *Covered Species*, and HCP Appendix B, *Biological Evaluation / American Burying Beetle Habitat Assessment*.

2.2.4 Conservation Measures

The proposed action includes implementing conservation measures for the ABB as described in the HCP. Conservation measures include avoidance and minimization measures (AMMs) to avoid and minimize impacts from the Covered Activities, mitigation to offset unavoidable impacts on the ABB and its habitat, and monitoring and reporting requirements.

2.2.4.1 Avoidance and Minimization Measures

We must determine that ABB take will be minimized and mitigated to the maximum extent practicable before issuing an ITP. The Applicants will implement the AMMs listed in Table 2-1 to reduce the

potential adverse effects of Covered Activities on ABB and its habitat. Refer to HCP Section 4.4.2, *Avoidance and Minimization Measures*, for a complete discussion of AMMs.

Table 2-1. Avoidance and Minimization Measures from the HCP

Measure	Description
Stormwater BMPs	The Applicants will ensure Covered Activities employ an OK DEQ-approved SWPPP using BMPs to reduce construction stormwater runoff and prevent soil erosion in and around the construction area. Implementing the SWPPP will minimize the effects of soil erosion on ABB habitat within and adjacent to the Plan Area.
Limit Clearing in TWAs	Clearing of TWAs will be limited to minimize temporary habitat loss.
Limit Use of Motor Vehicles, Machinery, or Heavy Equipment	The Applicants will limit off-road use of motorized vehicles, machinery, and heavy equipment in the Permit Area as much as possible to reduce the potential for soil compaction and crushing of ABB brood chambers.
Operational Fluid Use and Storage	The Applicants will comply with all applicable state and federal laws regarding fuel use and storage.
Fire Prevention	Vehicles, machinery, and heavy equipment will not be parked where dry grass or vegetation could be ignited. All vehicles will be maintained according to the respective service manuals. In dry conditions, grass and debris will be cleaned away from exhaust systems and bearings on a weekly basis.
Limit Use of Artificial Lighting	Artificial lighting will be minimized by (1) working during the day and (2) down-shielding required lights if construction does take place at night. The Applicants will limit construction activities in the Permit Area to daylight hours during the ABB active season when possible.
Relief of Soil Compaction	Following construction, the Applicants will disk temporary work sites and laydown areas and other heavily used or traveled areas in the Permit Area where soil compaction has occurred. Disking will relieve soil compaction and promote restoration of vegetation.
Revegetation	Following completion of construction/soil-disturbing activities, the Applicants will restore vegetation in temporary impact areas to conditions equal to or better than pre-project conditions.
Training	Construction personnel will attend a training course and be issued a fact sheet with color photographs of the ABB and its larvae. Construction personnel will be instructed to report if ABBs or their larvae are observed during ground-disturbing activities and to cease all such activity within 50 feet. Construction will not occur in this area until approved by the Applicants and/or the Service.

ABB = American burying beetle; BMP = best management practice; OK DEQ = Oklahoma Department of Environmental Quality; SWPPP = stormwater pollution prevention plan; TWA = temporary work area

2.2.4.2 Mitigation

ABB habitat impacts from Covered Activities will be offset through conservation and management of ABB habitat in perpetuity. The Applicants will purchase ABB credits at their choice of a Service-approved conservation bank² with a service territory that includes the Plan Area. When the Applicants mitigate habitat impacts through the purchase of credits at a Service-approved conservation bank, the

² Conservation banks are permanently protected lands that contain natural resource values. These lands are conserved and permanently managed for species that are endangered, threatened, candidates for listing as endangered or threatened, or are otherwise species-at-risk.

bank sponsor is responsible for ensuring the success of and managing the mitigation land in perpetuity upon sale of the credits. The Applicants will purchase appropriate credits prior to any habitat impacts that could result in ABB take. There are two Service-approved conservation banks that include the Plan Area in their service area and have ABB conservation credits available: the Muddy Boggy Conservation Bank³ and the American Burying Beetle Conservation Bank.⁴

2.2.4.3 Monitoring and Reporting

Compliance monitoring verifies the Applicants are fully implementing the HCP and meeting the ITP terms and conditions. Compliance monitoring requires the Applicants to prepare and submit an annual report for Service review and comment during the 8-year permit term. The Applicants will monitor restoration in the Plan Area (in areas where restoration occurred) to ensure restoration goals are achieved. Results will be included in the annual report.

2.3 Alternatives Considered but Eliminated from Further Consideration

The following alternatives to the proposed action were not carried forward for detailed analysis in this EA for the reasons described below.

2.3.1 Alternative Pipeline Alignment

We considered an alternative pipeline alignment that will avoid suitable ABB habitat. However, this alternative is not feasible. The Applicants secured the existing easements along the alignment in the late 1950s and early 1960s. The current alignment contains the existing pipeline and is maintained by OCWUT. This easement also contains enough space for the proposed second pipeline. Re-routing the proposed second pipeline in a new and separate easement will impose a substantial economic and logistical hardship on the Applicants (i.e., costs associated with new easements and/or difficulty in obtaining new easements). Therefore, we rejected this alternative.

2.3.2 Longer Permit Term

We considered a longer permit term to cover the operational lifespan of the Project. The Applicants chose not to accept a longer permit term because the Project operational lifespan could range from several decades to over a century. Because of uncertainties with regard to ABB populations, climate change, and other factors over this extended time period, we determined the greatest likelihood for ABB take will occur during the eight years expected to complete Project construction and habitat restoration.

³ <https://www.msusa.com/wp-content/uploads/2019/06/MSUSA-OK-B-Muddy-Boggy-data-sheet.pdf>

⁴ <http://commongroundcapital.com/american-burying-beetle/>

Chapter 3.

Affected Environment and Environmental Consequences

3.1 Introduction

This chapter describes the existing environmental conditions in the Plan Area and the potential direct and indirect effects on the human environment from the proposed action and no action alternative. To streamline and improve the readability of this EA, we have combined the discussion of affected environment and environmental consequences into a single chapter. This chapter addresses the following resources: biological resources (Section 3.2); water resources (Section 3.3); air quality (Section 3.4); cultural resources (Section 3.5); land use (Section 3.6); utilities and public services (Section 3.7); socioeconomics and environmental justice (Section 3.8); and public health and safety (Section 3.9). Each resource section consists of a description of the potentially affected resource (affected environment) and the potential impacts on that resource (environmental consequences).

A basic tenet of the proposed action—issuance of the ITP and subsequent implementation of the HCP—is that the Service does not directly authorize the Applicants' activities that may cause take of Covered Species. An ITP from the Service provides an applicant with incidental take authorization under the ESA, and requires the applicant to obtain any other necessary construction or operation-related permits from other entities, as necessary. The Applicants' Covered Activities are typically authorized by other federal, state, county, and local agencies or ordinances, depending on their location (e.g., which county they are located in). In this case, issuance of an ITP could facilitate development by addressing one of the various statutory and regulatory requirements tied to project authorization, but will not unilaterally approve such development. Accordingly, the scope of the EA is focused principally on the potential impacts of the proposed Covered Activities anticipated to result in incidental take of ABB, as well as any impacts associated with implementing the conservation strategy provided in the HCP. Thus, the EA is more detailed in its analyses of species and species habitats than for other aspects of the human environment (i.e., the other resources analyzed in this chapter), given the direct relationship between issuing an ITP and effects on wildlife species and their habitat.

The study area for this EA is the same as the Plan Area defined in the HCP. It includes all areas where Covered Activities will be conducted and thus where all direct, indirect, and cumulative effects will occur. As discussed in Section 2.2.1, *Plan Area and Permit Area*, the Permit Area—the area where ABB take might occur and thus the area where impacts on the human environment from the Service's proposed action will occur—is a subset of the Plan Area and ultimately will include all areas of suitable habitat that are occupied by ABBs based on the results of presence-absence surveys, which will be completed during the ABB active season prior to the start of ground-disturbing activities.

The CEQ lists two factors that should be considered in determining the significance of environmental impacts of an action: context and intensity. *Context* means that the significance of an action must be analyzed in several settings, such as its impact on society as a whole, the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the impacts in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR § 1508.27[a]).

Intensity refers to the severity of impact, and a number of subfactors are generally considered in evaluating intensity. These include:

- Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect would be beneficial;
- The degree to which the proposed action affects public health or safety;
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas;
- The degree to which the effects on the quality of the human environment are likely to be highly controversial;
- The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks;
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration;
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts;
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources;
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA; and
- Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment (40 CFR § 1508.27[b]).

In addition to considering the above factors, an agency should consider its own procedures in determining whether the action requires an EIS. Additional criteria that the Service uses to determine whether to prepare an EIS include:

- Controversy over environmental effects (e.g., major scientific or technical disputes or inconsistencies over one or more environmental effects);
- Change in agency policy having a major positive or negative environmental effect;
- Precedent-setting actions with wide-reaching or long-term implications (e.g., special use permits for off-road vehicles, mineral extraction, or new road construction);
- Major alterations of natural environmental quality, which may exceed local, state, or federal environmental standards;
- Exposing existing or future generations to increased safety or health hazards;
- Conflicts with substantially proposed or adopted local, regional, state, interstate, or federal land use plans or policies that may result in adverse environmental effects;
- Adverse effects on designated or proposed natural or recreation areas, such as wilderness areas, parks, research natural areas, wild and scenic rivers, estuaries, sanctuaries, national recreation

areas, habitat conservation plan areas, threatened and endangered species habitats, fish hatcheries, wildlife refuges, lands acquired or managed with Dingell-Johnson/Pittman-Robertson funds, unique or major wetland areas, and lands within a 100-year floodplain; and

- Removal from production of prime and unique agricultural lands, as designated by local, regional, state, or federal authorities; in accordance with the Department of the Interior's Environmental Statement Memorandum No. (ESM) 94-7.

We have considered the above factors in determining whether potential impacts from the proposed action will be significant.

Because the no action alternative is “no project,” we include this alternative’s assessment here in the introduction to eliminate redundancy in the following resource sections. Under the no action alternative, the Applicants will not request and we will not issue an ITP for the Project, and the Applicants will not submit the HCP. The Applicants will not construct a second Atoka pipeline as proposed because they could not do so without taking ABBs. The Applicants will continue to use their existing water supply pipeline and associated facilities to provide water to their customers in the Plan Area, which does not result in take of ABB. Since the purpose of the pipeline is to establish infrastructure to meet the projected water needs of Oklahoma City and participating central Oklahoma communities through 2060, the no action alternative could result in not meeting those future water needs. The no action alternative will have no effects on other aspects of the human environment.

3.2 Biological Resources

3.2.1 Affected Environment

This section describes biological resources in the Plan Area, including vegetation communities, general fish and wildlife, Covered Species, and special-status species.

3.2.1.1 Vegetation

This section addresses vegetation communities that are considered common and are not identified by federal or state agencies as at-risk species that require special management. Plant species that are at risk and that are managed under special purpose statutes (e.g., the ESA) are defined as special-status species and are addressed in Section 3.2.1.4, *Special-Status Species*. Vegetation in the Plan Area is described using the National Land Cover Database of the conterminous United States (Yang et al. 2018).

Table 3.2-1 shows the amount of land cover in the Plan Area. Major vegetative communities in the Plan Area include herbaceous, deciduous forest, hay/pasture, and cultivated crops.

Table 3.2-1. Land Cover in the Plan Area

Land Cover	Amount (acres)
Barren Land	9.7
Cultivated Crops	26.3
Deciduous Forest	425.0
Developed, High Intensity	0.4
Developed, Low Intensity	3.0
Developed, Medium Intensity	2.4
Developed, Open Space	76.3
Emergent Herbaceous Wetlands	0.2
Open Water	3.3
Hay/Pasture	145.4
Herbaceous	570.9
Shrub/Scrub	1.2
Total	1,263.8

Source: Yang et al. 2018.

3.2.1.2 General Fish and Wildlife

This section addresses fish and wildlife species that are considered common and are not identified by federal or state agencies as at-risk species that require special management (i.e., not a special-status species). The discussion focuses on terrestrial species, because as discussed in Section 3.2.2.2, *General Fish and Wildlife*, potential impacts on aquatic species from Covered Activities will be minimal or avoided. Fish and wildlife species that are at risk and managed under special purpose statutes (e.g., the ESA) are defined as special-status species and are discussed in Section 3.2.1.4, *Special-Status Species*. Due to the large size of the Plan Area, fish and wildlife species are described by ecoregion.

The Environmental Protection Agency (EPA) has described vegetation and land characteristics on large geographic scales across the U.S. by mapping large areas with similar biotic and abiotic characteristics into *ecoregions*. Ecoregions are areas where the type, quality, and quantity of environmental resources—such as vegetation, wildlife, soils, geology, climate, hydrology, land use, and land form—are generally similar (U.S. Environmental Protection Agency 2018). Ecoregions serve as a spatial framework for resource management and are effective for regional state environmental reports, resource inventories, and assessments. The EPA has mapped and described ecoregions in a hierarchical scheme that includes Levels I, II, III, and IV ecoregions, with Level I providing the coarsest environmental resource information over the largest geographic areas and Level IV providing the most refined environmental resource information over the smallest geographic areas.

The Plan Area is located in three Level III ecoregions: Arkansas Valley, Cross Timbers, and Ouachita Mountains (U.S. Environmental Protection Agency 2017) (see HCP Figure 3, *Level III Ecoregion Map*). Common or typical fish and wildlife species in these ecoregions include white-tailed deer, coyote, bobcat, gray fox, gray squirrel, fox squirrel, cotton rats, woodrats, swamp rabbit, muskrat, mink, pine vole, cottontail rabbit, beaver, raccoon, armadillo, turtles, snakes, lizards, frogs, toads, salamanders, and many bird species (Wiken et al. 2011; Woods et al. 2000).

3.2.1.3 Covered Species

We are only considering incidental take authorization for the ABB under the proposed action. This section provides information on the ABB, including its status and range, habitat, threats, and occurrence in the Plan Area.

The ABB is the largest carrion⁵ beetle in North America, reaching 1.0 to 1.8 inches in length (Backlund and Marrone 1997). It is a nocturnal species active in the summer months (active season) when ambient nighttime air temperatures consistently exceed 60 degrees Fahrenheit (°F) (U.S. Fish and Wildlife Service 1991). The ABB is most active from 2 to 4 hours after sunset (Walker and Hoback 2007). During the daytime, ABBs are believed to bury themselves in vegetation litter.

Individuals typically live for 1 year. Adults and larvae are dependent on carrion for food and reproduction. The ABB also may capture and consume insects (Scott and Traniello 1989). Adult ABBs burrow into the soil during the inactive season (winter months) when ambient nighttime air temperatures consistently fall below 60 °F (U.S. Fish and Wildlife Service 1991). In Oklahoma, this typically occurs for approximately 8 to 9 months from late September until mid-May (U.S. Fish and Wildlife Service 2015). The length of the active and inactive periods, however, fluctuates with temperature. Recent studies indicate ABBs in Arkansas burrow to depths ranging from 0 to 8 inches during the inactive season (Schnell et al. 2007). Others have reported overwintering depths ranging from 0 to 27 inches (Hoback 2011).

Status and Range

The Service listed the ABB under the ESA as endangered in 1989 (54 *Federal Register* [FR] 29652). The most recent species review found the ABB remains endangered throughout its current range because of ongoing threats to known populations and the failure to discover or establish viable populations in the remaining recovery areas (U.S. Fish and Wildlife Service 2008a). A more recent species status assessment (U.S. Fish and Wildlife Service 2019a) confirmed that the current status has improved relative to earlier reviews with at least 4-5 relatively resilient populations, but the future status remains vulnerable to increasing temperatures due to climate change and ongoing land use changes in parts of the species' range. The proposed 12-month finding (U.S. Fish and Wildlife Service 2019b) concludes that the species does not currently meet the definition of endangered but does meet the definition of threatened because the ABB will be endangered within the foreseeable future. The historic range of the ABB included over 150 counties in 35 states, including most of temperate eastern North America and the southern portions of three eastern Canadian provinces. Documentation confirming the species' presence is not uniform throughout this broad historical range.

Currently, the ABB can be found in less than 10 percent of its historic range, with localized, extant populations known to occur in nine states (U.S. Fish and Wildlife Service 2008a), including Oklahoma. Additionally, a reintroduced population on Nantucket Island off the coast of Massachusetts is relatively stable with active management and provisioning of carcasses, and reintroduction attempts in Missouri have reported successful reproduction and overwintering of adults. A re-introduction effort in Ohio is ongoing, documented reproduction and limited overwinter survival.

⁵ Carrion is decaying flesh of dead animals.

Habitat

The ABB is a habitat generalist and its habitat requirements, particularly for reproduction, may not be fully understood at present. ABBs have been successfully live-trapped in several vegetation types including native grassland, grazed pasture, riparian forest, coniferous forest, and oak-hickory forest, as well as on a variety of soil types (Lomolino et al. 1995; U.S. Fish and Wildlife Service 2008a). Habitat requirements include soils suitable for the burial of carcasses; xeric (dry), saturated, or loose sandy soils are not suitable (U.S. Fish and Wildlife Service 1991, 2008b).

Ecosystems supporting ABB populations are diverse and include primary forest, scrub forest, forest edge, grassland prairie, riparian areas, mountain slopes, and maritime scrub communities (U.S. Fish and Wildlife Service 2008a). The ABB readily moves between different habitats (Creighton and Schnell 1998; Lomolino et al. 1995). However, it is believed to have more selective breeding habitat (suitable soils and vegetation layer) compared to its feeding habitat. Soil conditions must be conducive to excavation by ABBs (Lomolino and Creighton 1996). Soil moisture is also a factor because ABBs die quickly when desiccated (dried) (Bedick et al. 2006). Soils in the vicinity of captures are all well drained and include sandy loam and silt loam, with a clay component noted at most sites. Level topography and a well-formed detritus (debris) layer at the ground surface are common (U.S. Fish and Wildlife Service 2008a).

While the ABB uses a wide variety of habitats, the Service currently believes areas exhibiting the following characteristics are unfavorable for use by the ABB based on disturbance regime, vegetation structure, unsuitable soil conditions, and carrion availability (U.S. Fish and Wildlife Service 2016).

- Land that is tilled on a regular basis, planted in monoculture, and does not contain native vegetation.
- Pasture or grassland that has been maintained through frequent mowing, grazing, or herbicide application at a height of 8 inches or less.
- Land that has already been developed and no longer exhibits surficial topsoil, leaf litter, or vegetation.
- Urban areas with maintained lawns, paved surfaces, or roadways.
- Stockpiled soil without vegetation.
- Wetlands with standing water or saturated soils (defined as sites exhibiting hydric soils and vegetation typical of saturated soils, and/or wetland hydrology).

Areas adjacent to wetlands and/or riparian areas may be used by the ABB (and are therefore not considered unfavorable for the ABB). These areas may be important for ABBs seeking moist soils during dry conditions.

Threats

Populations of the ABB have been extirpated from 90 percent of its original range. The ABB Recovery Plan (U.S. Fish and Wildlife Service 1991) and a 5-year Species Status Review (U.S. Fish and Wildlife Service 2008a) identify potential threats to the ABB, including disease/pathogens, pesticides, direct habitat loss and alteration, interspecific competition, loss of genetic diversity in isolated populations, increase in competition for prey, increase in edge habitat, decrease in abundance of prey, agricultural and grazing practices, and invasive species. The primary cause, however, has been habitat loss and fragmentation (U.S. Fish and Wildlife Service 1991).

Land use changes that fragmented native forest and grasslands and created edge habitats during the westward expansion of settlement in North America (such as the edge between forest and grassland, or grassland and cropland), in addition to the removal of top-level carnivores such as the grey wolf (*Canis lupus*) and eastern cougar (*Puma concolor*), caused a decrease of indigenous species and an increase in mesocarnivores⁶ that thrive in areas disturbed by humans. These mesocarnivores include American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), red fox (*Vulpes fulva*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), feral cats (*Felis domesticus*), and other opportunistic predators (Wilcove et al. 1986). A number of these species, especially the raccoon and striped skunk, have undergone dramatic population increases over the last century (Garrott et al. 1993), and the coyote and opossum have expanded their ranges. These generalist predators have increased in abundance where edge habitats allow increased foraging opportunities (Ray 2000). Therefore, as habitat for species in the favored weight range for ABB reproduction decreased, populations of its predators increased, potentially further limiting ABB reproductive potential.

ABBs are attracted to artificial lighting (Kozol 1990), which can lead to disruptions of the species' normal behavior patterns. The species has been shown to respond differently to varying light sources, and ultraviolet or mercury vapor lights elicit stronger responses while sodium vapor lights are the least attractive to ABBs (Anshutz et al. 2007).

The red imported fire ant (*Solenopsis invicta*) is a competitor for carrion and a potential source of mortality for burying beetles when they co-occur at a food source (Warriner 2004). Scott et al. (1987) studied *Nicrophorus carolinus*, a burying beetle closely related to the ABB, in Florida and concluded the inability of this species to successfully bury carrion was due to red imported fire ant interference. Collins and Scheffrahn (2005) noted that red imported fire ants may reduce ground-nesting populations of rodents and birds. Red imported fire ants have been found at one time or another in 40 Oklahoma counties, including all counties in the Plan Area (Oklahoma State University 2019).

Fire may cause direct mortality of individuals during the ABB's active season (approximately May through mid-September) (Howard et al. 2012), and can affect ABB habitat during the active or inactive seasons through loss of habitat and loss of food sources.

Occurrence and Habitat in the Plan Area

In Oklahoma, the ABB's range includes all areas within 18.6 miles (maximum ABB movement recorded by Jurzenski et al. 2011) of all documented ABB occurrences. Almost the entire Plan Area is located within the current range of the ABB (Figure 1-1). All of Atoka, Coal, Pontotoc, and Seminole counties are included in ABB range, as well as most of Pottawatomie County and a small section of Cleveland County (outside the Plan Area). Approximately 777 acres of the Plan Area are located within suitable habitat and in the current ABB range.

The Service has identified areas where conservation of the ABB should be targeted. These areas are called Conservation Priority Areas (CPAs). The ABB CPAs serve as areas where conservation efforts should be focused and where higher ratios of mitigation for impacts on ABBs should apply. The CPAs include areas with recent (within 10 years) documented ABB presence, which the Service believes are likely to contain important elements for ABB conservation, such as documented presence over multiple years; relatively high-density populations; suitable breeding, feeding, and sheltering habitat;

⁶ A mesocarnivore is an animal whose diet consists of 30-70 percent meat with the balance consisting of non-vertebrate foods, which may include fungi, fruits, and other plant material.

and carrion resources. A portion of the Plan Area is located within an ABB CPA (Figure 1-1). Approximately 451 acres of the Plan Area are within the CPA.

3.2.1.4 Special-Status Species

Special-status species are defined for the purposes of the EA to include the following.

- Species listed as threatened, endangered, candidate, or proposed for listing under the federal ESA (other than ABB).
- Species protected by the State of Oklahoma.⁷
- Migratory birds protected by the Migratory Bird Treaty Act (MBTA).
- Bald and golden eagles protected by the Bald and Golden Eagle Protection Act.

This section also addresses designated critical habitat for the ABB.⁸

Special-status species, excluding migratory birds of conservation concern (U.S. Fish and Wildlife Service 2008c), that occur or have the potential to occur in the counties comprising the Plan Area are summarized in Table 3.2-2. There are no state-listed species for these counties (Oklahoma Department of Wildlife Conservation 2018). The Service's Information for Planning and Consultation report (Appendix B) lists migratory birds of conservation concern (U.S. Fish and Wildlife Service 2008c) in the counties comprising the Plan Area. The list of special-status species includes the following:

- Seven threatened or endangered species listed under the ESA.
- Bald eagle and golden eagle.
- Twenty-four migratory birds (in addition to those federally listed or protected by the Bald and Golden Eagle Protection Act) of particular conservation concern (i.e., Birds of Conservation Concern [U.S. Fish and Wildlife Service 2008c]).

The Plan Area is located mainly in the Central Flyway migration corridor, which provides nesting, breeding, overwintering, and stopover habitat for a large diversity of migratory species, including grassland specialists, waterfowl, shorebirds, and passerine songbirds. Migration through the Plan Area generally begins in March with the movement of waterfowl, waterbirds, songbirds, raptors, and other bird species that overwinter in the southern U.S. and adjacent Mexico. In late April and May, the neotropical migrants that overwinter in Central and South America and the Caribbean islands arrive, along with shorebirds and the last of the raptor species. After the June-July breeding period, species migration reverses, with shorebirds among the earliest of migrants. September is the peak of the small perching bird migration, with raptors and waterfowl continuing into November.

The 1988 amendment to the Fish and Wildlife Conservation Act (16 U.S.C. §§ 661-667d) mandates the Service to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. *Birds of*

⁷ Oklahoma statute Title 29 Game and Fish gives the state authority to list wildlife species as threatened or endangered within the State of Oklahoma.

⁸ Critical habitat is a term defined by the federal ESA. It is the specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation.

Conservation Concern 2008 (U.S. Fish and Wildlife Service 2008c) is the most recent effort to carry out this mandate. The overall goal of the report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities.

Table 3.2-2. Special-Status Species that Occur or Have the Potential to Occur in the Plan Area^a

Species	Federal Status	Plan Area County Listed	Occurrence/Habitat in the Plan Area
Mammals			
Northern long-eared bat (<i>Myotis septentrionalis</i>)	T	Atoka	The Plan Area provides roosting and foraging habitat. No known hibernacula (caves) or roost trees are located in the Plan Area.
Birds			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BGEPA	--	The Plan Area and immediate vicinity contains suitable nesting, perching, and foraging habitat for the species.
Golden eagle (<i>Aquila chrysaetos</i>)	BGEPA	--	The Plan Area and immediate vicinity contains suitable nesting, perching, and foraging habitat for the species.
Least tern (<i>Sterna antillarum</i>)	E	Atoka, Coal, Pontotoc, Pottawatomie, Seminole	The Canadian River crossing provides habitat for the species and is listed as a dependent aquatic watershed for the species.
Piping plover (<i>Charadrius melodus</i>)	T	Atoka, Coal, Pontotoc, Pottawatomie, Seminole	The Plan Area is within the probable migratory pathway between breeding and winter habitats for the species. The Canadian River crossing provides stopover and foraging habitat for the species.
Red knot (<i>Calidris canutus rufa</i>)	T	Atoka, Coal, Pontotoc, Pottawatomie, Seminole	The Plan Area is within the probable migratory pathway between breeding and winter habitats for the species. The Canadian River crossing provides stopover and foraging habitat for the species.
Whooping crane (<i>Grus americana</i>)	E	Atoka, Coal, Pontotoc, Pottawatomie, Seminole	The Plan Area is within the probable migratory pathway between breeding and winter habitats for the species. Numerous streams, wetlands, agricultural fields, and ponds within the Plan Area provide habitat for the species.
Clams			
Ouachita rock pocketbook (<i>Arkansia wheeleri</i>)	E	Atoka	No habitat for the species is present within the Plan Area in Atoka County.
Scaleshell mussel (<i>Leptodea leptodon</i>)	E	Atoka	No habitat for this species is present within the Plan Area in Atoka County.
Winged mapleleaf (<i>Quadrula fragosa</i>)	E	Atoka	No habitat for this species is present within the Plan Area in Atoka County.

Species	Federal Status	Plan Area County Listed	Occurrence/Habitat in the Plan Area
Fishes			
Arkansas River shiner (<i>Notropis girardi</i>)	T	Atoka, Pontotoc, Pottawatomie, Seminole	The Plan Area is within a known occupied watershed for the species. The Canadian River crossing provides critical habitat for the species.

Source: U.S. Fish and Wildlife Service 2018.

^a There are no state-listed species in the counties comprising the Plan Area (Oklahoma Department of Wildlife Conservation 2018). The table does not include all of the migratory birds protected by the Migratory Bird Treaty Act that use the Plan Area.

BGEPA = protected by the Bald and Golden Eagle Protection Act; E = endangered; T = threatened.

On behalf of the Applicants, Enercon Services, Inc. (Enercon) conducted an on-site assessment of the Plan Area in March, April, and May 2016 and May 2018 to determine potential presence of ESA-listed species and bald eagles (see HCP Appendix B, *Biological Evaluation / American Burying Beetle Habitat Assessment*). Enercon's on-site assessment consisted of attempts to observe individuals or sign indicating listed species presence (including, but not limited to, tracks, scat, relict shells, and nests). Enercon also assessed plant community structure and composition, as well as edaphic and hydrologic factors of the site, to identify potential habitat for listed species. Additionally, Enercon submitted a request for element occurrence records from the Oklahoma Biological Survey's Oklahoma Natural Heritage Inventory (ONHI) database along the Canadian River crossing in Seminole and Pontotoc counties. The Canadian River crossing is the only location within the Plan Area that provides potential habitat for the interior least tern, piping plover, red knot, and Arkansas River shiner. ONHI identified seven database records associated with this location. No known hibernacula (caves) or roost trees for the northern long-eared bat occur in the Plan Area. Enercon did not observe any special status species during their site visits.

The proposed pipeline route crosses the Canadian River which is critical habitat for the Arkansas River shiner. The Canadian River forms the border between Pontotoc County and Pottawatomie and Seminole counties. Critical habitat includes the river channel and 300 feet on each side of the river width at bankfull discharge. Bankfull discharge is the flow at which water begins to leave the channel and move into the floodplain and generally occurs with a frequency of every 1 to 2 years.

3.2.2 Environmental Consequences

This section describes the potential direct and indirect impacts on biological resources in the Plan Area.

3.2.2.1 Vegetation

Vegetation impacts are described by identifying impact mechanisms associated with the Covered Activities. Construction of the pipeline and associated infrastructure will affect vegetation by temporarily disturbing and permanently removing vegetation. The Covered Activities can also compact soil and contribute to the establishment and spread of invasive plants, both of which can affect native plant growth. As described below, the proposed action, which includes implementation of the AMMs identified in the HCP, is not expected to result in significant impacts on vegetation.

Temporarily Disturb and Permanently Remove Vegetation

Potential effects on vegetation will be short- and long-term. Direct causes of surface disturbances in the easement will consist of temporary site preparation and construction activities. Impacts will include localized disturbance to vegetation, which includes individual plants and the seedbank, caused by

construction equipment and vehicles during site preparation, including damage to vegetation from vehicle tires, trampling/crushing, excavation, grading, soil compaction, and soil stockpiling. Easement site preparation activities will clear or modify vegetation and disturb soil within the Plan Area to install the pipeline. The Applicants will clear the easement of woody vegetation prior to construction. Easement clearing will occur either mechanically or manually and will typically involve cutting and removing woody-stemmed vegetation (clearing) followed by stump removal (grubbing).

Long-term impacts on vegetation from construction and easement maintenance will include conversion of woody vegetation to non-woody vegetation and loss of vegetation resulting from permanent habitat conversion. Clearing of woody vegetation typically includes removal of mature trees and low woody vegetation. Depending on the vegetation adjacent to these wooded areas, cleared woody areas will likely be converted to grasses or to vegetation similar to that found in adjacent areas. Clearing woody vegetation will have a long-term, high-intensity, localized effect because it will result in permanent vegetation conversion. Vegetation clearing will be confined to the pipeline easement, which is approximately 100 feet wide.

For cover change impact areas (i.e., areas where habitat was converted from forested habitat to open habitat), the Applicants will restore these areas to conditions equal to or better than open habitats in the immediate area. In most cases, both temporary and cover change impacts will be restored using native warm season grasses and/or other native species naturally occurring in the surrounding area. Some areas, such as mixed grass pastures, will be restored to pre-project conditions that may feature a mixture of native and non-native species with the goal of restoring to equal or better habitat conditions for the ABB. In other areas, restoration activities may be ineffective or impossible due to the wishes or land use practices of property owners or their tenants. In such cases, where restoration cannot be completed due to factors beyond the Applicants' control, the Applicants will mitigate these impacts at the permanent mitigation ratio.

If construction/soil disturbance ends during the dormant vegetation season, bare soil will be temporarily stabilized by broadcasting cool season annual species such as annual rye grass or wheat seed and, where necessary, using clean, weed-free wheat straw as mulch to protect seeds and increase soil moisture. At the beginning of the next growing season, vegetation in these areas will be restored as described in the preceding paragraph. Seeds used during vegetation restoration will be free of invasive species seeds or propagules and equipment used for restoration will be washed before used in restoration activities to reduce the chances of unintentionally introducing non-native or invasive plant seeds or propagules to the restoration area.

Constrain Plant Germination and Growth through Soil Compaction and Erosion

The movement of heavy equipment and supplies during construction will compact the soil, affecting vegetation germination and growth. Soil compaction from Covered Activities will inhibit seed germination and root penetration in the soil surface and could result in bare soil or sparsely vegetated areas. Vegetation removal and soil compaction will expose soil to the erosive forces of rain and overland stormwater runoff, causing sediment to smother vegetation within and beyond project footprints, especially in areas with steep terrain. These indirect, short-term impacts will be minimized through erosion and sediment controls implemented throughout the 8-year permit term.

One of the AMMs identified in the HCP to avoid or minimize effects on the ABB is to reduce erosion by implementing stormwater best management practices (BMPs). This AMM will also minimize impacts on plant growth. The Applicants will ensure construction activities conform to a state-approved, site-specific stormwater management plan using BMPs to reduce construction stormwater runoff and

prevent soil erosion in and around the construction area. These practices might include erosion control measures such as silt fencing, hay bales, water bars, and other efforts to prevent washing away of topsoil, formation of gullies, or other soil erosion effects, to minimize impacts on habitat.

Another AMM identified in the HCP that will minimize impacts on plant germination and growth is limiting the use of motor vehicles, machinery, or heavy equipment. The Applicants will limit off-road use of motor vehicles, machinery, and heavy equipment in the Permit Area to the extent feasible to reduce the potential for soil compaction and crushing of ABB brood chambers. This AMM will minimize the amount of soil compaction and impacts on plant growth throughout the 8-year permit term.

Also, as part of mitigating effects on ABB habitat, the Applicant will disk temporary work sites and laydown areas and other heavily used or traveled areas in the Permit Area where soil compaction has occurred. Disking will relieve soil compaction and promote restoration of vegetation.

Contribute to the Spread of Invasive Plants

Construction activities could introduce and increase the spread of invasive plants in the following ways: (1) construction equipment could carry invasive plant seeds or plant parts from infested areas outside the construction area into the construction area; (2) construction equipment could disturb existing invasive plant infestations in the Plan Area (if present) and cause the spread of these infestations; (3) fill material containing invasive plants could be used; and (4) seed mixtures containing invasive plant seeds could be used for re-vegetating construction staging areas. Implementing common construction BMPs will minimize the potential for introducing invasive plants to the construction area.

Invasive plants can adversely affect vegetation communities by outcompeting native vegetation, leading to a reduction in biodiversity and degradation of habitats. Invasive plants are often more aggressive than native vegetation, and the disturbed conditions of a construction site create an environment (e.g., bare and compact soil, disturbed surfaces) where some invasive plants thrive. Invasive plants that encroach beyond construction footprints could outcompete native vegetation and result in altered vegetation structure, a reduction in plant species richness, and overall disruption of the plant ecosystem.

One of the mitigation measures identified in the HCP is revegetating disturbed areas. Seeds used during vegetation re-establishment will be free of invasive species seeds or propagules. Equipment used for restoration will be washed before being used in restoration activities to reduce the chances of unintentionally introducing invasive plants to the restoration area. Thus, the Applicants will take measures to prevent the spread of invasive plants.

In summary, we do not expect any significant impacts to vegetation because the Applicants have committed to restore impacted areas by revegetating temporary worksites; disking temporary work sites, laydown areas, and other heavily used areas; and preventing the spread of invasive plants.

3.2.2.2 General Fish and Wildlife

Impacts on general fish and wildlife species are described by identifying impact mechanisms associated with the Covered Activities. The Covered Activities can affect fish and wildlife from or by removing, degrading, or fragmenting habitat; human disturbance; encounters with vehicles and construction equipment; contact with accidental release of contaminants; and artificial lighting.

The impacts discussion focuses on terrestrial species because the ABB does not occur in aquatic habitats (i.e., surface waters such as rivers, creeks, springs, ponds, lakes; and perennial wetlands), and ITP coverage will apply only to impacts in areas with positive ABB survey results, where ABB presence is

assumed, or where ABBs are encountered unexpectedly during construction. Covered Activities that will disturb the ground or affect vegetation in ABB habitat adjacent to surface waters, such as installing the pipeline underneath a stream or river, could cause some indirect impacts to surface waters (see Section 3.3, *Water Resources*), but those impacts will likely be avoided or minimized with BMPs and occur in isolated areas of the surface water. In addition, activities directly affecting aquatic habitats but not covered by the ITP may be subject to other regulatory reviews (e.g., under Sections 401 and 404 of the Clean Water Act [CWA]) in which aquatic impacts should be considered. As described below, the proposed action, which includes implementation of the AMMs identified in the HCP, is not expected to result in significant impacts on general fish and wildlife.

Habitat Degradation

The Covered Activities will adversely affect wildlife by causing temporary and permanent habitat loss. All woody vegetation within the Plan Area will be cleared. All species groups will be affected to some degree, but impacts will likely be greater on bird populations because of the abundance and diversity of avian species that occur in the Plan Area. Avian species occupying disturbed areas will likely move to suitable adjacent habitat. Wildlife habitat will be permanently removed at above-ground facilities (e.g., pump stations) and any areas where existing access roads are widened. The installation of the pipeline underground will not present a permanent barrier to wildlife species that use the surrounding areas, so effects from habitat fragmentation will be minimal. As noted in Section 3.2.2.1, *Vegetation*, following completion of construction/soil disturbing activities, the Applicants will restore vegetation in temporary impact areas to conditions equal to or better than pre-project conditions. This AMM will provide a long-term benefit to wildlife species in the Plan Area.

Human Disturbance and Construction Equipment

Impacts on wildlife will include disturbances from construction-related activities, such as the presence of construction personnel, presence and use of construction equipment, and noise from construction activities. These activities may disturb wildlife species in and adjacent to construction areas. Noise disturbances may occur beyond the Plan Area, but impacts will generally be confined to the Plan Area. These disturbances will likely affect all groups of species to some degree but may especially affect birds and mammals (Bayne et al. 2008; Francis and Barber 2013). Disturbances to wildlife associated with pipeline construction may result in disruptions in feeding, breeding, or sheltering behavior; increased energy expenditure spent fleeing human disturbance; and/or displacement of individuals (Bennett 1991; Bayne et al. 2008; Francis and Barber 2013). These disturbances could result in abandonment of individual wildlife nests, dens, territories, or burrows.

Disturbed wildlife species will likely occupy the abundant habitat available directly adjacent to the Plan Area, and many will likely return to the area after construction, when personnel and equipment are no longer present and the habitat is restored. The magnitude of these impacts on individual species or groups of species will largely depend on the timing of construction activities relative to seasonal or diurnal occurrences.

Mortality or injury to individuals may occur as a result of being crushed by construction equipment and vehicles. Crushing by construction equipment and vehicles will primarily affect less mobile terrestrial species, such as small mammals, reptiles, and insects. Wildlife species that occupy burrows may experience mortality if occupied burrows are collapsed or if egress is prevented. These impacts will be limited to the Plan Area and access roads. The risk of wildlife mortality from crushing by construction equipment and vehicles will result in short-term, adverse impacts. Construction-related activities will not result in any major changes to local or regional wildlife populations.

Fuel Spills

Accidental release of contaminants during construction, such as an inadvertent spill of gasoline, oil, or lubricants when fueling or storing construction equipment, could affect individual animals if the animal came in contact with the contaminant. However, an uncontained spill of hazardous materials will be small and affect a limited area because the volume of these materials that may be present at a construction location will be small, and there will be no long-term storage of hazardous materials at construction locations. In addition, implementation of required spill prevention and response plans will limit potential impacts from a spill, should one occur.

Artificial Lighting

In some instances, Project construction may be conducted at night. Construction at night will require supplemental lighting as well as use of vehicle mounted lights. The impact of artificial lighting on wildlife is relatively new and not fully understood. However, based on the research that is available and the importance of ambient light to animal behavior and physiology, it is likely artificial lighting can adversely affect wildlife (Rich and Longcore 2005; Stone et al. 2009; Kempenaers et al. 2010; Baker and Richardson 2006). Wildlife can be affected by artificial lighting in two main ways—disorientation and attraction/repulsion (Longcore and Rich 2004; Corre et al. 2002; Telfer et al. 1987). The disorientation of sea turtles and the attraction of insects as a result of artificial lighting are common examples. Consequently, the addition of artificial lighting to an environment can alter foraging and reproductive behaviors, predator-prey interactions, habitat use, community structure, and physiology (Stone et al. 2009; Longcore and Rich 2004; Corre et al. 2002; Miller 2006; Beier 2005; Perry and Fisher 2005; Buchanan 2005; Eisenbeis 2005; Frank 2005). For example, bats have been shown to change foraging behavior, flight routes, and evening emergence times in response to artificial lighting (Stone et al. 2009; Beier 2005; Murphy et al. 2009; Patriarca and Debernardi 2010; Kuijper et al. 2008; Rydell 2005). Effects are likely species-specific, based on the role ambient light plays in physiology and behavior, and might also depend on the type of lighting used (Rich and Longcore 2005; Poot et al. 2008).

Any potential wildlife impacts from artificial lighting associated with the Covered Activities will be localized and short term, with the potential to occur only during emergency response activities (and any nighttime construction, which is not expected). One of the AMMs identified in the HCP to minimize impacts on the ABB is limiting the use of artificial lighting. Impacts from artificial lighting will be minimized by (1) avoiding construction at night when possible and (2) down-shielding required lights if construction does take place at night. The Applicants will limit construction activities in the Permit Area to daylight hours during the ABB active season when feasible.

In summary, we do not expect any significant impacts to general fish and wildlife species because the Applicants will restore disturbed habitat; human presence and construction equipment will be temporary; spill prevention and response plans will limit potential impacts from a spill; and the use of artificial lighting will be localized and short term.

3.2.2.3 Covered Species

Impacts on the ABB are described by identifying impact mechanisms associated with the Covered Activities. The impact mechanisms are the same impact mechanisms described above for general wildlife. Construction of the pipeline and facilities will result in direct effects on the ABB and its habitat because construction involves ground disturbance, movement of heavy equipment, and human activity. Mortality of ABB adults, larvae, and eggs will likely result from Covered Activities in occupied habitat. While most of the habitat impacts will be temporary (i.e., lasting 5 years or less), some impacts will be

permanent (i.e., construction of above-ground facilities). Other effects will relate to conversion of forested habitat to open habitat.

Indirect effects to the ABB might include introduction of non-native plant species via construction equipment, which could lead to ABB habitat loss or degradation. As noted above, the Applicants will take measures to prevent the spread of invasive plants. Indirect effects might also include inadvertent burying of carrion by construction equipment, which may interrupt ABB reproduction by making suitable carcasses unavailable. If construction equipment inadvertently buries carrion, this impact will last only one breeding season and be confined to the Plan Area. Although the Plan Area is long, it is mostly narrow (100 feet wide). Additional off-easement areas will also be small. Therefore, ABBs are likely to have access to other carrion sources just outside the Plan Area.

Habitat Degradation

Vegetation clearing and easement grading expose soils to sun and wind and might result in decreased soil moisture and elevated soil temperature. ABBs are known to be sensitive to changes in soil moisture and high temperature (Bedick et al. 2006). ABBs appear to seek out areas with relatively higher soil moisture and may cope with elevated air temperatures by remaining inactive and buried in soil. In some situations, mortality of ABBs could be caused by extreme reduction of soil moisture and elevated temperature in areas directly above brooding or overwintering areas. If sheltering areas are subjected to these conditions, ABBs are likely to relocate to areas with better conditions. Since exposing soils can change soil temperature and moisture level, vegetation clearing and easement grading might result in mortality or temporary behavioral changes that might directly or indirectly adversely affect the ABB.

Human Disturbance and Construction Equipment

Although the behavior of ABBs is not completely understood, ABBs may be (to some degree) adversely affected by intense human activity, elevated levels of vehicle traffic, and excessive noise. It is difficult to predict if this effect will be negative or positive. It is possible that increased human activity could lead to a decrease in direct mortality, because ABBs may abandon the area. An alternative viewpoint is human activity will result in negative effects because displacement of individual ABBs from the Plan Area might result in an increase in interspecific competition for resources, as ABBs attempt to use new areas. Such displacement might also lead to an increase in exposure to avian and mammalian predators. Such effects are difficult to quantify and describe. However, effects from these activities are expected to be minor and for a short duration. These disruptions are considered temporary effects during the construction phase and will be unlikely to have any long-term negative effect on the species.

Death of ABBs at various life history stages might result from Covered Activities. During the ABB active period (late May through late September), adults which are not reproducing typically spend daylight hours buried in soils or leaf litter near the surface. Adults become active during hours of darkness and seek sources of carrion for feeding and potential reproductive sites. Because of their unique life history, ABBs spend a large amount of time relatively immobile and buried a few to several inches below the soil surface.

ABBs are susceptible to death or injury by crushing at all stages of their life cycle. This is particularly likely when vehicles and heavy equipment are operating in areas inhabited by reproducing or sheltering ABBs. Adults that are not reproducing and are sheltering in soils or leaf litter during the day may be killed or injured by construction equipment. Easement clearing, excavation of trenches, and similar ground-disturbing activities may destroy brood chambers along with adults, eggs, and larvae contained within by crushing and/or exposure. Mortality in all of these life stages is possible. Similarly, uncovering

or digging into or near brood chambers might result in exposure of the brood chamber and/or ABBs inside resulting in mortality caused by desiccation, heat stress, and/or predation by various scavengers and small mammals.

Fuel Spills

Heavy equipment will require refueling throughout construction. Although unlikely, death of ABBs could result from fuel spills. Fuels, such as diesel and gasoline, could result in mortality of ABBs if the spill were to occur at a brood site or where adult (non-reproducing) ABBs were sheltering or overwintering. Fuel spills are not a Covered Activity and thus any take associated with a fuel spill will not be covered by the ITP. However, take due to spill response activities within the Plan Area will be covered. Construction BMPs will be used to minimize or avoid this hazard.

Artificial Lighting

In some instances, construction activities may occur at night. Construction at night will require supplemental lighting as well as use of vehicle-mounted lights. ABBs, like many insects, are attracted to artificial lights (Bedick et al. 1999). Such uses of artificial light might result in temporary adverse impacts to ABB by disrupting their normal feeding and reproductive behavior. Behavior disruptions could expose the species to increased mortality by predation.

Estimated Take

Take of the ABB is difficult to quantify because (1) individuals are small in size, making them difficult to locate, which makes encountering dead or injured individuals very unlikely; (2) ABBs spend a substantial portion of their lifespan underground; and (3) the species is primarily active at night. These factors make it difficult to locate injured or dead individuals to quantify the direct effects from mortality or harm to ABBs from Covered Activities. Furthermore, there is no reliable means to estimate ABB density within the Plan Area with which to compare estimates of take of individuals from Covered Activities. For these reasons, the HCP estimates ABB take by quantifying the temporary, permanent, and cover change (fragmentation) impacts on ABB from Covered Activities by using ABB habitat as a proxy for impacts on individuals. This approach is consistent with other approved ABB HCPs.

Table 3.2-2 shows the estimated amount of ABB habitat affected by the Project. Impacts in the CPA will be mitigated at a higher ratio than impacts elsewhere in ABB range (refer to HCP Table 2, *Mitigation for the Second Atoka Pipeline Project*).

Table 3.2-3. ABB Habitat Impacts

Impact Type ^a	Project Impacts on ABB Habitat (acres)
ABB Range (Excluding Conservation Priority Area)	
Temporary	230.74
Permanent Cover Change	93.52
Permanent	1.17
Total	325.43
Conservation Priority Area	
Temporary	370.54
Permanent Cover Change	74.26
Permanent	6.92

Impact Type ^a	Project Impacts on ABB Habitat (acres)
Total	451.72

^a Temporary impacts are those that affect ABB habitat for 5 years or less (areas affected by the Project are restored to a condition suitable for ABB use within 5 years of the original impact). Permanent impacts are those that eliminate ABB habitat, as well as any impact on habitat that takes more than 5 years to re-establish as suitable for ABB use. Permanent cover change impacts are defined as impacts that change the successional stage of an area to a different stage (e.g., forest or shrubland to grassland), resulting in habitat that is possibly less preferable for ABB use or used in a different way by the ABB.

In summary, we do not expect any significant impacts to the ABB because the Applicants will restore disturbed habitat; human presence and construction equipment will be temporary; spill prevention and response plans will limit potential impacts from a spill; and the use of artificial lighting will be localized and short term. In addition, the Applicants will mitigate for impacts according to the standard mitigation ratios (see HCP Table 2).

3.2.2.4 Special-Status Species

The impact mechanisms for special-status species are the same as those discussed for general fish and wildlife species. Because the potential impacts on special-status species depend on the particular species (as opposed to a discussion of general wildlife species impacts), the impact discussion is organized by type of special-status species rather than by impact mechanisms.

Federally Listed Species

As noted in Section 3.2.2.2, *General Fish and Wildlife*, impacts on aquatic species and habitats will be minimal (insignificant or discountable) or avoided because Covered Activities will not occur in aquatic habitat. Thus, we do not expect any adverse effects to the Ouachita rock pocketbook or Arkansas River shiner. Similarly, we do not expect any adverse effects to the Arkansas River shiner's critical habitat (i.e., the Canadian River and 300 feet on each side of the river). The remaining ESA-listed species in Table 3.2-2 (northern long-eared bat and four species of birds) have the potential to be exposed to the same stressors as those discussed above for general wildlife species.

Mammals

Potentially suitable roosting and foraging habitat for the northern long-eared bat is present within Atoka County, where the species is listed. No known hibernacula (caves) or roost trees are located within the vicinity of the Plan Area. With no known roost trees located within the Project's vicinity, the temporary nature of disturbance, and mobility of the species, the risk for direct effects to this bat species is minimal. Therefore, we do not expect any adverse effects to an individual northern long-eared bat.

Birds and Fish

The Canadian River provides suitable habitat for the interior least tern, piping plover, red knot, and Arkansas River shiner. The installation of the water pipe in this area will be done via microtunneling or boring under the river. The pipe entrance and exit locations will be located more than 300 feet from the banks of the suitable habitat located at the Canadian River crossing; therefore, we do not expect any adverse effects to the interior least tern, piping plover, red knot, or Arkansas River shiner.

The Plan Area contains suitable stopover, roosting, and foraging habitat associated with the many major rivers, ponds, agricultural fields, and wetlands for the whooping crane. There is potential for whooping cranes to occur in the Plan Area during migration (March-June and August-November). The risk of

effects to whooping cranes is minimal because of the mobility of the whooping crane and temporary nature of the construction disturbance. Therefore, we do not expect any adverse effects to an individual whooping crane.

Clams

No habitat for the ESA-listed clam species is present in the Plan Area. Therefore, the proposed action will have no effect on the Ouachita rock pocketbook, scaleshell mussel, or winged mapleleaf.

Bald and Golden Eagles

During their site visits, Enercon did not observe any eagles, eagle nests, or evidence of use. However, Enercon observed suitable nesting, perching, and foraging habitat within the Plan Area and immediate vicinity. The Applicants will survey the Plan Area prior to the start of construction, to determine if any eagle nests are located within 660 feet of the proposed construction activities. In the event an eagle nest is observed in or near the Plan Area, the Applicants will contact the Service to coordinate efforts to avoid or minimize disturbance of eagle nests. Such efforts might include: (1) maintaining a distance of 660 feet between the activity and the nest (distance buffers), (2) maintaining forested (or natural) areas between the activity and around nest trees (landscape buffers), and (3) avoiding disruptive (loud) activities during the breeding season. Given the Applicants will survey the Plan Area prior to construction and coordinate with the Service as applicable, we do not expect adverse effects to eagles.

Migratory Birds

Potential impacts on migratory birds will be the same as discussed in Section 3.2.2.2, *General Fish and Wildlife*. Given the temporary nature of construction disturbance and the mobility of migratory birds, we do not expect significant impacts to migratory birds.

On December 22, 2017, the U.S. Department of the Interior (DOI) issued a memorandum (M-37050; M-Opinion) that analyzed whether the MBTA prohibits the accidental or incidental taking or killing migratory birds. Incidental take is take that results from an activity, but is not the purpose of that activity. The M-Opinion concludes that “consistent with the text, history, and purpose of the MBTA, the statute’s prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs.” In other words, take of a migratory bird, its nest, or eggs that is incidental to another lawful activity does not violate the MBTA.

On April 11, 2018, the Service issued a memorandum to provide guidance on the M-Opinion. The Service’s memorandum provides guidance to clarify what constitutes prohibited take under the MBTA. The Service interprets the M-Opinion to mean that the MBTA’s prohibitions on take apply when the purpose of an action is to take migratory birds, their eggs, or their nests. Conversely, the take of birds, eggs, or nests occurring as the result of an activity, the purpose of which is not to take birds, eggs, or nests, is not prohibited by the MBTA. Because the purpose of the Project is not to take migratory birds, their eggs, or their nests, any incidental take of migratory birds, their eggs, or their nests during the Project will not violate the MBTA.

3.3 Water Resources

3.3.1 Affected Environment

This section describes water resources—surface waters, floodplains, and wetlands—in the Plan Area.

3.3.1.1 Surface Waters

Surface waters include rivers, creeks, springs, lakes, ponds, and reservoirs. Surface water is maintained by precipitation and is lost through evaporation, seepage into the ground, human diversion, or use by plants and animals. Typical beneficial surface water uses include drinking water, public supply, irrigation, agriculture, thermoelectric generation, mining, and other industrial uses.

Existing surface water conditions in the Plan Area are quantified, described, and summarized by overlaying water resources data with the Plan Area using a geographic information system (GIS). The National Hydrography Dataset (NHD) (U.S. Environmental Protection Agency and U.S. Geological Survey 2017) was used to determine the extent of surface water features in the Plan Area. The NHD maps the surface water drainage network of the U.S. and includes streams, rivers, canals, ponds, lakes, and reservoirs. The GIS analysis used the NHD to generate miles of streams and rivers and acres of non-linear waterbodies (ponds, lakes, reservoirs) in the Plan Area.

Surface water quality in the Plan Area is described using state CWA 305(b) surface waters reports and the 303(d) lists of impaired waters. The CWA requires all states to assess and describe the quality of their waters in a report called the 305(b) report. In that report, states assign designated uses (e.g., public water supply) to all surface waters within the state. For surface waters where pollution controls do not maintain relevant water quality standards for designated uses, states must list those waters as impaired (i.e., place them on the state's 303(d) list).

Watershed and Hydrology Information

The Plan Area lies within four watersheds (sub-basins): Muddy Boggy (8-digit hydrologic unit code [HUC-8]: 11140103), Clear Boggy (HUC-8: 11140104), Lower Canadian-Walnut (HUC-8: 11090202), and Little (HUC-8: 11090203) (Oklahoma Water Resources Board 2018). The Plan Area contains 2.6 miles of intermittent streams or rivers, 0.8 miles of perennial streams or rivers, and 1.7 acres of non-linear waterbodies (pond or lake). Refer to HCP Figure 4, *Major Surface Water Features Map*, for a depiction of major surface waters in the Plan Area.

Water Quality

Designated beneficial uses of surface waters in Oklahoma include aesthetic, agriculture, fish consumption, warm water aquatic community, cool water aquatic community, habitat limited aquatic community, trout fishery, navigation, primary body contact recreation, public/private water supply, emergency water supply, and secondary body contact (Oklahoma Department of Environmental Quality 2016a). The Federal CWA requires that all states assess surface water quality and list any surface water under Section 303(d) for which assigned beneficial uses are impaired by pollution. Table 3.3-1 summarizes the total linear distances of rivers and streams that are listed as CWA 303(d) impaired in the Plan Area. The impairments associated with these surface waters include enterococcus (bacteria), macroinvertebrate bio, turbidity, total dissolved solids, pH, and dissolved oxygen. There are no impaired waterbodies (ponds or lakes) in the Plan Area.

Table 3.3-1. CWA 303(d) Impaired Surface Waters in the Plan Area

Surface Water	Length (feet/miles) within Plan Area	Impairment
Lower Canadian-Walnut Watershed		
Canadian River	0.02	Enterococcus (bacteria)
Little Sandy Creek	0.05	Macroinvertebrate bio
Little Watershed		
Hog Creek	0.02	Enterococcus (bacteria)
Pecan Creek	0.03	Macroinvertebrate bio
Salt Creek	0.02	Enterococcus (bacteria)
Aqueduct (Stanley Draper Lake Origin)	0.01	Turbidity
Unnamed Tributary of Blacksmith Creek	0.07	Total Dissolved Solids
Muddy Boggy Watershed		
Muddy Boggy Creek	0.04	pH; Enterococcus (bacteria)
Clear Boggy Watershed		
Leader Creek	0.02	Dissolved Oxygen

Data Source: Oklahoma Department of Environmental Quality 2016b

3.3.1.2 Floodplains

Floodplains are defined as any land area susceptible to being inundated by waters from any source (44 CFR 59.1), and are often associated with surface waters and wetlands. Floodplains are valued for their natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions. For human communities, however, floodplains can be considered a hazard area because buildings, structures, and properties located in floodplains can be inundated and damaged during floods.

Floodplain data in the Plan Area were obtained from the Federal Emergency Management Agency (FEMA) floodplain mapping data (Federal Emergency Management Agency 2017). FEMA develops Flood Insurance Rate Maps, the official maps on which FEMA delineates special flood hazard areas for regulatory purposes under the National Flood Insurance Program. Special flood hazard areas are also known as 100-year floodplains, or areas that have a 1-percent annual chance of flooding. Because not all communities (e.g., cities and counties) participate in the National Flood Insurance Program, and because not all floodplains contain insurable structures, the FEMA floodplain mapping data are not comprehensive of all floodplains. Within the Plan Area, FEMA has not provided floodplain data for Atoka and Coal counties.

The Plan Area contains approximately 79.4 acres of FEMA-mapped 100-year floodplain. The Applicants' aquatic resources delineation report (see HCP Appendix C) contains maps showing the FEMA-mapped 100-year floodplain.

3.3.1.3 Wetlands

Wetlands are important features in the landscape that provide numerous beneficial services for people and functions for fish and wildlife. Some of these services, or functions, include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, producing aesthetic value, insuring biological productivity, filtering pollutant loads, and maintaining surface water flow

during dry periods. Functions are the result of the inherent and unique natural characteristics of wetlands.

Wetland functions can also reflect a measurable value to society. For example, a value can be determined by the revenue generated from the sale of fish that depend on the wetland, by the tourist dollars associated with the wetland, or by public support for protecting fish and wildlife. Although large-scale benefits of functions can be valued, determining the value of an individual wetland is difficult because wetlands differ widely and do not all perform the same functions or perform functions equally well (U.S. Environmental Protection Agency 2002).

On behalf of the Applicants, Enercon conducted a wetland delineation in the Plan Area (see HCP Appendix C for the delineation report). Enercon reports approximately 4.40 acres of potentially jurisdictional wetlands occur within the Project Area (which includes areas outside the Plan Area). Enercon delineated three forested wetlands, 27 emergent wetlands, and one scrub-shrub wetland. Enercon's delineation report shows the location of the recorded wetlands (see HCP Appendix C).

3.3.2 Environmental Consequences

This section describes the potential direct and indirect impacts on water resources in the Plan Area. Surface water, floodplains, and wetlands are distinct resources, but they do not function as separate and isolated components of the watershed, but rather as a single, integrated natural system; disruption of any part of these resources may have an effect on the functioning of the entire system (Federal Emergency Management Agency 2007). If the Applicants require the placement of permanent fill or structure directly within a surface water (including wetlands) that is deemed a water of the U.S. (i.e., protected by the CWA), the Applicants will need to obtain all necessary federal permits (e.g., CWA Section 404 permit and Section 401 Water Quality Certification), which require separate NEPA compliance by the U.S. Army Corps of Engineers (Corps).

3.3.2.1 Surface Waters

The surface waters impacts discussion focuses on Covered Activity impact mechanisms that will occur outside of surface waters, because the ABB does not occur in surface waters (i.e., rivers, creeks, springs, ponds, lakes, and reservoirs), and because ITP coverage will apply only to impacts in areas with positive ABB survey results, where ABB presence is assumed, or where ABBs are encountered unexpectedly during construction.

Ground Disturbance and Sedimentation

All Covered Activities will cause ground disturbance. For example, easement site preparation activities will clear or modify vegetation and disturb soil within the Plan Area. Pipeline installation will involve trenching (excavation). The Applicants will construct three pump stations and three intermediate surge facilities. These ground disturbance activities can alter erodibility and potential for runoff into nearby surface waters.

Use of construction vehicles and equipment can loosen and expose bare soils and increase the potential for sediment particles to be mobilized and carried in overland runoff, with potential to reach adjacent or nearby surface waters. Sediment deposition into surface waters can affect water quality by increasing turbidity, which can directly affect aquatic species and habitats. Turbidity can decrease light penetration and increase pollutant and nutrient levels (e.g., nitrogen and phosphorous) which can alter water quality conditions. For example, excess nutrients in a surface water may enhance the growth of algae and

produce algal blooms, which can affect the availability of oxygen in water. These potential impacts could be exacerbated if the surface water is already designated as an impaired water (see Table 3.3-1). While sedimentation into surface water will likely be a short-term occurrence during ground disturbance, the settling of sediments in a surface water may have long-term effects. For example, sediment deposition into a stream may physically alter (e.g., raise) the stream bed, thus affecting the stream's flow and erosional patterns.

The risk of sedimentation can be reduced by avoiding surface waters as much as possible and by application of BMPs for erosion, which are included in the HCP. One of the AMMs identified in the HCP to avoid or minimize effects on the ABB is to reduce erosion by implementing stormwater BMPs. The Applicants will ensure construction activities conform to a state-approved, site-specific stormwater management plan (i.e., stormwater pollution prevention plan [SWPPP], required as part of CWA Section 402 permitting) using BMPs to reduce construction stormwater runoff and prevent soil erosion in and around the construction area. These practices might include erosion control measures such as silt fencing, hay bales, water bars, and other efforts to prevent washing away of topsoil, formation of gullies, or other soil erosion effects. Additional AMMs identified in the HCP will also reduce potential erodibility and sedimentation impacts, including limiting the off-road use of motorized vehicles, machinery, and heavy equipment as much as possible.

Following completion of construction or soil-disturbing activities, the Applicants will restore vegetation in temporary impact areas to conditions equal to or better than pre-project conditions. Additionally, the Applicants will disk (typically 6 inches deep) temporary work sites, laydown areas, and other heavily used or traveled areas in the Permit Area where soil compaction occurs.

Accidental Petro-Chemical Spills

The use of construction equipment could result in accidental spills or leaks of petro-chemicals (e.g., gasoline, hydraulic fluids) onto the ground surface, which could reach surface waters if not contained and cleaned up. Although the risk of a major spill and contamination of surface waters is low, accidental spills might degrade water quality, kill or injure aquatic organisms, or limit the beneficial use of waters (e.g., drinking, recreation). These potential impacts could be exacerbated if the surface water is already designated as an impaired water. The Applicants will reduce the risk of an accidental petro-chemical spill affecting surface waters by complying with all applicable state and federal laws regarding fuel use and storage, avoiding surface waters as much as possible, and by application of BMPs to ensure a timely cleanup if a spill occurred. Additionally, the Applicants' SWPPP will contain site-specific measures to avoid and minimize accidental petro-chemical spill impacts on surface waters.

Alteration of Surface Topography and Overland Runoff

Covered Activities that require grading, excavation, and placement of fill material could cause long-term changes to surface topography and alterations of the natural flow direction and volumes of overland runoff. This potential impact will most likely occur during construction of new above-ground facilities (pump stations and surge facilities). Changes to surface topography and compaction of soils can redirect and change velocities of overland runoff, which can affect receiving surface waters. In addition, the new impervious surfaces (pump stations and surge facilities) will increase stormwater runoff due to the limited porosity of the impervious surface. An increase in stormwater runoff to a nearby stream could increase the amplitude of stream flows, increase bank instability, and disperse pollutants.

During implementation of Covered Activities, the alteration of surface topography and overland runoff effects on surface waters will be avoided or minimized by application of BMPs for controlling runoff,

which are included as an AMM in the HCP. These BMPs will control the volume and rate of surface runoff, minimizing and potentially avoiding differing runoff volumes reaching surface waters; control measures may include silt fencing, hay bales, water bars, and other efforts. Limiting off-road use of motor vehicles, machinery, and heavy equipment in the Permit Area will also reduce potential topography alterations and runoff. Further, the Applicants' post-construction restoration for habitat impacts, which includes revegetation and relief of compacted soils, will minimize alterations to topography and increased runoff, thereby reducing potential long-term impacts on surface waters.

In summary, we do not expect any significant impacts to surface waters because the Applicants will restore vegetation and disc temporary impact areas to prevent sedimentation, alteration of surface topography, and overland runoff. In addition, spill prevention and response plans, as well as BMPs described in the HCP, will limit potential impacts from a spill to surface waters.

3.3.2.2 Floodplains

Covered Activities that require vegetation clearing, excavation, and placement of fill material or above-ground structures in floodplains could affect floodplain functions. Placing fill material or structures in a floodplain can interfere with the passage, storage, and retention of floodwaters. Alteration of ground elevations in a floodplain by placement of fill material or structures causes a direct loss of flood storage capacity equivalent to the volume of fill or structure below the flood elevation. This reduced flood storage capacity and displacement of floodwaters can result in greater volumes of floodwater downstream and subsequent increases in floodwater levels. Conversely, constriction of flood flow paths from loss of floodplain storage capacity may increase floodwater elevation upstream of the constriction, resulting in upstream flooding from backup of floodwaters. These alterations and redirections of flood flows to other parts of the channel or floodplain can also lead to channel erosion and alteration of channel alignment.

The proposed pump stations and associated ancillary facilities will not be located in the 100-year floodplain. Therefore, these structures will not affect floodplain functions. Given the temporary nature of displacement of fill during pipeline construction, installation of the pipeline within the floodplain is not expected to result in significant floodplain-related effects (see HCP Appendix C for floodplain maps). After the pipe is installed, the Applicants will backfill the soil, thus avoiding impacts related to the passage, storage, and retention of floodwaters.

Covered Activities that will clear floodplain vegetation (but will not change floodplain elevations) could alter a floodplain's capacity to slow down, retain, and absorb floodwaters. Maintaining low vegetative cover within the pipeline easement in floodplain can lead to increased downstream flood flows, sedimentation, channel erosion, and flooding. The extent of such impacts will vary based on the amount of existing vegetation removed and whether removal will be temporary (e.g., construction staging) or permanent (e.g., convert forest to a permanent shrub or herbaceous vegetation type). Any floodplain impacts will be minimal and localized.

One of the AMMs identified in the HCP that will minimize floodplain impacts is limiting the off-road use of motor vehicles, machinery, or heavy equipment in the Permit Area as much as possible. The HCP mitigation plan also includes post-construction restoration for vegetation cover impacts that includes revegetation and relief of compacted soils, which could minimize disturbed vegetation and ground disturbance, reducing potential long-term impacts on floodplain function.

In summary, we do not expect any significant impacts to floodplains because the Applicants will restore vegetation and disc temporary impact areas to reduce potential long-term impacts on floodplain function.

3.3.2.3 Wetlands

Wetland Loss and Degradation—Habitat

Covered Activities that occur in wetlands could temporarily or permanently affect wetland vegetation and habitat functions, including operating construction vehicles in wetlands, long-term vegetation maintenance of the easement, temporary staging that may be required in wetlands, clearing of wetland vegetation, or placement of permanent fill material during construction activities (note that habitat functions will be entirely lost if a wetland is completely filled) (see HCP Appendix C for the Applicants' aquatic resources report that shows wetlands within and near the Plan Area). If a wetland is partially filled or vegetation fragmented, or if wetland vegetation is trimmed or cleared, vegetation communities and habitat will be permanently altered and degraded. For example, if an existing forested wetland is cleared as part of easement preparation, the forested wetland vegetation will be converted to scrub-shrub or herbaceous wetland vegetation, which is a permanent, long-term change in habitat that will affect wildlife using the forested wetland.

One of the AMMs identified in the HCP that will minimize wetland impacts is limiting the off-road use of motor vehicles, machinery, or heavy equipment in the Permit Area as much as possible. The HCP mitigation plan also includes post-construction restoration for vegetation cover impacts that includes revegetation and relief of compacted soils, which could minimize disturbed vegetation and ground disturbance, reducing potential long-term impacts on adjacent wetlands.

Wetland Loss and Degradation—Water Quality

Covered Activities that occur in or around wetlands could impact wetland water quality functions. Permanent placement of fill material in a wetland will result in the permanent loss of the wetland's ability to improve water quality; on a watershed level, any permanent wetland loss could reduce the capacity of regional wetlands to filter pollutants and improve water quality. Ground disturbance in or near wetlands could also result in degraded water quality of the wetland itself. The primary concerns are impacts associated with sedimentation and petro-chemical products (see Section 3.3.2.1, *Surface Waters*). Soil disturbance and exposure to surface runoff during construction could increase sediment in nearby wetlands, potentially increasing surface water turbidity, smothering wetland vegetation, reducing water oxygen levels, and reducing wetland water storage capacity. Although the effects of sedimentation associated with Covered Activities may not be widespread, they could result in long-term impacts on local wetland communities. While many wetlands act to filter out sediment and contaminants, any substantial increase in sediment or contaminant loading could exceed the capacity of a wetland to perform its normal water quality functions. The Applicants' compliance with the SWPPP and implementation of other BMPs (including the HCP's AMMs) will avoid or minimize impacts of wetland water quality.

Wetland Loss and Degradation—Stormwater and Floodwater Storage

Covered Activities that occur in wetlands could affect wetland stormwater and floodwater storage functions. Fill material placed in a wetland during construction activities will result in the permanent loss of the wetland's ability to impede and retain stormwater and floodwater; on a watershed level, any permanent wetland loss could reduce the capacity of regional wetlands to impede and retain these

flows. Alteration of wetland vegetation could also permanently reduce a wetland's ability to retain overland runoff. For example, clearing and trimming of wetland vegetation will permanently change vegetation communities from one type to another (e.g., forested to scrub shrub), permanently reducing the functional capacity of wetlands to impede and retain stormwater and floodwater. Densely vegetated wetlands may be more sensitive to this impact since these wetlands have a greater ability to slow down and retain stormwater and floodwater. Implementation of the AMMs and mitigation identified in the HCP, as well as any measures imposed by the Corps during Section 404 permitting, will avoid or minimize these impacts.

In summary, we do not expect any significant impacts to wetlands because the Applicants will restore vegetation and disc temporary impact areas to reduce impacts to habitat near wetlands, and compliance with the SWPPP and implementation of other BMPs (including the HCP's AMMs) will avoid or minimize impacts to wetland water quality.

3.4 Air Quality

3.4.1 Affected Environment

This section describes the existing air quality conditions in the Plan Area. Air quality is generally influenced by the quantities of pollutants released within and upwind of the area, and can be highly dependent on the chemical and physical properties of the pollutants. Air quality standards (i.e., the National Ambient Air Quality Standards [NAAQS]) and regulations limit the allowable quantities that may be emitted. The topography, weather, and land use in an area also affect how pollutants are transported and dispersed and the resulting ambient concentrations.

Air quality conditions are characterized by measuring ground-level ambient (outdoor) pollutant concentrations. Measured concentrations are compared to the NAAQS. The most important measured pollutants are the *criteria pollutants*. Criteria pollutants are air contaminants commonly emitted from a variety of sources and include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter 10 micrometers or less in diameter (PM₁₀), particulate matter 2.5 micrometers or less in diameter (PM_{2.5}), and sulfur dioxide (SO₂). Primary standards are set at levels to protect public health, including the health of sensitive populations (such as asthmatics, children, and the elderly) with a margin of safety. Secondary standards are set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Air quality in the entire state of Oklahoma is in compliance with the NAAQS (Oklahoma Department of Environmental Quality 2018).

3.4.2 Environmental Consequences

This section describes the potential direct and indirect impacts on air quality in the Plan Area. Air quality impacts are assessed by determining any instances where emissions from Covered Activities could lead to a violation of a NAAQS.

Construction activities include using vehicles and equipment that generate air pollutants. Construction activities will include clearing vegetation, grading the site, trench excavation, installing the pipe, and constructing pump stations and ancillary facilities. Emissions will occur intermittently, depending on the work schedule and the specific equipment in use. Construction activities will generate criteria pollutants, volatile organic compounds, and hazardous air pollutants from engine exhaust, and fugitive

dust from disturbed earth surfaces. The greatest potential for emissions and adverse air quality impacts will occur during site preparation when soil disturbance and earthwork is greatest, producing fugitive dust, and the intense use of heavy equipment over a short time period, producing relatively high exhaust emissions. Given the temporary nature of construction emissions, construction will not cause a violation of ambient air quality standards or have a considerable impact on long-term air quality in the region.

In summary, we do not expect any significant impacts to air quality because of the temporary nature of exhaust emissions and dust production during construction.

3.5 Cultural Resources

3.5.1 Affected Environment

This section describes cultural resources conditions in the Plan Area. Cultural resources are past and present expressions of human culture and history in the physical environment. They represent physical locations of human activity, occupation, or use and can refer to historical or architectural objects, sites, structures, or places with potential public and scientific value, including locations of traditional cultural, ethnic, or religious significance to a specific social or cultural group.

The cultural resources analysis is based on a cultural resource survey conducted by Cojeen Archaeological Services, LLC (CAS) on behalf of the Applicants. CAS performed an archeological survey of the Plan Area from October 2015 to February 2016. CAS performed an initial desktop cultural review prior to conducting the survey. The review showed four archeological sites plotted encroaching on the existing waterline easement and a fifth site recorded as the waterline itself. The cultural resources survey resulted in the relocation of all previously recorded sites, 31 newly recorded archeological sites, the recording of the infrastructure related to the water pipeline (all in excess of 45 years in age), and three standing structure complexes in excess of 45 years in age.

Most of the easement crosses private lands, however, the easement also crosses Tribal and Bureau of Reclamation lands. Approximately 1,450 linear feet of lands in two tracts is crossed belonging to the Citizen Potawatomi Tribe in southern Pottawatomie County. A report was prepared for the Tribe dated November 22, 2017. No cultural resources were located during the survey of Citizen Potawatomi lands. Approximately 22,500 linear feet of lands in 18 tracts is crossed belonging to the Absentee Shawnee Tribe in Pottawatomie and Cleveland counties. A report was prepared for the Tribe dated February 21, 2017. One site, a scatter of mid-20th century trash and construction debris, was recorded on these lands. This site was determined to be not eligible for inclusion on the National Register of Historic Places (NRHP). Approximately 2,500 linear feet of Bureau of Reclamation lands was crossed in northern Cleveland County. A report was prepared for the Bureau of Reclamation dated March 8, 2016. No cultural resources were located during the survey of Bureau of Reclamation lands.

A draft survey report (dated September 26, 2016) of the findings for the remainder of the survey was presented to the Oklahoma Archaeological Survey for initial comments. Based on comments by the State Archeologist, in a letter dated May 17, 2017, limited testing of six archeological sites was initiated in early 2018 to determine potential NRHP eligibility of these sites. These sites included one previously recorded unassigned prehistoric site along Muddy Boggy Creek (34C0144), one potentially late-19th to early-20th century occupation site (34C0193), and four newly recorded prehistoric sites: 34C0202 (along Leader Creek), 34PN334 (along Owl Creek), 34SM159 (floodplain of the Canadian River), and 34SM160 (uplands along the Canadian River). In a draft report on the initial testing, dated February 18,

2019, based on testing three of these sites, 34CO193, 34SM160, and 34SM159, were determined not eligible for inclusion on the NRHP.

Testing of 34CO144 showed it was an extensive long-term occupation site that covered the easement and extended south of the survey corridor. Ultimately, it was determined to re-route the water pipeline corridor to avoid this site. Site 34CO144 is considered eligible for placement on the NRHP.

Testing at 34PN334 yielded a moderately intensive occupation with two distinct components, including a unique Middle Archaic component. Testing also showed the easement was previously disturbed and contained no significant intact deposits that would contribute to the understanding of this site. Portions of the site to the south of the easement but within the survey corridor contain significant deposits and those portions of the site are considered eligible for placement on the NRHP.

Site 34CO202 has had preliminary testing performed which yielded deep, intact deposits that extend across the existing easement. This site is considered eligible for placement on the NRHP pending additional testing.

3.5.1.1 Section 106 Consultation

Compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, is required by law for all federal actions (referred to as “undertakings” under Section 106). This includes issuance of Section 10(a)(1)(B) ITPs for activities covered in an HCP. Under the NHPA, significant cultural resources are referred to as historic properties and include any prehistoric or historic district, site, building, structure, object, or landscape included in, or determined eligible for inclusion in, the NRHP. Under Section 106, the area of potential effects (APE) is defined as “those areas in which impacts are planned or are likely to occur. Specifically, the APE is defined as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. Additionally, the APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16[d]).” We have defined the APE for this undertaking as the Plan Area. We are currently conducting Section 106 consultation with the State Historic Preservation Officer (SHPO), which includes confirming the APE. The final EA will document the results of the Section 106 consultation.

3.5.1.2 Native American Consultation

The Service sent letters to seven federally recognized Native American tribal representatives located throughout the Plan Area (see Section 1.4 for a list of the tribes). Notification was also sent to the Bureau of Indian Affairs—Eastern Oklahoma and Southern Plains Regions. Tribal representatives were invited to submit comments. We have received comments from tribes, but as of the publication of this draft EA consultation is ongoing. The final EA will document the results of the tribal consultation process.

3.5.2 Environmental Consequences

This section describes the potential direct and indirect impacts on cultural resources in the Plan Area or APE. Potential effects on historic properties are reviewed under the criteria of adverse effect at 36 CFR 800.5 (a)(1). An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that will diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. Adverse impacts may include visual effects that diminish a property’s integrity, historical significance, or eligibility for listing on the NRHP. Adverse effects may also include reasonably

foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Direct impacts to cultural resource sites, including physical destruction or alteration of all or part of a resource, might occur during construction of the pipeline, pump stations, and ancillary facilities. Typically, direct impacts are caused by the actual construction itself or through vehicular traffic. Vehicular traffic might damage surficial or shallowly buried archeological resources. Direct impacts might also include isolation of a historic resource from or alteration of its surrounding environment (setting). CAS's cultural resource survey identified three archaeological sites that encroached upon the existing easement, none of which are listed or eligible for listing in the NRHP.

We are currently conducting Section 106 consultation with the SHPO and government-to-government consultation with tribes, which includes identifying any adverse effects to historic properties, traditional cultural properties, or Native American sacred sites, and developing mitigation measures to resolve any unavoidable adverse effects. We do not expect any significant impacts to cultural resources because any adverse effects that could not be avoided will be mitigated by the Applicants. The final EA will document the results of the Section 106 consultation.

3.6 Land Use

3.6.1 Affected Environment

This section describes the land ownership and use in the Plan Area. The Plan Area is within a mostly rural area with relatively low human population density and development. Developed areas include small communities, scattered residences, oil and gas fields, and agricultural lands. Public lands and other protected areas in the Plan Area were identified using the U.S. Geological Survey's Protected Areas Database (U.S. Geological Survey 2016). The majority of the land in the Plan Area is privately owned (Table 3.6-1). Oklahoma City leases the existing permanent pipeline easement. Pump stations and ancillary facilities that will be constructed as part of the Project will be located within the easement or on Applicant-owned property.

Table 3.6-1. Land Ownership in the Plan Area

Land Ownership	Acres
City	4.3
State	
State Land Board	55.9
State Parks and Recreation	11.6
American Indian	67.1
Private or Other (land outside PAD) ^a	1,135.1
Total	1,274.0

^a Area not included in the U.S. Geological Survey Protected Areas Database (PAD) is designated "private or other."
Data Source: U.S. Geological Survey 2016

Table 3.2-1 in Section 3.2, *Biological Resources*, shows the land cover (a proxy for land use) in the Plan Area. Most of the Plan Area consists of herbaceous, deciduous forest, and hay/pasture land cover.

3.6.2 Environmental Consequences

This section describes the potential direct and indirect impacts on land use in the Plan Area. Construction activities will temporarily disturb land for site preparation, excavation and pipe installation, construction of facilities, and for staging areas. After the pipe is buried, the easement will be graded and seeded to restore vegetation. During construction activities, land use of surrounding areas may be affected by temporary road and access closures, traffic, noise, air quality, and visual disturbances. However, due to the short-term duration of construction activities, these impacts will be minor. Aside from permanent land cover change (e.g., forested areas to open habitat) in some areas, Covered Activities within the existing easement will not change the existing land use. Facilities constructed outside the easement will be located on property owned by the Applicants and thus will not significantly impact land use.

3.7 Socioeconomics and Environmental Justice

3.7.1 Affected Environment

This section describes socioeconomics and environmental justice in the Plan Area, including population, housing, labor force, earnings, and minority and low-income populations.

3.7.1.1 Socioeconomics

For the purposes of this study, the Plan Area for socioeconomic and environmental justice impacts is defined as the six Oklahoma counties the Project traverses—Atoka, Cleveland, Coal, Pontotoc, Pottawatomie, and Seminole. Socioeconomic and demographic data are used in this discussion to establish baseline conditions and provide perspective. The data consist of publicly available information about the Plan Area.

Population

As displayed in Table 3.7-1, census data show that from 2010 to 2017, three of the six counties in the Plan Area grew in population by an average of approximately 4.1 percent, ranging from a population decline of approximately 4.4 percent in Coal County to an increase of 7.1 percent in Cleveland County (USCB 2010a, 2019c). Five of the six counties are projected to increase in population by 2040, with an average 20.4 percent increase. Seminole County is expected to decrease in population by 2040. The lowest increase is expected in Coal County, with an increase of only 8.2 percent. The largest population increase, 37.7 percent, is projected for Cleveland County (Oklahoma Department of Commerce 2012).

Table 3.7-1. Population Change by County within the Plan Area

County	2000 (Decennial)	2010 (Decennial)	2017 (Estimate)	Percentage Change (2010 to 2017)	2040 Projected
Atoka	13,879	14,182	13,899	-2.0	16,589
Cleveland	208,016	255,755	274,024	7.1	377,232
Coal	6,031	5,925	5,666	-4.4	6,128
Pontotoc	35,143	37,492	38,289	2.1	43,425
Pottawatomie	65,521	69,442	71,614	3.1	88,223
Seminole	24,894	25,482	25,246	-0.9	22,597

Sources: USCB 2000a, 2010a, 2019c; Oklahoma Department of Commerce 2012

Housing

As shown in Table 3.7-2, census data show that from 2010 to 2017, total housing units increased in all six counties in the Plan Area, increasing on average at approximately 2.1 percent. The greatest increase was in Cleveland County, at 7.3 percent, while the lowest increase was in Coal County at 0.1 percent. Only Cleveland County had an increase above three percent. The remaining five counties showed increases below three percent (USCB 2000b, 2010b, 2019g).

Table 3.7-2. Total Housing Units by County within the Plan Area

County	2000	2010	2017	Percentage Change (2010 to 2017)
Atoka	5,673	6,312	6,393	1.3
Cleveland	84,844	104,821	112,483	7.3
Coal	2,744	2,810	2,812	0.1
Pontotoc	15,575	16,595	16,785	1.1
Pottawatomie	27,302	29,139	29,788	2.2
Seminole	11,146	11,642	11,694	0.4

Sources: USCB 2000b, 2010b, 2019g

Labor Force

Table 3.7-3 shows the population characteristics of the labor force in the Plan Area since the last decennial census. The U.S. Census Bureau also estimated occupational sectors for the civilian employed population 16 years and older in the six counties comprising the Plan Area. The three occupational sectors with the highest overall employment were educational services, health care and social assistance (52,120); retail trade (23,533), and arts, entertainment, and recreation, accommodation and food services (19,499) (USCB 2019a).

Table 3.7-3. Employment by Occupational Category in Counties within the Plan Area

Occupational Category	County					
	Atoka	Cleveland	Coal	Pontotoc	Pottawatomie	Seminole
Employed population 16 years and over	4,664	137,715	2,243	17,199	29,570	9,310
Agriculture, forestry, fishing and hunting, mining	391	3,288	238	817	1,132	842
Construction	324	7,789	243	1,090	1,920	708
Manufacturing	387	9,829	133	1,197	2,854	1,098
Wholesale trade	55	3,509	40	398	626	157
Retail trade	511	16,131	187	1,994	3,591	1,119
Transportation and warehousing; utilities	320	5,681	92	560	1,200	409
Information	27	2,428	26	233	428	39
Finance and insurance; real estate rental and leasing	193	8,333	127	930	1,148	331
Professional, scientific, and management; administrative and waste management services	235	12,924	85	1,232	1,986	439
Educational services; health care and social assistance	1,113	36,093	617	4,967	7,135	2,195
Arts, entertainment, and recreation; accommodation and food services	473	13,672	165	1,149	3,245	795
Other services	242	7,125	122	859	1,264	408
Public administration	393	10,913	168	1,773	3,041	770

Source: USCB 2019a

Income

The U.S. Department of Health and Human Services defines the poverty guideline for the continental U.S. in 2019 for a family of four as \$25,750 in annual income (84 *FR* 1167). If a family's total income is below the guideline, then that family and every individual in it is considered in poverty. Every year, the U.S. Census Bureau collects data on how much money households obtain from different sources, all of which are labeled as income. Earnings, primarily wages and salary from a job, are one source of income. Other sources include Social Security payments, pensions, child support, public assistance, annuities, money derived from rental properties, interest, and dividends.

As shown in Table 3.7-4, the estimated annual median household income (2017 dollars) within the six Plan Area counties ranged from \$37,106 in Atoka County to \$60,632 in Cleveland County (USCB 2019f). None of the counties within the Plan Area has an estimated median household income or estimated median household earnings less than the U.S. Department of Health and Human Services poverty guideline.

Table 3.7-4. Employment and Income

Data Category	County						
	Atoka	Cleveland	Coal	Pontotoc	Pottawatomie	Seminole	Oklahoma
2018 unemployment rate (annual average)	6.6%	4.8%	7.9%	5.1%	6.7%	8.0%	5.7%
Employment status (civilian population 16 years and over in labor force)	4,664	137,715	2,243	17,199	29,570	9,310	1,746,419
Median household income (in 2017 USD)	\$37,106	\$60,632	\$39,931	\$46,689	\$46,159	\$37,741	\$49,767
Per capita income in past 12 months (in 2017 USD)	\$19,439	\$29,231	\$24,004	\$23,862	\$22,284	\$19,605	\$26,461

Sources: USCB 2019b, 2019f
% = percent; USD = U.S. dollars

3.7.1.2 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was passed in February 1994 and mandates that all federal actions address environmental effects, including human health, economic, and social effects of the proposed actions on minority and low-income communities. Based on U.S. Census Bureau criteria, minority populations consist of persons of Hispanic or Latino ethnicity of any race, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Two or More Races.

The composition and distribution of minority populations within the Plan Area are shown in Table 3.7-5. In reviewing the data, the predominant minority population in five out of the six counties (Atoka, Coal, Pontotoc, Pottawatomie, and Seminole) was the American Indian or Alaska Native ethnicity, with 11.6 percent, 13.1 percent, 8.8 percent, 14.7 percent, and 20.1 percent, respectively. In Cleveland County, the predominant minority population was the Hispanic or Latino ethnicity, at 8.2 percent. The Hispanic or Latino ethnicity is also the highest minority population reporting in the state of Oklahoma (10.6 percent)

The data also illustrate that for the same time period, a higher percentage of poverty was reported for families and for individuals in five of the six counties (Atoka, Coal, Pontotoc, Pottawatomie, and Seminole) than for the state of Oklahoma as a whole (11.8 percent and 16.2 percent, respectively). Only Cleveland County reported lower rates for family and individuals than the state overall (7.5 percent and 12.6 percent) (USCB 2019c).

Table 3.7-5. Population Characteristics of Counties within Plan Area

Characteristic	County						
	Atoka	Cleveland	Coal	Pontotoc	Pottawatomie	Seminole	Oklahoma
2010 Population Total (decennial)	14,182	255,755	5,925	37,492	69,442	25,482	3,751,351
2017 Population Total (estimated)	13,899	274,024	5,666	38,289	71,614	25,246	3,930,864
White	73%	78.4%	69.9%	70.0%	76.1%	67.9%	74.3%
Black or African American	3.7%	4.7%	0.2%	2.2%	3.2%	4.8%	7.8%
American Indian or Alaska Native	11.6%	3.7%	13.1%	8.8%	14.7%	20.1%	9.2%
Asian	0.7%	4.4%	0.3%	0.8%	0.7%	0.2%	2.3%
Native Hawaiian and Other Pacific Islander	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.2%
Two or More Races	9.9%	7.4%	14.0%	17.6%	4.5%	6.3%	6.1%
Hispanic or Latino	3.4%	8.2%	4.4%	5.1%	4.9%	4.8%	10.6%
White alone, not Hispanic or Latino	71.8%	72.8%	69.5%	66.3%	73%	65.1%	65.7%
Poverty (families)	16.5%	7.5%	15.7%	11.9%	12.1%	16.5%	11.8%
Poverty (individual)	19.8%	12.6%	20.3%	17.3%	17.0%	22.7%	16.2%
Persons under 18 years	22.5%	22.2%	24.8%	23.8%	24.3%	25.4%	24.4%
Education-high school graduate or higher, percentage of persons age 25 years+ (2013-2017 estimate)	82.8%	91.4%	83.6%	88.7%	86.8%	84.1%	87.5%

Sources: USCB 2019b, 2019c, 2019d, 2019e
% = percent

3.7.2 Environmental Consequences

This section describes the potential direct and indirect socioeconomic and environmental justice impacts in the Plan Area. The socioeconomic impact analysis consists of assessing the population in terms of size, housing characteristics, labor and employment, and income. Assessing adverse impacts entails evaluating the potential for community disruption and impacts on community structure associated with the proposed action. An environmental justice analysis consists of assessing to what extent minority or low-income populations are disproportionately affected by adverse impacts. Characterization of the affected area for an environmental justice analysis consists of identifying minority and low-income populations present in the Plan Area (Council on Environmental Quality 1997).

The proposed action traverses rural areas in six counties in Oklahoma. Construction activities will occur in the existing pipeline easement. All construction and habitat restoration activities are expected to be completed within eight years. No significant beneficial or adverse socioeconomic impacts are expected because of the limited number of construction personnel involved and temporary nature of the construction. The Project is not anticipated to pose adverse environmental, health, or safety impacts and risks for any individuals or population groups, nor cause a disproportionate, high or adverse human health or environmental impact on minority and low-income populations because construction activities will be limited to the pipeline easement, temporary work areas, and sites owned by the Applicants, and the Applicants will comply with all relevant local, state, and federal laws during construction. Therefore, we do not expect significant impacts related socioeconomics and environmental justice.

3.8 Public Health and Safety

3.8.1 Affected Environment

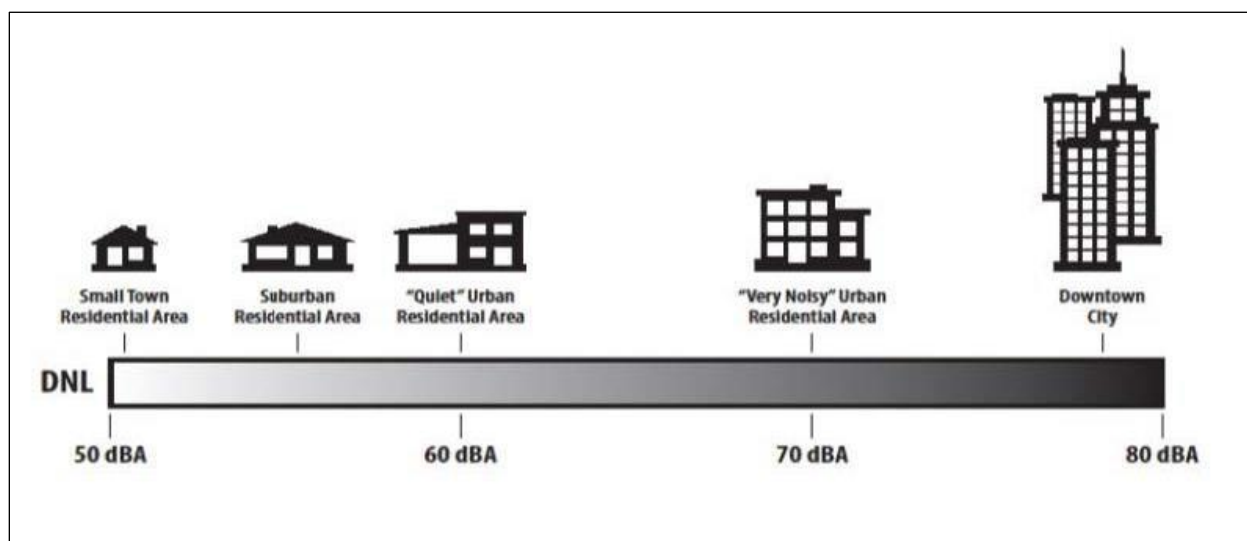
This section identifies the public health and safety issues in the Plan Area, including activities typical of pipeline construction that can result in public health, safety, or noise impacts. Construction activities in the Plan Area may generate public health and safety concerns, including the potential for injuries to workers resulting from falls from equipment, falls into open excavations, and accidents associated with movement of construction vehicles, equipment, and materials (e.g., where a worker is struck by heavy equipment, or caught/compressed between two structures). Members of the public may also be exposed to some of these issues due to general construction site hazards and the siting of industrial equipment in potentially accessible areas. Accidents during construction may result in injuries or fatalities to workers or members of the general public.

Construction activities can generate noise concerns. Both objective and subjective factors can be considered when evaluating community reaction to noise. Objective factors include absolute level and background noise, character of noise, and temporal and seasonal factors. Subjective factors include history of previous exposure, community attitude, and type of neighborhood. Human responses to noise differ depending on the time of the day; for example, humans experience more annoyance from noise during nighttime hours. The day-night average sound level (DNL) is the average noise level over a 24-hour period, after the addition of 10 decibels (dB) to sound levels from 10 p.m. to 7 a.m. to account for the greater sensitivity of most people to nighttime noise. The outdoor limit for protecting public health and welfare in residential areas is recognized by many federal agencies, including the EPA, as DNL 55. The dividing line between acceptable and unacceptable noise levels in residential areas is considered to be DNL 65.

Ambient or background noise levels represent the total amount of noise in an area and are used to compare the effects of a new noise source relative to existing conditions. Figure 3.8-1 shows ambient noise levels typical of areas with various population densities; population characteristics in the Plan Area are described in Section 3.7, *Socioeconomics and Environmental Justice*.

As indicated in Figure 3.8-1, ambient noise levels associated with high-density urban areas (70 to 80 A-weighted dB [dBA]) are much higher than those associated with small residential areas (50 dBA). The addition of a new noise source to an area with high existing ambient noise levels may be masked by existing noise sources and therefore less audible than in an area with low ambient noise levels. In rural areas with low ambient noise levels, a new noise source may be audible at distances farther from the facility than their urban counterparts, although low population densities in rural areas may have fewer sensitive receptors that will potentially be affected by the noise. Ambient noise levels and population density are therefore important parameters in characterizing the affected environment.

Figure 3.8-1. Typical Day-Night Average Noise Levels



Source: U.S. Environmental Protection Agency 1974.

3.8.2 Environmental Consequences

This section describes the potential direct and indirect impacts on public health and safety in the Plan Area. Impact mechanisms or activities associated with the Covered Activities that can affect public health and safety include site preparation, movement of vehicles and equipment, and construction-related noise increases. Impacts on public health and safety from implementing the HCP's conservation strategy are expected to be negligible and therefore are not described.

Construction risks could result in injuries to the general public and construction workers, including the potential for collisions with construction vehicles, equipment, and materials; and falls from structures or falls into open excavations. Public access to construction areas will be limited; therefore, the potential risk to the general public will be low. The potential risk of construction-related injuries to workers will be minimized through safety training, use of appropriate safety equipment, and development and adherence to health and safety plans.

Construction noise was evaluated for typical construction equipment operating on a construction site (Table 3.8-1). For purposes of analysis, we assumed the primary sources of noise during these activities will be truck and vehicle traffic, heavy earth-moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on site. Most, if not all, Covered Activities will occur during the day. Construction noise will cause a temporary and short-term increase to the ambient sound environment within the Plan Area. Workers associated with construction activities will be expected to wear appropriate hearing protection as required by Occupational Safety and Health Administration regulations (29 CFR §1910.95).

Table 3.8-1. Maximum Noise Levels at 50 Feet for Common Construction Equipment

Equipment Type	Maximum Noise Level (Lmax) at 50 feet (dBA, slow)
Compactor (ground)	80
Dozer	85
Dump truck	84
Excavator	85
Generator	82
Grader	85
Pickup truck	55
Warning horn	85
Crane	85

Source: Federal Highway Administration 2006

dBA = A-weighted decibels; Lmax = maximum noise level

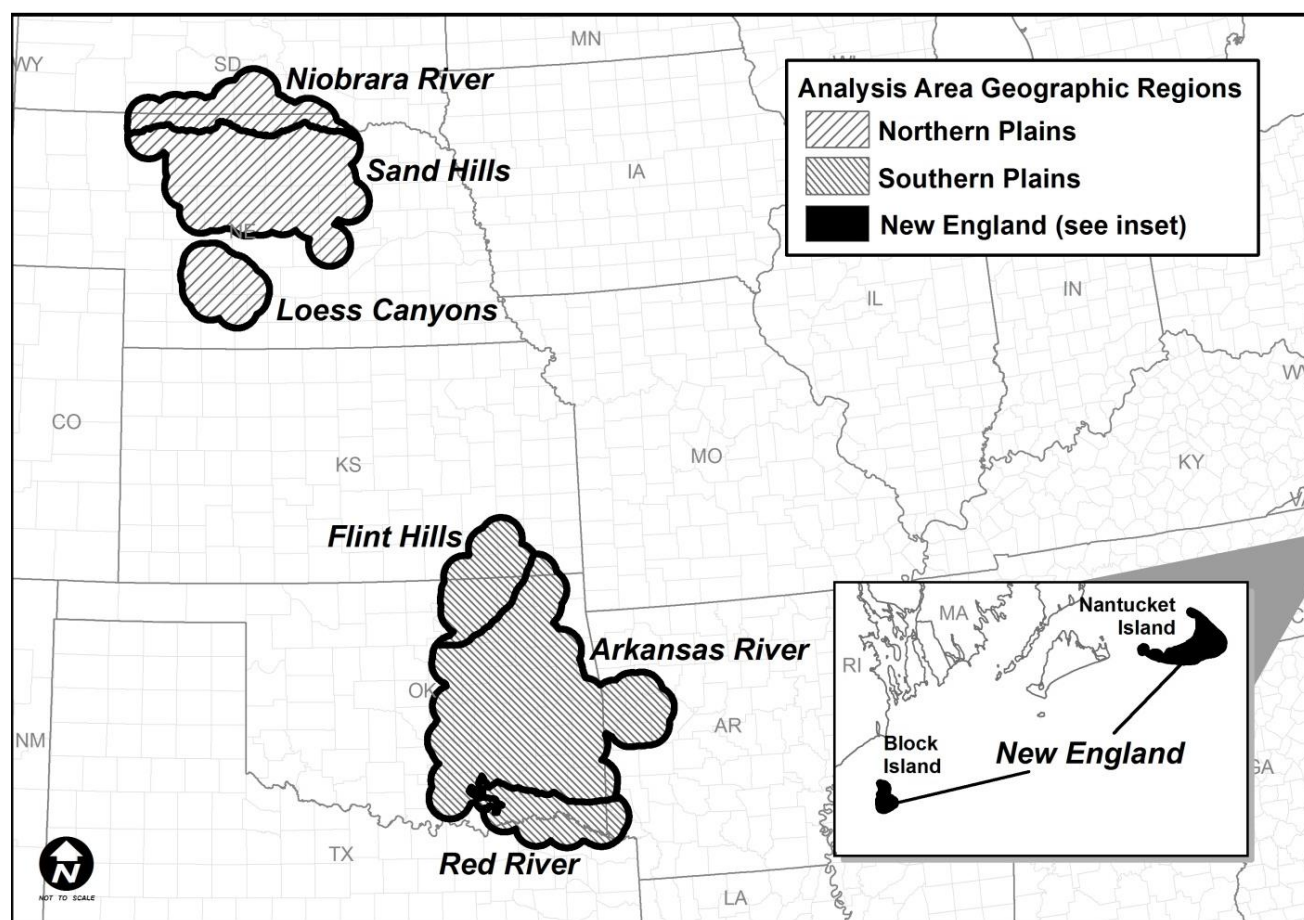
In summary, we do not expect any significant impacts to public health and safety because the general public will not have access to construction areas and construction workers will be provided safety training prior to the start of construction.

4.1 Introduction

The CEQ NEPA-implementing regulations define a cumulative impact as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR § 1508.7). Cumulative impacts can result from individually minor but collectively noteworthy actions taking place over a period of time.

As stated in Section 3.1, the scope of the EA is focused principally on the potential impacts of the proposed Covered Activities anticipated to result in incidental take of ABB, as well as any impacts associated with implementing the conservation strategy provided in the HCP. Thus, the EA is more detailed in its analyses of species and species habitats than for other aspects of the human environment, given the direct relationship between issuing an ITP and effects on wildlife species and their habitat. Accordingly, the proposed action will have more potential to contribute to cumulative impacts when added to other actions that 1) overlap or occur near the Plan Area and 2) result in take of ABB. In our 2019 Species Status Assessment report for the ABB (U.S. Fish and Wildlife Service 2019c), we organized the current range of the ABB into analysis areas that follow broad geographic and ecological patterns (Figure 4.1-1). The proposed action occurs within the Southern Plains analysis area, which includes the Red River, Arkansas River, and Flint Hills analysis areas. Therefore, the geographic area of focus for this cumulative impacts analysis is the Southern Plains analysis area. This chapter identifies past and present projects for which the Service has issued take of ABB and analyzes the proposed action’s potential cumulative impacts.

Section 4.2 describes the past and present actions near the Plan Area; Section 4.3 describes the reasonably foreseeable future actions near the Plan Area; and Section 4.4 provides the evaluation of cumulative impacts.

Figure 4.1-1. American Burying Beetle Species Status Assessment Analysis Areas

Source: U.S. Fish and Wildlife Service 2019c.

4.2 Past and Present Actions

The land area near the Southern Plains analysis area is primarily forested, open space, or agricultural and has experienced little urban development. Major developments within and near these areas have included conversion of native vegetation to agricultural crops or grazing land, urban or rural development, transportation projects, rights-of-way clearing for utilities, and development of industrial facilities, such as oil and gas pipelines, well pads, and associated facilities. The result is a variety of past and present actions affecting ABB that have resulted in the existing conditions described in Chapter 3, *Affected Environment and Environmental Consequences*. The discussion below details recent Service permitting and consultation processes for ABB.

4.2.1 Research and Recovery Permits

Currently, more than 90 entities or individuals possess valid ESA section 10(a)(1)(A) scientific research permits under which some authorized take of ABBs may occur. Most of these permits authorize surveys, which contribute to our understanding of ABB distribution. All research conducted under these permits must further conservation efforts for the species. Loss of some individual ABBs over the short-term from research is allowed as the research, when applied to conservation efforts, should provide long-term

benefits. The Service requires implementation of every available precaution to reduce and/or eliminate authorized take associated with research activities.

4.2.2 Habitat Conservation Plans

Section 10(a)(1)(B) of the ESA allows the Service to issue an incidental take permit for “...any taking otherwise prohibited by section 9(a)(1)(B) [of the ESA] if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” If, under section 10(a)(2)(B) of the ESA, the Service finds the issuance criteria are met by the applicant, including that the applicant will, “...to the maximum extent practicable, minimize and mitigate the impacts of such taking,...” the Service will issue a permit.

There are currently six HCPs which permit take of the ABB within the species’ range. Three of these are larger programmatic HCPs (spanning relatively large areas and covering multiple activities), while the other three are specific to individual projects. Total take issued under these HCPs is 39,826 acres, which is covered through the year 2059 and is approximately 0.1 percent of the species’ available habitat within its current occupied range. Impacts of take issued for these HCPs is offset through the use of ABB conservation banks or conservation lands that will be protected, in perpetuity, for ABB conservation. Additionally, much of the take issued under these HCPs is considered temporary, where ABB habitat will be restored within five years after disturbance.

4.2.3 Section 7 Consultations under the Act

The Service consults on numerous proposed actions potentially impacting the ABB, mostly in the state of Oklahoma. Project types include pipelines, roads, quarries, telecommunication towers, residential housing development, bridges, mining, petroleum exploration/extraction/production, commercial development, recreational development, transmission lines, and water and waste water treatment facilities. Impacts from these activities vary in size and duration, with projects such as quarries being hundreds of acres and having permanent impacts, to rights-of-way of a few acres with only temporary impacts. Most of these consultations are informal and do not result in take of the ABB. Consequently, no incidental take is authorized for these actions.

Since 2010, the Service has issued 46 formal biological opinions (twelve of which are programmatic) where incidental take of ABB is anticipated, totaling 643,012 acres of ABB habitat, or 0.2 percent of the species range. Included in that total is 39,826 acres discussed in the HCP section above. Similar to HCPs, most of the take issued for these biological opinions is considered temporary, where ABB habitat is restored within five years after disturbance. Ten of the biological opinions were for projects that resulted in beneficial effects to the species, such as National Wildlife Refuge actions and the development of conservation banks. Most of the remaining non-beneficial projects offset the impacts of their taking through the use of ABB conservation banks or similarly protected conservation lands, resulting in only a minor net loss of ABB habitat.

4.3 Reasonably Foreseeable Future Actions

Major reasonably foreseeable development trends that could affect ABB in the Southern Plains analysis area include oil and gas development, transportation projects, and urban growth and development. Oil and gas activities similar to those described above for the ICP in Oklahoma could occur in the Southern Plains analysis area. Activities could include exploration, development, extraction, and transport and/or

distribution of crude oil, natural gas, and other petroleum products. Major highway projects include construction of new highways and upgrades to existing highways. The counties in the Plan Area are projected to grow in population between now and 2040 (see Table 3.7-1). This population growth will likely lead to development activities to support this growth, such as residential, industrial, energy, and municipal development. Also, reasonably foreseeable future actions include construction of the Project outside the Plan Area (see Figure 1-1). This area is not considered part of the proposed action's study area because it is outside the ABB's range and thus the Service will not be issuing incident take of ABB in this area.

Construction and operation of projects related to these development trends could disturb or impact ABB or its habitat. It is important to note that project proponents for these actions are responsible under the ESA to avoid take of ABB. If, during a project's planning process, the project proponent determines incidental take will occur, the project proponent will need to initiate the section 7 consultation process (for projects with a federal nexus) or section 10 process (for projects with no federal nexus) to comply with the ESA.

4.4 Evaluation of Cumulative Impacts

For evaluation purposes, the resources considered in the impacts assessment have been placed into the following four groups:

- Biological Resources – vegetation, general fish and wildlife, Covered Species, and special-status species
- Physical Resources – water resources and air quality
- Social Resources – land use, socioeconomics and environmental justice, and public health and safety
- Cultural Resources

4.4.1 Biological Resources

4.4.1.1 Vegetation

Past and present actions have resulted in changes to vegetation types in the Southern Plains analysis area. Major developments have included conversion of native vegetation to agricultural crops or grazing land, urban or rural development, transportation projects, rights-of-way clearing for utilities, and development of industrial facilities, such as oil and gas pipelines, well pads, and associated facilities. As a result, native vegetation communities have been altered through temporary and permanent removal and permanent conversion. Degradation of natural vegetation types has also resulted from fragmentation of remaining native vegetation. Some of these changes, though not permanent, extend over the long term until required site restoration occurs. These impacts are localized and some can be controlled through avoidance, minimization, and mitigation measures. Past and present activities have also cumulatively resulted in the introduction and spread of invasive plants.

The reasonably foreseeable future actions could result in the removal and conversion of native vegetation types in project sites, rights-of-way, and adjacent areas. These actions could result in continued cumulative loss and degradation of native vegetation types within the Southern Plains analysis area. Permanent conversion would occur in areas of facility footprints (e.g., structures,

buildings, roads, etc.). The spread of invasive plants could continue during implementation of these reasonably foreseeable future actions.

When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to temporary and permanent effects on vegetation in the Southern Plains analysis area from construction and easement maintenance. The contribution of the proposed action to cumulative adverse impacts on vegetation will depend in part on the prior land disturbance. Effects will be lower in cropland or previously disturbed or fragmented habitat than in undisturbed habitats of higher quality (e.g., forests). Soil and vegetation disturbance could contribute to cumulative spread of invasive plants. The proposed action's contribution to vegetation impacts in the Southern Plains analysis area will be confined to the pipeline easement and minimized by mitigation measures, such as re-vegetation measures (refer to Section 3.2.2.1, *Vegetation*). With implementation of the mitigation measures, significant cumulative impacts on vegetation are not expected.

4.4.1.2 General Fish and Wildlife

Past and present actions have resulted in cumulative changes to wildlife and habitats within the Southern Plains analysis area. Past and present actions have likely affected all species populations to some extent. Conversion of native habitats to cropland and construction and operation of oil and gas pipelines and associated facilities and infrastructure have altered natural communities, resulting in changes in wildlife habitats, species abundance, and community composition. Adverse impacts associated with these past and present actions include direct injury or mortality to wildlife; habitat loss or fragmentation; permanent and temporary displacement of wildlife or interference with feeding, mating, nesting, or migratory behaviors; and habitat alteration or degradation associated with the introduction of invasive plants or replacement of native vegetation with cropland. Although changes to wildlife communities and habitats have occurred, the Southern Plains analysis area still contains large tracts of intact (unfragmented) high-quality wildlife habitat which supports healthy populations and diverse wildlife communities.

The reasonably foreseeable future actions could result in additional cumulative impacts on wildlife within the Southern Plains analysis area. Impacts associated with these actions could include additional injury or mortality to wildlife; habitat loss or fragmentation; permanent and temporary displacement of wildlife or interference with feeding, mating, nesting, or migratory behaviors; and habitat alteration or degradation associated with the introduction of invasive species.

When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to temporary and permanent effects on wildlife habitat and individual wildlife. The mitigation measures identified in the HCP will minimize cumulative impacts to wildlife in the Southern Plains analysis area. With implementation of the mitigation measures, significant cumulative impacts on general fish and wildlife are not expected.

4.4.1.3 Covered Species

Past, present, and reasonably foreseeable future actions have resulted, and will likely continue to result, in cumulative impacts on the ABB. The ABB is highly sensitive to disturbances and is slow to recover, making it more vulnerable to the effects of habitat fragmentation and alteration, disturbance, and individual mortality than other species. Past and present actions have resulted in cumulative, long-term adverse effects on the ABB within the Southern Plains analysis area. The lack of urban development in Oklahoma has allowed the ABB to persist in this region. Reasonably foreseeable future actions in the Southern Plains analysis area might result in long-term effects on the ABB, depending on the project's

specific location and the amount of habitat loss or fragmentation associated with construction. However, many potential adverse effects can be controlled through avoidance, minimization, and mitigation measures developed during the section 7 consultation process (for projects with a Federal nexus) or section 10 process (for projects with no Federal nexus).

When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to adverse effects to the ABB within the Southern Plains analysis area. The Service, through the ESA consultation process, ensures the cumulative amount of take of the ABB allocated to various permittees does not jeopardize the continued existence of the species. Therefore, significant cumulative impacts on the ABB are not expected.

4.4.1.4 Special-Status Species

Past, present, and reasonably foreseeable future actions have resulted, and will likely continue to result, in cumulative impacts on special-status species within the Southern Plains analysis area. Impacts on special-status species and their habitats are and would be generally the same as those described in Section 4.4.1.2, *General Fish and Wildlife*, but have affected or may affect individual special-status species differently, depending on the nature and location of individual actions. Effects of specific actions on special-status species might be less frequent or require a greater level of avoidance, minimization, or mitigation measures because special status-species receive greater protection under federal and/or state law than other wildlife.

When combined with other past, present, and reasonably foreseeable future actions, the proposed action could contribute to cumulative impacts on special-status species, but such impacts will not be anticipated to reach the level of take. As discussed in Section 3.2.2.4, *Special-Status Species*, the proposed action is not expected to result in adverse effects to any ESA-listed species (other than ABB) or eagles. For some special-status species (e.g., Ouachita rock pocketbook and Arkansas River shiner), the proposed action will not contribute to any cumulative impacts, because there are no expected direct or indirect impacts from the proposed action. Given that potential cumulative impacts on special-status species will not reach the level of take, significant cumulative impacts on special-status species are not expected.

4.4.2 Physical Resources

4.4.2.1 Water Resources

Past and present actions in the Southern Plains analysis area have likely affected water resources to some degree from ground clearing, placement of fill material, and maintenance of vegetation. Similar activities from reasonably foreseeable future actions may similarly affect water resources. BMPs (e.g., silt fencing) are implemented during construction activities to avoid or minimize impacts. When combined with other past, present, and reasonably foreseeable future actions, the proposed action could contribute to cumulative impacts on water resources in the Southern Plains analysis area. Cumulative impacts to water resources are expected to be minimized through compliance with state and federal laws and regulations that protect surface waters (e.g., the Clean Water Act) and the mitigation measures identified in the HCP. Therefore, significant cumulative impacts on waters resources are not expected.

4.4.2.2 Air Quality

Past and present actions in the Southern Plains analysis area have resulted in local, temporary air emissions during construction activities. For example, construction-related activities such as site

preparation require equipment that would generate criteria pollutants, volatile organic compounds, hazardous air pollutants from engine exhaust, and fugitive dust from disturbed earth surfaces. Similar activities from reasonably foreseeable future actions would result in similar types of emissions. When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to air emissions in the Southern Plains analysis area. Given the temporary nature of the emissions, violations of the NAAQS are not expected. Therefore, significant cumulative impacts on air quality are not expected.

4.4.3 Social Resources

4.4.3.1 Land Use

Past and present actions in the Southern Plains analysis area have affected land use. For example, construction-related activities have affected land resources through change in land use from leases, easements, or land ownership; conflicts with land use compatibility where new ROWs are established as a result of construction; and temporary and long-term changes in the physical and natural environment that may affect recreational activities. Similar activities from reasonably foreseeable future actions might similarly affect these resources. When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to minor cumulative land cover change impacts in the Southern Plains analysis area, specifically a change in land cover in some parts of the easement. The proposed action will not contribute to cumulative impacts related to use of the land. Therefore, significant cumulative impacts on land use are not expected.

4.4.3.2 Socioeconomics and Environmental Justice

No measureable socioeconomic impacts are expected from the Project because of the limited number of construction personnel involved and temporary nature of the construction. The Project is not anticipated to pose adverse environmental, health, or safety impacts and risks for any individuals or population groups, nor cause a disproportionate, high or adverse human health or environmental impact on minority and low-income populations because construction activities will be limited to the pipeline easement, temporary work areas, and sites owned by the Applicants, and the Applicants will comply with all relevant local, state, and federal laws during construction. Therefore, the proposed action will not contribute to cumulative impacts related to socioeconomics and environmental justice.

4.4.3.3 Public Health and Safety

Past and present actions in the Southern Plains analysis area have included public health and safety risks. For example, operations of electrical infrastructure pose risks to public health and safety through the generation of stray voltage. Similar activities from reasonably foreseeable future actions might similarly pose public health and safety risks. When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to public health and safety risks. Cumulative impacts to public health and safety, including noise, are expected to be minimized through adherence to standard industry safety measures and compliance with applicable state and local regulations. Therefore, significant cumulative impacts on public health and safety are not expected.

4.4.4 Cultural Resources

The past, present, and reasonably foreseeable future actions in the Southern Plains analysis area could affect cultural resources. Adverse impacts would result from any undertaking that has the potential to

physically or visually impact historic properties through disturbances, visual intrusions, and increased potential for unauthorized artifact collecting. When combined with other past, present, and reasonably foreseeable future actions, the proposed action will contribute to the potential to impact cultural resources. Cumulative impacts to cultural resources are expected to be avoided or minimized through compliance with state and federal laws that protect cultural resources (e.g., NHPA and Oklahoma Antiquities Law). Therefore, significant cumulative impacts on cultural resources are not expected.

Appendix A

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Appendix B

Information for Planning and Consultation Report

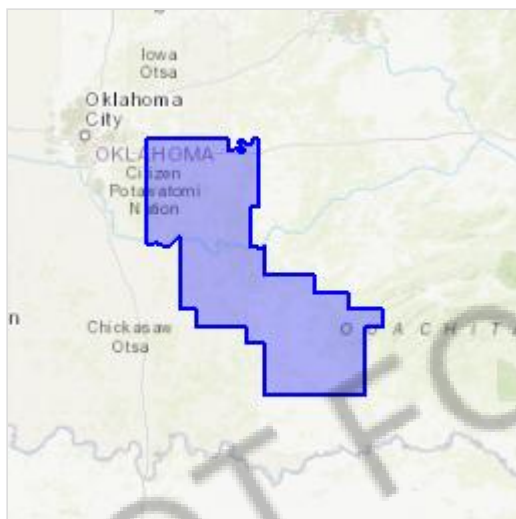
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Oklahoma



Local office

Oklahoma Ecological Services Field Office

☎ (918) 581-7458

📠 (918) 581-7467

9014 East 21st Street

Tulsa, OK 74129-1428

<http://www.fws.gov/southwest/es/Oklahoma/>

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Least Tern <i>Sterna antillarum</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered
Piping Plover <i>Charadrius melodus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane <i>Grus americana</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

Fishes

NAME	STATUS
Arkansas River Shiner <i>Notropis girardi</i> There is final critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/4364	Threatened

Clams

NAME	STATUS
Ouachita Rock Pocketbook <i>Arkansia wheeleri</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4509	Endangered
Scaleshell Mussel <i>Leptodea leptodon</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5881	Endangered
Winged Mapleleaf <i>Quadrula fragosa</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4127	Endangered

Insects

NAME	STATUS
American Burying Beetle <i>Nicrophorus americanus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Arkansas River Shiner <i>Notropis girardi</i> https://ecos.fws.gov/ecp/species/4364#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

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

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public

have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 1 to Aug 31
Bachman's Sparrow <i>Aimophila aestivalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6177	Breeds May 1 to Sep 30

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Sep 1 to Jul 31

Golden Eagle *Aquila chrysaetos*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Breeds Jan 1 to Aug 31

Harris's Sparrow *Zonotrichia querula*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Kentucky Warbler *Oporornis formosus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Apr 20 to Aug 20

Lesser Yellowlegs *Tringa flavipes*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Breeds elsewhere

Long-billed Curlew *Numenius americanus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/5511>

Breeds elsewhere

Marbled Godwit *Limosa fedoa*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9481>

Breeds elsewhere

Prairie Warbler *Dendroica discolor*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 1 to Jul 31

Prothonotary Warbler *Protonotaria citrea*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Apr 1 to Jul 31

Red-headed Woodpecker *Melanerpes erythrocephalus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Sep 10

Semipalmated Sandpiper *Calidris pusilla*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Sprague's Pipit *Anthus spragueii*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8964>

Breeds elsewhere

Willet *Tringa semipalmata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Probability of Presence Summary

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

Probability of Presence (■)

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

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

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

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

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

Survey Effort (|)

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

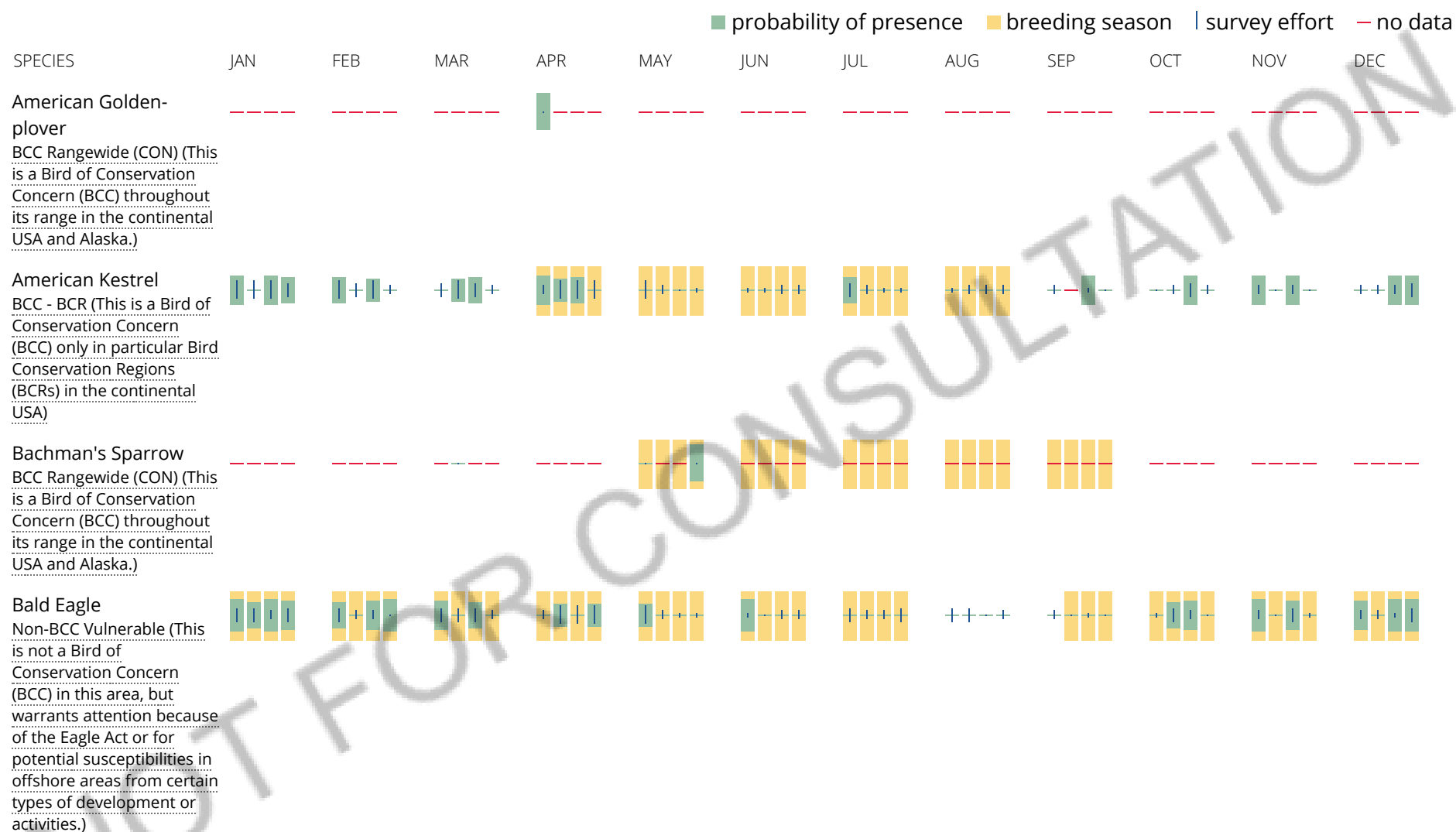
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

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



Golden Eagle

Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Harris's Sparrow

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Kentucky Warbler

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lesser Yellowlegs

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-billed Curlew

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Marbled Godwit

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



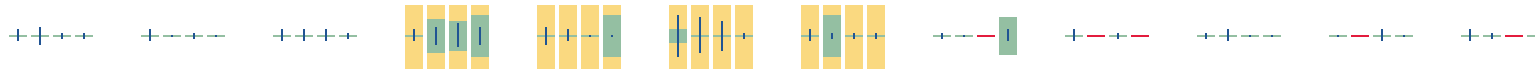
Prairie Warbler

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Prothonotary Warbler

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



SPECIES

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Red-headed Woodpecker

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Semipalmated Sandpiper

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Sprague's Pipit

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Willet

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

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

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is

not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the [NWI map](#) for a full list.

FRESHWATER POND

[Palustrine](#)

LAKE

[Lacustrine](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercled worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.