EXHIBIT 6

Biological Assessment for the Dakota Access Pipeline Project

March 2016

US Army Corps of Engineers
BUILDING STRONG
Omaha District
St. Louis District
Rock Island District

This Biological Assessment is for Endangered Species Act compliance for
Corps of Engineers' actions under the
Clean Water Act, Section 404;
Rivers and Harbors Act, Section 10; and
33 U.S. Code Section 408,
associated with the Dakota Access Pipeline Project

EXECUTIVE SUMMARY

Dakota Access, LLC (Dakota Access) is proposing to construct the Dakota Access Pipeline (DAPL) in North Dakota, South Dakota, Iowa, and Illinois (Figure A-1, Appendix A). DAPL would consist of an approximately 1,168-mile-long, 12-inch to 30-inch diameter crude oil pipeline connecting the rapidly expanding Bakken and Three Forks production areas in North Dakota to existing crude infrastructure in Illinois.

The DAPL proposed alignment crosses jurisdictional Waters of the United States (WOUS) and requires U.S. Army Corps of Engineers (Corps) Clean Water Act Section 404 and Rivers and Harbors Act Section 10 authorizations (Regulatory). The DAPL proposed alignment also crosses lands owned by the Corps, and/or lands that have federal government flowage easements under management by the Corps. These areas require permission from the Corps under 33 U.S. Code, Section 408 (408). All federal action areas that "may affect" federally listed species require the Corps to consult with The US Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (ESA). **This Biological Assessment (BA) was prepared to address potential effects to federally listed species at locations within the Corps Action Areas of DAPL for purpose of evaluating effects under Section 7 of the ESA.** The total amount of the DAPL pipeline under Corps' jurisdictional review is approximately 38 miles[1] (by length) or 3.2[2]% of the total pipeline.

The **Regulatory Action Areas** reflect the Corps Permit Review Areas, determined by the Corps with technical input from Dakota Access as the point on the ground where the pipeline alignment could reasonably deviate and result in a different route or crossing location. This was defined to be 192 and 257 feet from the edge of the jurisdictional feature or water of the U.S. along the pipeline alignment for forested areas and non-forested areas, respectively. Refer to Appendix B for representative exhibits that demonstrate the areas under review and consultation in the Corps proposed regulatory actions. The Corps **408 Action Areas** and information in support of the 408 Biological Assessments for ESA compliance can be found in Appendix G (North Dakota) and Appendix H (Illinois).

To satisfy the requirements of ESA Section 7, this BA was prepared to address potential project-related effects to federally listed species that may occur in the Corps Action Areas (Regulatory & 408). The action areas for the Corps' Federal actions include all areas to be directly or indirectly affected by the proposed Federal actions. Effects of the action include direct and indirect effects of the Federal action on

[1] This length was determined by adding up the length of all Regulatory and 408 action areas.
[2] This percentage was determined by dividing the length of the combined Corps action areas by the total length of the pipeline.

the species or the critical habitat, together with the effects of the other activities that are interrelated or interdependent with that action. The Corps analyzed the impacts to federally listed species on a regional basis for cumulative effects. Effects to listed species outside of the Corps' Action Areas could reasonably be expected to deviate from the proposed alignment are not subject to this consultation. However, information regarding these non-federal areas was produced by Dakota Access and is provided in Appendix C at the request of the USFWS.

Habitat assessment field surveys were conducted by Dakota Access along the proposed DAPL right-of-way (ROW) in fall and winter of 2014 and spring of 2015. The results of the habitat assessment field surveys indicate that potential habitat for federally protected species is present within some of the Action Areas for the proposed DAPL (Table ES-1). Conservation measures potentially applicable to minimize or eliminate adverse effects are presented in the BA, and a determination of effects within the Action Areas (Regulatory and 408, identified in grey shading in Table ES-1) on each evaluated species or species group is presented. Only determinations of "may affect" are presented in the BA; determinations of "no effect" or if species are not present are indicated by "----" in the table. Support information for "no effect" determinations within Corps' Action Areas is contained within the administrative record for this project.

Table ES-1: Overall Determinations[3] for Federally Listed Threatened and Endangered Species that May be Affected by the DAPL(d)

Species Name	Federal Status (a)	Section 408[4] Action Areas (multiple)	Regulatory 404/10 Action Areas (multiple)	Overall Effects Determination (b)
Interior Least Tern	E	NLAA	----	**NLAA**
Piping Plover	T	NLAA	----	**NLAA**
Piping Plover Critical Habitat	CH	NLAA	----	**NLAA**
Whooping Crane	E	NLAA	----	**NLAA**
Rufa Red Knot	T	NLAA	----	**NLAA**
Northern Long-eared Bat	T	NLAA	NLAA	**NLAA**
Indiana Bat	E	NLAA	NLAA	**NLAA**
Topeka Shiner	E	----	LAA – SD only (c) NLAA	**LAA**
Pallid Sturgeon	E	NLAA	----	**NLAA**

(a) Federal status abbreviations: E= Endangered species; T= Threatened species; CH = Critical Habitat
Source for species name, Federal status, and presence of critical habitat within Corps Action Areas: USFWS Environmental Conservation Online System (https://ecos.fws.gov/ecp/; Accessed May 15, 2015); USFWS Midwest Region site (http://www.fws.gov/midwest/endangered/lists/cty_indx.html; Accessed May 15, 2015).

(b) NLAA = may affect, not likely to adversely affect; LAA = may affect, likely to adversely affect.

(c) The Corps of Engineers, South Dakota Regulatory Office and USFWS South Dakota Ecological Services Field Office have an approved Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the Topeka shiner in South Dakota which will be followed to address the four crossings of Topeka shiner streams in South Dakota. Incidental take authorized in South Dakota under the *Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the Topeka shiner in South Dakota.* Acceptance of this plan in South Dakota authorizes the potential for adverse effects, up to and including Take, but is designed to avoid and minimize the potential for adverse effects the Topeka shiner. See Appendix I.

(d) As requested by the Service, Appendix C, which contains information on the DAPL Project outside the Corps' Action Areas, is included in the BA.

[3] Dakota Access has indicated "NLAA" determination for the Dakota skipper, piping plover, northern long-eared bat, and the Topeka shiner in Appendix C. Although outside the Corps' action areas, the "overall" determination for these species would be "NLAA," except for the Topeka shiner which would be "LAA."

[4] See Appendix G and Appendix H

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LIST OF ABBREVIATIONS

Abbreviation/Term	Phrase/Name
ATWS	additional temporary workspace
BA	Biological Assessment
BMP	best management practice
Dbh	Diameter at Breast Height
Dakota Access	Dakota Access, LLC
DAPL	Dakota Access Pipeline
ECD	erosion control device
ESA	Endangered Species Act
GIS	Geographic Information System
HDD	horizontal directional drill
IDNR	Illinois Department of Natural Resources
IPaC	Information, Planning, and Conservation System
MNDNR	Minnesota Department of Natural Resources
MLV	mainline valve
NHP	Natural Heritage Program
NGPC	Nebraska Game and Parks Commission
NWP	Nationwide Permit
PCB	polychlorinated biphenyl
PCN	Preconstruction Notification
PEM	Palustrine emergent wetland
PFO	Palustrine forested wetland

Abbreviation/Term	Phrase/Name
PSS	Palustrine scrub-shrub wetland
PUB	Palustrine unconsolidated bottom
ROW	right-of-way
SDGFP	South Dakota Game, Fish, and Parks
Corps	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDNR	Wisconsin Department of Natural Resources
WOUS	Waters of the United States
WNS	White-nose Syndrome
Section 408	33 CFR, Section 408
Section 404	Clean Water Act, Section 404
Section 10	Rivers and Harbors Act, Section 10
Section 7	Endangered Species Act, Section 7

1.0 INTRODUCTION

Dakota Access initiated coordination with the U.S. Army Corps of Engineers (Corps) in September 2014 and subsequently filed preconstruction notifications (PCN) to construct the proposed pipeline across Waters of the United States (WOUS) regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. At each proposed crossing of a WOUS, potential effects to federally listed threatened or endangered species were evaluated for compliance with the Endangered Species Act (ESA) of 1973 (as amended). Because the crossings require the aforementioned Federal authorizations, Section 7 of the ESA applies where the crossings include (or are in the vicinity of) listed species, potential habitat, and/or critical habitat. To satisfy the requirements of Section 7, this Biological Assessment (BA) was prepared to evaluate potential construction-related effects to federally listed species (i.e., those species protected under the ESA) that are known or likely to occur in the Regulatory Action Areas of the DAPL (Table 4-1, Section 4, page 4-2).

The Regulatory Action Areas were determined by the Corps, with technical assistance from Dakota Access as the point on the ground where the pipeline alignment could reasonably deviate and result in a different route or crossing location. This was defined to be 192 and 257 feet from the edge of the jurisdictional feature or WOUS, along the pipeline alignment for forested areas and non-forested areas, respectively. These areas represent the upland portions of the pipeline that are interrelated and interdependent to the Corps federal actions. Representative exhibits that demonstrate the areas under review by the Corps within the Action Areas are provided in Appendix B.

1.1 Proposed Federal Action

The Proposed Federal actions in this case are the Corps Nationwide Permit (NWP) verification decisions for the discharge of dredged or fill material into WOUS, and for work in or under navigable waters, for the construction, but not future maintenance, of utility pipeline crossings. Refer to Appendix G and Appendix H for ESA compliance information related to federal actions subject to Corps Section 408.

1.1 Project Purpose

The project purpose is to evaluate the discharge of dredged or fill material into waters of the United States, and to evaluate the crossings of navigable waters, for utility line crossings and determine whether the proposed crossings can be authorized and if any conditions to authorization are required.

1.2 Applicable Regulations

Dakota Access's request for authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act in some instances requires the Corps to consult with USFWS under Section 7 of the ESA. Under the ESA, the Corps consults with the U.S. Fish and Wildlife Service (USFWS) to determine if the proposed Corps authorizations are likely to affect the species or jeopardize the continued existence of listed species or critical habitat under the ESA.

The purpose of the ESA (16 U.S.C. 1531-1544, 87 Stat. 884), as amended, is to protect and recover imperiled species and the ecosystems upon which they depend. The ESA is administered in relevant part by the USFWS and protects endangered and threatened species and their critical habitats by prohibiting the "take" of listed animals. The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (USFWS, 2013).

Under Section 7 implementing guidance, 50 C.F.R. § 402.14, a Federal agency shall review its actions at the earliest possible time to determine whether any action may affect protected resources. If such a determination is made, formal consultation with USFWS is required, except if, as a result of the preparation of a BA under 50 C.F.R. § 402.12, the Federal agency determines that the proposed action is not likely to adversely affect any protected resources and USFWS concurs in the determinations. This BA has been prepared to address the necessary Section 7 consultation between the Corps and USFWS for potential impacts to federally listed species within the Action Areas. Supplemental information, above and beyond that needed to satisfy the Corps responsibilities for compliance with Section 7 of the Endangered Species Act, has been provided by Dakota Access, and the Corps has agreed to provide this information at the request of the USFWS. This information has been provided in Appendix C of this BA. In addition, Appendix G and Appendix H contain ESA information related to areas subject to Corps Section 408 (33 USC 408). Appendix I contains information related to an existing Programmatic Biological Opinion (BO) for the Topeka shiner in South Dakota.

2.0 PROJECT DESCRIPTION

Dakota Access is proposing to discharge dredged or fill material into WOUS for work in WOUS, and for work in navigable waters, for the construction of utility pipeline crossings. The proposed pipeline would originate in northwest North Dakota, traverse southeast through North Dakota, South Dakota, Iowa, and Illinois, and terminate at the existing hub in Patoka, Illinois (Figure A-1, Appendix A). The following sections describe the construction methods for the pipeline through the Corps' Regulatory Action Areas.

2.1 Pipeline Facilities

The DAPL pipeline within the Regulatory Action Areas would consist of a 12-inch to 30-inch diameter crude oil pipeline that would be installed largely using an open-trench construction method except at railroad, road, wetland, and waterbody crossings where a horizontal directional drill (HDD) construction method may be necessary. Construction of the pipeline would require a typical construction right-of-way (ROW) width of 125 feet in uplands, 100 feet in non-forested wetlands, 85 feet in forested areas (wetlands and uplands), and up to 150 feet in agricultural areas. Following construction, a 50-foot wide permanent easement would be maintained along the pipeline.

Where necessary, Dakota Access would utilize additional temporary workspace (ATWS) outside of the construction ROW to facilitate specialized construction procedures, such as HDDs; railroad, road, wetland, waterbody, and foreign utility line crossings; tie-ins with existing pipeline facilities; areas with steep side slopes and pipeline crossovers. These ATWSs, in addition to the construction corridor outside of the permanent easement would be restored to preconstruction contours and allowed to revert to preconstruction conditions following construction activities, so there would be no permanent impacts on these areas.

To the extent practicable, Dakota Access would utilize existing public and private roads to access the pipeline ROW and aboveground facilities. The existing roads that would be utilized include paved, gravel or pasture roads, and other conveyances.

2.2 Pipeline Construction Sequence

The installation of the pipeline would include the following construction activities within the pipeline ROW:

- Survey staking
- Clearing and grading
- Trenching

- Pipe string, bending, and welding
- Pipe installation and trench backfilling
- Integrity testing
- Restoration and seeding

Pending necessary authorizations, Dakota Access states that construction of the pipeline is scheduled to begin during the first quarter of the year so the pipeline could be in-service by the fourth quarter of the year. The construction activities are scheduled to be completed by the fourth quarter of the year in which the project is initiated. While restoration and reseeding would be complete by the fourth quarter, it is anticipated that successful revegetation would extend through the growing season of the following year. Dakota Access would maintain best management practices (BMPs) until vegetation has been successfully established along the construction ROW in non-agricultural areas.

2.2.1 Survey Staking

Prior to commencement of ground disturbing activities, a standard survey and stakeout would be conducted to identify ROW and workspace boundaries and to locate existing foreign utility lines within the construction ROW. Access roads would be marked to limit construction access to approved routes.

2.2.2 Clearing and Grading

Following the completion of the surveys, the construction ROW would be cleared of vegetation and debris. Within wetlands, stumps would be cut flush with the ground and left in place except where removal is necessary to facilitate the creation of a safe and level workspace. Cleared vegetation and debris along the ROW would be disposed of in accordance with Federal, State, and local regulations, either by burning, chipping and spreading, or transportation to a commercial disposal facility. Where necessary, to contain disturbed soils during clearing and grading in upland areas, and to minimize potential erosion and sedimentation of wetlands and waterbodies, temporary erosion control devices (ECDs) would be installed prior to or immediately after initial ground disturbance and would be maintained throughout construction.

2.2.3 Trenching

Trenching involves excavation of a ditch for pipeline placement, and is accomplished through the use of a trenching machine, backhoe, or similar equipment. Trench spoil would be deposited adjacent to each trench within the construction work areas, with topsoil segregation utilized where necessary based on land use. In standard conditions, the trench would be excavated to a depth of approximately 8 feet to allow for a minimum of 3 feet of cover over the pipe. Typically, the bottom of the trench would be cut at least 12

inches greater than the width of the pipe. The width at the top of the trench would vary to allow the side slopes to be adapted to local conditions at the time of construction.

2.2.4 Pipe Stringing, Bending, and Welding

Following preparation of the trench, the new pipe would be strung and distributed along the ROW parallel to the trench. Depending on available workspace, some pipe may be fabricated offsite and transported to the ROW in differing lengths or configurations. Pipe would be bent by hydraulic bending machines, as necessary, to conform the pipe to the trench. Once in place along the ROW, pipe lengths would be aligned, bends fabricated, and joints welded together. Welding would be performed in accordance with the American Petroleum Institute Standards and U.S. Department Of Transportation-Pipeline and Hazardous Materials Safety Administration pipeline safety regulations, and company welding specifications. All welds would be coated for corrosion protection and visually and radiographically inspected for defects. Additionally, the entire pipeline would be visually inspected prior to lowering-in.

2.2.5 Pipe Installation and Trench Backfilling

Completed sections of pipe would be lifted off the temporary supports by side boom tractors or similar equipment, and placed into the trench. Prior to lowering-in, the trench would be visually inspected to verify that it is free of rock and other debris that could damage the pipe or the coating. Additionally, the pipe and the trench would be inspected to verify that the configurations are compatible. Tie-in welding and pipeline coating would occur within the trench to join the newly lowered-in section with the previously installed sections of pipe. Following this activity, the trench would be backfilled with the previously excavated material and crowned to approximately 6 inches above its original elevation to compensate for subsequent settling.

2.2.6 Integrity Testing

Newly installed pipelines undergo integrity testing through hydrostatic pressure testing before being put into service. Hydrostatic testing involves isolating a portion of the pipeline that is undergoing testing, filling it with clean water, and then pressurizing the pipeline to a specified pressure to check for leaks. Once hydrostatic testing is completed, the water that is used for hydrostatic testing is removed from the pipeline and discharged to upland sites.

2.2.7 Restoration and Seeding

Upon completion of pipeline installation, the ROW would be regraded to preconstruction contours and elevations, and stabilized with ECDs as necessary to prevent erosion and sedimentation. In non-agricultural areas, the ROW would be seeded using a seed mix as recommended by the Natural Resources

Conservation Service, unless otherwise specified by landowner conditions. The ROW would be monitored for properly functioning ECDs until the ROW is stabilized with vegetation. Once vegetation cover is established, any remaining temporary ECDs would be removed and restoration would be considered complete. Seeding of the ROW would be completed as soon as practicable following trench backfilling. It is anticipated that successful restoration of the ROW would be accomplished within one growing season following the completion of construction.

2.3 Waterbody Crossing Methods

Dakota Access would install the pipeline segments across waterbodies utilizing available technological and construction methods that would avoid or reduce impacts to these features. Depending on environmental conditions with consideration to engineering and constructability of each crossing, Dakota Access would utilize open-cut, flume, dam and pump, and HDD methods to install the proposed pipeline across waterbodies.

2.3.1 Open-cut

Construction methods utilized at waterbody crossings are highly dependent on the characteristics of the waterbody encountered. Barring any sensitive resources or restrictions, the majority of minor and intermediate waterbodies would typically be crossed via the conventional open-cut method. This method employs the same general construction procedures that were described above for upland pipeline construction. Equipment would operate from the banks of the waterbody to the maximum extent practicable to excavate a trench. Flow would be maintained at all times. Excavated material from the trench would be placed on the bank above the ordinary high water mark for use as backfill. The pipe segment would be prefabricated and weighted, as necessary, to provide negative buoyancy and placed below scour depth. Typical backfill cover requirements would be met, contours would be restored within the waterbody, and the banks would be stabilized via seeding and/or the installation of erosion control matting or riprap. Excess excavated materials would be distributed in an upland area in accordance with applicable regulations.

Impacts to water quality would be minimized through the implementation of best management practices (BMPs). The pipeline trench would be excavated immediately prior to pipe installation to limit the duration of construction within the waterbody to the extent practical. Excavated materials would be stored no fewer than 10 feet from the edge of the waterbody, and temporary ECDs would be utilized to prevent the sediment from reentering the waterbody.

2.3.2 Flume

The flume crossing method is an alternative to the open-cut method in which water flow is temporarily directed through one or more flume pipes placed over the excavation area. The use of the flume(s) allows trenching and pipeline installation to occur primarily under dry conditions without significant disruption of water flow.

2.3.3 Dam and Pump

The dam and pump crossing method is similar to the flume crossing method in that it is an alternative to the open-cut method that allows trenching and pipeline installation to occur under relatively dry conditions with minimal impact to water flow. This method involves the temporary installation of dams (consisting of sandbags, bladders, or other impervious materials) upstream and downstream of the proposed crossing. Pumps are then used to dewater the excavation area and to transport the water flow around the construction work area.

2.3.4 Horizontal Directional Drill

The HDD method allows for construction across a feature without the excavation of a trench, by drilling a hole significantly below conventional pipeline depth, and pulling the pipeline through the pre-drilled hole. Dakota Access would utilize HDDs at several locations to avoid direct impacts to resources, such as wetlands and waterbodies, and/or to avoid areas in which constructability by conventional means is not feasible.

Depending on the HDD equipment utilized, electric-grid wires may be laid along the predetermined HDD route to help guide the drill bit along the pipeline ROW. In thickly vegetated areas, a small path may be cut to accommodate laying the electric-grid guide wires (no large diameter vegetation would be cleared for this purpose). Once the electric grid guide wires are installed, the directional drilling rig would drill a small diameter pilot hole along the prescribed profile.

Following the completion of the pilot hole, reaming tools would be utilized to enlarge the hole to accommodate the pipeline diameter. The reaming tools would be attached to the drill string at the exit point and would then be rotated and drawn back to incrementally enlarge the pilot hole. During this process, drilling mud consisting of bentonite clay and water would be continuously pumped into the pilot hole to remove cuttings and maintain the integrity of the hole. When the hole has been sufficiently enlarged, a prefabricated segment of pipe would be attached behind the reaming tool on the exit side of the crossing and pulled back through the drill hole towards the drill rig.

2.4 Wetland Crossing Methods

To avoid and minimize impacts, Dakota Access would generally reduce the construction ROW to 85 feet in forested wetlands and 100 feet in emergent wetlands. Operation of construction equipment through wetlands would be limited to only that necessary for each stage of pipe installation (e.g., clearing, trenching, etc.). Topsoil segregation techniques would be utilized in unsaturated wetlands to preserve the seed bank and allow for expedited successful restoration of the disturbed area.

Wetland crossings for the Project may be accomplished via the conventional lay method in accordance with applicable permit conditions. Construction techniques for this method are similar to the open-cut method in upland areas; however, top soil segregation techniques would be utilized to facilitate revegetation following the completion of construction activities. In some cases, site-specific conditions may not support construction equipment, but the area is still proposed for the conventional lay crossing method. In these instances construction mats would be utilized to minimize disturbances to wetland hydrology and prevent soil disturbance in wetland areas.

2.5 General Conservation Measures

A priority in selecting the route for the pipeline was to avoid and minimize impacts to environmentally sensitive areas, including known or critical habitats to federally listed threatened and endangered species. Dakota Access performed a thorough routing analysis incorporating greater than 50 data sets in an effort to avoid and minimize impacts while optimizing the route. Additionally, as title was pulled and field surveys performed, additional minor route deviations were incorporated to further avoid and minimize impacts. The HDD crossing method is proposed to avoid some wetlands, waterbodies, sensitive habitat, and/or culturally sensitive areas, including the avoidance of the major rivers and their associated habitats that would be crossed by the proposed Project alignment.

Dakota Access would also reduce the construction ROW width in wetlands and forested areas to minimize Project impacts. In general the ROW would be decreased to a width of 85-100 feet in wetlands from the typical ROW width of 125-150 feet in uplands. Areas disturbed by construction, excluding above ground facilities, would be restored to preconstruction contours and conditions. A 50-foot wide permanent easement would be maintained along the pipeline.

3.0 ACTION AREA

Section 7 of the ESA requires the USFWS to analyze the effects of the agency action where that action "may affect" listed species or designated critical habitat. An Action Area is defined as "[a]*ll areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action,"* (USFWS, 1998).

The action areas for the Corps' Regulatory actions for the proposed discharge of dredged or fill material into WOUS, and for work in navigable waters, for the construction of utility pipeline crossings, include all areas to be directly or indirectly affected by the Regulatory actions. Effects of the action include direct and indirect effects of the action on the species or the critical habitat, together with the effects of the other activities that are interrelated or interdependent with that action. Direct effects are those that occur at the same time and place as the regulated activity, that is, direct effects of the regulated activity occur in the waterway at the time and place of the regulated activity and include, for example, temporary trenching in waterbodies, installation of pipeline segments and backfilling to restore waterbodies to pre-construction contours and conditions. Indirect effects are those that are caused by the proposed action and are later in time but still reasonably certain to occur. Indirect effects from temporary activities would include effects like the sedimentation resulting from the construction of the crossing in each waterbody. Work in uplands to construct pipeline segments that influence construction at waterbody crossings depend on the Federal actions for their justification, and do not have independent utility apart from the waterbody crossings. Therefore activities to construct pipeline segments in uplands that affect the location and configuration of waterbody crossings are interrelated and interdependent with the regulated activities in waterbodies.

The Corps' Regulatory Action Areas were determined by the Corps, with technical input from Dakota Access as the point on the ground where the pipeline alignment could reasonably deviate and result in a different route or crossing location. This was defined to be 192 and 257 feet from the edge of the jurisdictional feature or water of the U.S. along the pipeline alignment for forested areas and non-forested areas, respectively. Exhibits depicting the limits of the Corps Action Areas, as determined by the easement width at each crossing of a WOUS, are provided in Appendix B.

A summary of the Regulatory Action Areas located within each state crossed by the pipeline is provided in the following subsections. For additional information on Corps' Action Areas subject to Section 408, refer to Appendix G and Appendix H, and the associated 408 EAs that these sections were excerpted from.

3.1 North Dakota

In North Dakota, the DAPL Project includes approximately 358 miles of 12-inch to 30-inch diameter pipeline originating near Stanley in Mountrail County and crossing into South Dakota near Hague in Emmons County. Along the pipeline route in North Dakota, the DAPL Project includes 6 tank terminals, 3 launcher/receivers, and 53 MLVs.

The Corps is reviewing two locations for compliance with Section 10 of the Rivers and Harbors Act through PCN and request for verification of authorization under Nationwide Permit (NWP) 12. Figure A-1 in Appendix A depicts the location of the DAPL Project under review in North Dakota. Due to the need to also comply with Section 408, Section 7 consultation information has been developed as part of a November 2015 Draft Environmental Assessment/ Biological Evaluation (November Draft EA) for the Section 408 process for these locations. Information for the two North Dakota crossings has been taken from the Draft EA (see Appendix G).

3.2 South Dakota

In South Dakota, the Corps is reviewing 11 locations/Action Areas for compliance with Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act for verification of authorization under NWP 12. Figure A-1 in Appendix A depicts the location of the Action Areas under review in South Dakota.

3.3 Iowa

In Iowa, the Corps is reviewing 66 locations/Action Areas for compliance with Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act for verification of authorization under NWP 12. Figure A-1 in Appendix A depicts the location of the Action Areas under review in Iowa. Of the 65 Action Areas, Section 7 consultation is being pursued for 27 of the crossings.

3.4 Illinois

In Illinois, the Corps Rock Island District is reviewing 45 locations/Action Areas for compliance with Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act for verification of authorization under NWP 12. Similarly, the Corps St. Louis District is reviewing 85 locations/Action Areas for verification of authorization under NWP 12. Figure A-1 in Appendix A depicts the location of the Action Areas under review in Illinois. Of the 45 and 85 Action Areas, Section 7 consultation is being pursued for 25. The Corps has come to “no effect” determinations at all other Action Areas. Due to the need to also comply with Section 408, Section 7 consultation information has been developed as part of a

January 2016 Draft Environmental Assessment (January Draft EA) for the Section 408 process for these locations. Refer also to Appendix H for Section 408 information related to crossings in Illinois.

4.0 LISTED SPECIES

Available information was obtained from the USFWS Information, Planning, and Conservation System (IPaC) website (http://ecos.fws.gov/ipac/) and the State and County Distribution Lists on the USFWS Midwest Region website (http://www.fws.gov/midwest/endangered/lists/cty_indx.html; accessed fall 2014 and spring 2015). Based on the USFWS IPaC documentation, results of desktop studies and habitat assessment field surveys, and technical discussions with the USFWS regarding the DAPL, it has been determined that three federally listed species are known or likely to occur within counties crossed and could potentially be affected by construction of the proposed DAPL in Action Areas due to the presence of potential habitat (Table 4-1).

This BA has been prepared to document the results of the review of those federally listed species that "may be affected" by the proposed project within Regulatory action areas. Since each crossing is evaluated as a "single and complete action," Regulatory staff evaluate, and make ESA determinations, for each crossing. See Appendix F for crossing-by-crossing determinations that are under consultation in this document. Some crossings that also require Section 408 decisions are evaluated in the appropriate Section 408 BA (Appendix G or Appendix H). For a given location, only one ESA analysis has been done.

In addition to the species presented within the Regulatory BA, the following species were evaluated by the Corps' Regulatory offices:

1. North Dakota (entirely within Section 408 action areas; see Appendix G)

2. South Dakota
    a. Interior least tern
    b. Piping plover
    c. Pallid sturgeon
    d. Rufa redknot
    e. Dakota skipper
    f. Black-footed ferret
    g. Whooping crane
    h. Western prairie fringed orchid
    i. Northern long-eared bat

3. Iowa
    a. Interior least tern
    b. Piping plover
    c. Spectaclecase mussel
    d. Sheepnose mussel

e. Eastern prairie fringed orchid
f. Western Prairie fringed orchid
g. Prairie bush clover

4. Illinois (in addition to Section 408 action areas; see Appendix H)
    a. Spectaclecase mussel
    b. Sheepnose mussel
    c. Higgins eye pearly mussel
    d. Decurrent false aster
    e. Eastern prairie fringed orchid
    f. Piping plover
    g. Gray bat

The Corps concluded "no effect" for the above species within its Regulatory action areas, and therefore no consultation on these species is required.

A description of the life history and known occurrences for each of the three species is presented below.

4.1 Indiana Bat

The Indiana bat (*Myotis sodalis*) is only known or likely to occur within 10 Iowa counties (Boone, Story, Polk, Jasper, Mahaska, Keokuk, Wapello, Jefferson, Van Buren, and Lee Counties) and 6 Illinois counties (Adams, Schuyler, Pike, Scott, Macoupin, and Bond Counties) that are crossed by the DAPL. (Table 4-1; Figure A-2, Appendix A). However, even though only 6 counties in Illinois have previously recorded occurrence, all 12 Illinois counties are being assessed for this species. No known maternity roosts or hibernacula used by Indiana bats have been previously recorded within the Action Areas in Iowa or Illinois. Critical habitat for the Indiana bat has not been designated in any of the counties that are crossed by the pipeline.

The Indiana bat was federally listed as endangered under the ESA on March 11, 1967 (USFWS, 2007). This species can be found from Iowa, Missouri, and Arkansas; east to western Virginia and North Carolina; and north reaching New York, Vermont, New Hampshire, and Massachusetts (Burgess, 2012). In general, Indiana bats spend November through April hibernating in the northern area of their ranges, with close to half of the population occupying caves in southern Indiana (Burgess, 2012; USFWS, 2006). Caves are the preferred wintering habitat for this species, specifically areas with a stable ambient temperature less than 50 degrees Fahrenheit and a large volume with structural diversity inside (USFWS, 2007). In addition to caves, researchers have found Indiana bats using abandoned mines and other cave-like man-made structures as hibernacula, resulting in an expansion in their winter range (USFWS, 2009).

Table 4-1: Federally Listed Threatened and Endangered Species with Potential to Occur in the Regulatory Action Areas of the DAPL

Species Name	Federal Status[a]	Designated Critical Habitat Within DAPL Corps Action Areas	North Dakota Counties Within Species Range	South Dakota Counties Within Species Range	Iowa Counties Within Species Range	Illinois Counties Within Species Range
Mammals						
Indiana bat[b] *Myotis sodalis*	E	No	Not applicable	Not applicable	Boone, Story, Polk, Jasper, Mahaska, Keokuk, Wapello, Jefferson, Van Buren, Lee	Hancock, Adams, Schuyler, Brown, Pike, Morgan, Scott, Macoupin, Montgomery, Bond, Fayette, Marion
Northern long-eared bat *Myotis septentrionalis*	T	No	Mountrail, Williams, McKenzie, Dunn, Mercer, Morton, Emmons	Campbell, McPherson, Edmunds, Faulk, Spink, Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, Lincoln	Lyon, Sioux, O'Brien, Cherokee, Buena Vista, Sac, Calhoun, Webster, Boone, Story, Polk, Jasper, Mahaska, Keokuk, Wapello, Jefferson, Van Buren, Lee	Hancock, Adams, Schuyler, Brown, Pike, Morgan, Scott, Macoupin, Montgomery, Bond, Fayette, Marion
Fish						
Topeka shiner *Notropis topeka*	E	No	Not applicable	Spink, Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, Lincoln	Lyon, Sioux, Buena Vista, Sac, Calhoun, Webster, Boone	Not applicable

(a) Federal Status Abbreviations: E= Endangered species; and T= Threatened species.

(b) Only 6 counties in Illinois have previously recorded occurrence for this species. However, all 12 Illinois counties are being assessed for this species.
Source: USFWS Environmental Conservation Online System (https://ecos.fws.gov/ecp/; Accessed May 15, 2015); USFWS Midwest Region site (http://www.fws.gov/midwest/endangered/lists/cty_indx.html; Accessed May 15, 2015).

In the spring, the bats can migrate hundreds of miles to their summer habitats, with females departing the hibernacula before the males (USFWS, 2007). Females form maternity colonies in 10 to 20 roost trees, generally only using 3 of these trees as primary roost sites. The females return to the same roost trees each year and are thought to replace lost primary roost sites with one of the other 10 to 20 roost trees used the previous year (USFWS, 2007). Researchers have documented female Indiana bats as having a preference for dead or dying deciduous trees with slabs of exfoliating bark or narrow cracks within the tree. Male Indiana bats usually remain closer to their hibernaculum, using a wider variety of roosting sites than females. Unlike females, males are mostly solitary when roosting in the summer and are found roosting in smaller trees and pine trees more often than females. Artificial roosts are rarely used by Indiana bats (USFWS, 2007).

The Indiana bat is a selective opportunist, feeding on insects most commonly from the orders Coleoptera (beetles), Diptera (flies), Lepidoptera (butterflies and moths), and Trichoptera (caddisflies) (USFWS, 2007). Southern colonies of bats tend to feed more on terrestrial insect species, whereas northern colonies consume insects near wetlands (Burgess, 2012). This difference in food preference suggests that southern colonies feed more in upland habitats, and northern colonies feed in wetlands or near streams and ponds (USFWS, 2007). A similarity among all Indiana bats is that they feed at night, usually beginning within an hour after sunset, capturing and consuming insects in mid-flight (USFWS, 2007).

The Indiana bat population has suffered from habitat loss/degradation, forest fragmentation, winter disturbance, and environmental contaminants like insecticides, oil spills, and polychlorinated biphenyls (PCBs) (USFWS, 2009). Newer threats arising as serious detriments to the population numbers include climate change and White-nose Syndrome (WNS). Previously, WNS was not on the recovery plan for this species; however, it is now in the process of being addressed as a severe threat to the existence of this species (USFWS, 2009). Other steps being taken to protect this species include: conservation and management of hibernacula, development of a prioritized list of hibernacula needing remedial actions and a site-specific Hibernacula Management Plan for each of high importance, creation of new technical guidance for installation of bat-friendly gates and other human deterrents, investigation into abandoned mines being used as hibernacula, and management of habitat on private land, etc. (USFWS, 2007). In addition, 13 hibernacula consisting of 11 caves and 2 mines in 6 states have been designated as critical habitat (USFWS, 2009).

4.2 Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is known or likely to occur within every county crossed by the DAPL (Table 4-1; Figure A-4, Appendix A). No occurrences of northern long-eared bat or

caves used by northern long-eared bats have been recorded within the Action Areas. Critical habitat for the northern long-eared bat has not been designated in any Action Areas.

The northern long-eared bat was federally listed as threatened under the ESA on April 2, 2015 (USFWS, 2015a). The species ranges from the eastern United States, west to parts of Colorado and Montana, and into Canada to eastern British Columbia and the southern part of the Northwest Territories (USFWS, 2015b). The northern long-eared bat is most common in the northern region of this range, but rare in the western portion (NatureServe, 2014; USFWS, 2014a).

During the winter months of mid-November to early April, this species occupies hibernacula (USFWS, 2014a). Underground caves and cave-like structures such as mines and railroad tunnels are known to shelter northern long-eared bats from the cold (USFWS, 2014a). Preferred hibernacula have large passages, plenty of cracks or crevices for roosting, a steady temperature between 32 and 48 degrees Fahrenheit, high humidity, and limited air currents (USFWS, 2014a). In summer, between mid-May and mid-August, the northern long-eared bat roosts individually and in colonies in forested areas, with most preferring to roost in cavities, crevices, hollows, or beneath the bark of live and dead trees and/or snags (USFWS, 2014a). Finding trees/snags exhibiting these characteristics is of high importance to this species, regardless of tree species (USFWS, 2014a). Researchers have determined that this species selects trees with a diameter at breast height (dbh) of greater than or equal to 3 inches (USFWS, 2014a). Furthermore, individual trees within 1,000 feet of nearby forested habitat are appealing roosting habitat if the tree has cavities, crevices, hollows, or exfoliating bark (USFWS, 2014a). Deviation from this typical habitat has been observed, with some bats roosting in man-made structures (sheds, barns, etc.) and males and non-reproductive females roosting in areas with colder temperatures (caves and mines) (USFWS, 2014a). During migrations between the winter hibernacula and summer habitats, the northern long-eared bat travels an average of 40 to 50 miles (USFWS, 2014a). Throughout this journey, various forested habitats are utilized by this species; in particular, riparian forests, fencerows, and similar wooded corridors (USFWS, 2014a).

The northern long-eared bat is an insectivore and begins feeding at dusk (USFWS, 2015b; Wisconsin Department of Natural Resources [WDNR], 2013). This species consumes moths, flies, leafhoppers, caddisflies, and beetles, while flying around upland and lowland woodlots in corridors and along forest edge habitats (USFWS, 2015b; USFWS, 2014a)

The primary cause of decline in northern long-eared bat populations is the rapid spread of WNS across the eastern United States and the Midwest (USFWS, 2014b). Since WNS was established as a threat to

northern long-eared bat populations, the species population in the Northeast has declined by up to 99 percent (USFWS, 2015b). WNS is caused by a fungus, *Pseudogymnoascus destructans*, which causes an increase in the bat's metabolism and results in the bat being more active during hibernation during the later stages of infection (USFWS, 2014b; Verant et al., 2014). Further research has found bats in the early stages of infection to suffer from severe, chronic respiratory acidosis and hyperkalemia (Verant et al., 2014). Infected bats exhibit white fungal growth on their mouths, ears, and/or wings, and after death have been found to have little or no fat reserves (Blehert et al., 2008). Based on the USFWS Section 4(d) rule of the ESA of 1973, as amended (16 U.S.C. 1531 et seq.), the western region of the northern long-eared bat range are beyond the 150-mile buffer from documented WNS sites (USFWS, 2015c; USFWS, 2015d). It is believed that this disease will eventually spread throughout the entire range, causing a greater decline in the population of northern long-eared bats (USFWS, 2015b). Beyond WNS, the northern long-eared bat is threatened by wind turbines, habitat degradation, and hibernaculum disturbances from humans during bat hibernation (WDNR, 2013).

4.3 Topeka Shiner

The USFWS Iowa Ecological Field Office has indicated the potential presence for the species in 12 streams containing Action Areas in Iowa (North Raccoon River, Cedar Creek, West Fork Camp Creek, Camp Creek, Lake Creek, Purgatory Creek, West Cedar Creek, East Cedar Creek, Hardin Creek, West Buttrick Creek, a tributary to East Buttrick Creek, and East Buttrick Creek) (Table 4-1; Figure A-6, Appendix A). In Iowa, critical habitat for the Topeka shiner has been designated along stream segments in Lyon, Sac, Calhoun, Webster, and Boone Counties; however, no Action Areas impact stream segments designated as having recorded populations of Topeka Shiner within these counties based on the Topeka Shiner Range and Designated Critical Habitat in Iowa map (USFWS, 2012) (Table 4-1; Figure A-6, Appendix A).

The Topeka shiner was federally listed as endangered under the ESA on December 15, 1998 (USFWS, 2009). Currently, the Topeka shiner can be found in only 20 percent of its historical range (Sellner, 2012). This species occupies runs and pools in streams located in South Dakota, Minnesota, Kansas, Iowa, Missouri, and Nebraska (USFWS, 2009). Topeka shiners prefer small, low order, prairie streams that have good water quality, cool to moderate temperatures, and few other fish species (Mammoliti, 2004). Slow-flowing streams with gravel, rubble, sand, or bedrock with some silt as substrate also contain suitable habitat for this species (Nebraska Game and Parks Commission [NGPC], 2012). Studies have found this species tolerates drought to a certain degree, inhabiting desiccating pools and intermittent streams (Mammoliti, 2004). In Iowa, the Topeka shiner exists in the Des Moines, Raccoon, Boone, Big Sioux, and Rock watersheds (Mammoliti, 2004). Researchers have found Topeka shiner utilizing off-

channel habitat in Iowa, and further research is in place to examine both off-channel and in-channel habitat types (USFWS, 2009).

The Topeka shiner typically spawns from mid-May to early June when the water temperature is around 71.6 degrees Fahrenheit (Minnesota Department of Natural Resources [MNDNR], 2015). Pool habitats are preferred for spawning, in particular over green and orange spotted sunfish nests (Mammoliti, 2004). The males aggressively defend an approximate 1.6-foot diameter territory around the nest, and females force their way into the nest to lay clutches containing between 150 and 800 eggs (NGPC, 2012). This species is a multiple clutch spawner, and average fecundity of a female reproducing throughout 2 summers is 1,040 eggs (NGPC, 2012; USFWS, 2009).

This species is an opportunistic omnivore, consuming aquatic insects, microcrustaceans, larval fish, algae, and detritus (USFWS, 2009). Historically, Topeka shiners were thought to be benthic insectivores, but recent studies have found this species to consume organisms from a variety of trophic levels (Mammoliti, 2004). Researchers have documented the Topeka shiner feeding on surface-dwelling insects, feeding on benthic insects, and stealing eggs from flathead minnow nests (Mammoliti, 2004).

Threats putting stress on this species population stem from human development. Topeka shiner habitat is negatively impacted by sedimentation, nutrient loading, decreased stream flow, and increased water temperature (USFWS, 2009). Humans contribute to these impacts through intensive row crop development and overgrazing, urbanization and highway construction, main stem reservoir development, tributary impoundment, channelization and maintenance of waterways, and dewatering of streams (USFWS, 2009).

5.0 EFFECTS ANALYSIS – REGULATORY CROSSINGS[5]

This section discusses the potential direct and indirect effects of Action Areas for the proposed DAPL, crossing jurisdictional waterbodies, on the federally listed threatened or endangered species and designated critical habitat. Based on desktop analysis and field evaluations, it was determined that potential habitat for three federally listed species could be present in Action Areas. For each species addressed in this BA, direct and indirect effects have been evaluated for the construction of the pipeline within Corps Action Areas. The Cumulative Effects section can be found in Section 5.7. Refer to Appendix G and Appendix H for the Corps' 408 analysis and effects determinations.

5.1 Potential Project-related Direct Effects

Direct effects result from construction of the proposed projects in areas requiring Corps verifications of NWP 12. Direct effects to a listed species, if present, which may result from construction of the DAPL in Action Areas, include species mortality by construction machinery and activities.

5.2 Potential Project-related Indirect Effects

Indirect effects are effects that are caused by or will result from the construction of the proposed projects in areas requiring Corps verifications of NWP 12 and are later in time but still reasonably likely to occur. Project-related indirect effects would potentially result from construction activity, construction noise, the potential elimination, degradation, or conversion of listed species habitat, and increased human activity along the DAPL ROW during construction. Construction activities could cause a listed species to avoid potential habitats.

5.3 Habitat Assessment Field Survey Methods

Habitat assessment field surveys were conducted in the Action Areas to determine the presence or absence of potential listed species habitat. Prior to conducting habitat assessment field surveys, various sources of available data were reviewed to identify federally listed threatened and endangered species, designated critical habitat, or potentially suitable habitat within the defined Action Areas where habitat assessment field surveys would occur. These sources include:

- Aerial imagery
- USFWS National Wetlands Inventory
- USFWS IPaC
- USFWS North Dakota Ecological Services Field Office website

[5] See Appendix G and Appendix H for the Corps Effects Analysis for the Section 408 areas

- USFWS South Dakota Ecological Services Field Office website
- USFWS Midwest Region, Iowa
- USFWS Rock Island Illinois Ecological Services Field Office website
- USFWS Marion Illinois Ecological Services Sub-office website
- North Dakota Parks and Recreation Department's Natural Heritage Program (NHP)
- South Dakota NHP
- South Dakota Game, Fish, and Parks (SDGFP)
- Illinois Department of Natural Resources (IDNR)
- IDNR Natural Heritage Database.

Baseline habitat assessment field surveys were conducted by biologists during summer and fall of 2014 and spring of 2015 of Action Areas to evaluate various habitat/vegetative communities. The results of the habitat assessments are provided below for each listed species known or that has the potential to occur within an Action Area. Where potential listed species habitats were identified in Action Areas, an effect determination is provided based on potential project-related direct and indirect impacts.

5.4 Indiana Bat

The range of the Indiana bat includes Action Areas in Iowa and Illinois. Desktop analysis and field investigations indicated that potential foraging and roosting habitat is present within the Action Areas. Bat habitat assessment field surveys performed in May and June 2015 were guided by the *2015 Revised Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS, 2015). Using these standardized sample methods, data were collected for forest type resources, including canopy closure/density, dominant tree species, number of suitable snags, and percent of trees 5-inch dbh or greater with exfoliations (e.g., shagbark hickory, suitable shellbark hickory, and suitable dead trees). During the bat habitat field surveys, water resource data was collected onsite including notes on ephemeral, intermittent, and perennial streams as well as agricultural drainage ditches. Information collected during the field surveys and supporting desktop studies were used to determine the presence and quantity of Indiana bat roosting habitat within the Action Areas.

The DAPL was assessed to locate and characterize potential habitat for the Indiana bat to support Corps and USFWS consultations and verification. The assessment included a desktop analysis followed by habitat assessment field surveys. The results of the desktop evaluations followed by habitat assessment field surveys within Iowa and Illinois indicate that a total of 140 acres of potential habitat for the Indiana bat could be affected by the proposed DAPL within the Action Areas. Evaluations for potential roost trees (live trees and dead or dying trees with loose bark, exfoliating bark, cracks, crevices, hollows, or

cavities) were completed for Action Areas. Based on these evaluations, 110 trees in Iowa, 411 trees in Illinois Rock Island District, and 283 trees in Illinois St. Louis District are of sufficient size and exhibit characteristics to be considered potential roost trees located in Action Areas in Iowa and Illinois. Table 5-1 summarizes the results of habitat evaluations completed for the Indiana bat within the Action Areas.

Table 5-1: Summary of Indiana Bat Habitat Evaluations Completed for the DAPL within Iowa and Illinois Action Areas

State & Corps District	Forested Habitat Affected by the Action Areas (acres)[a]	Available Habitat Within a 5-mile Buffer of the Action Areas (acres)	Percentage of Available Habitat Affected by the Action Areas	Potential Roost Trees Within the Construction Workspace in Action Areas	Confirmed Active Roost Trees Within Construction Workspace in Action Areas
Iowa, Rock Island	22	107,990	0.02%	110	2
Illinois, Rock Island	43	57,050	0.08%	411	0
Illinois, St. Louis	75	205,240	0.04%	283	0
Total	**140**	**370,280**	**0.04%**	**804**	**2**

(a) Acreage includes those areas that contain potential foraging or roosting habitat within the proposed footprint of the DAPL within Action Areas.

Acoustic and mist net surveys have been conducted per the *2015 Range-Wide Indiana Bat Summer Survey Guidelines (USFWS, 2015)* and in consultation with the USFWS, along the Action Areas to determine where the Indiana bat occurs and if potential roost trees are utilized by the Indiana bat. Based on the emergent surveys, two active/non maternity roost trees are within Action Areas in Iowa, IA 37 and IA 43; no active roost trees are located in Action Areas in Illinois, and one additional roost trees is located within 100 feet of IA 37.

Emergence counts of the active roost tree identified within the workspace associated with Action Area 37 resulted in 0 bats the first night and 4 bats during the second night of observation. Emergence counts of the second active roost tree within the workspace, Action Area 43, resulted in 5 bats the first night and 7 bats during the second night of observation. Based on the results of emergence surveys, neither of these trees is a maternity roost.

Thirty seven Action Areas occur within the Indiana bat colony buffers (2.5 mile radius from any recorded active roost tree), totaling approximately 21.9 acres of foraging habitat within these Action Areas. This acreage represents approximately 0.09 percent of the available habitat for the Indiana bat within the colony buffer areas. Table 5-2 below depicts the Action Areas by bat colony along with the respective

acreage and suitable roost trees. The complete results of acoustic and mist net surveys for the Indiana bat are presented in the September 30, 2015 *Indiana and Northern Long-eared Bat Summer 2015 Survey Report.*

Table 5-2: Summary of Action Areas within Indiana Bat Colonies Identified for the DAPL within Iowa and Illinois

Colony	Associated Action Areas	Forested Acreage within Workspace in the Colony Buffer within Action Areas	Forested Acreage in the 2.5 Mile Colony Buffer	Percentage of Workspace within the Colony Buffer in Action Areas	Potential Roost Trees within Workspace in the Colony Buffer in Action Areas
Colony 2	IA32, IA33, IA34, IA35	1.37	2,605.66	0.05%	7
Colony 3	IA37, IA38, IA39	0.87	450.04	0.19%	5[b]
Colony 4	IA42, IA43, IA44	1.4	1,199.43	0.12%	12[b]
Colony 5	IA55, IA56	0.93	3,331.67	0.03%	8
Colony 7[a]	ILRI15, ILRI16, ILRI17, ILRI18, ILRI19, ILRI20	6.68	2,133.30	0.31%	58
Colony 8	ILSL05, ILSL06, ILSL07, ILSL08, ILSL09, ILSL10, ILSL11	3.91	7,456.30	0.05%	31
Colony 9	ILSL34, ILSL35, ILSL36, ILSL37, ILSL38, ILSL39, ILSL40, ILSL41, ILSL42, ILSL43, ILSL44	4.83	5,284.76	0.09%	27
Colony 10	ILSL47	1.91	3,203.20	0.06%	2
Total		**21.9**	**25,664.36**	**0.09%**	**150**

(a) Colony occupied by both Indiana bat and northern long-eared bat.
(b) Indicates this number includes one active roost tree based on emergence surveys.

5.4.1 Conservation Measures

Through discussions with the Corps and USFWS, Dakota Access has identified and would implement numerous conservation measures to avoid and minimize the potential or adverse effects to the Indiana bat. Conservation Measures include:

- As noted in Section 2.5, the preliminary routing analysis included avoidance and minimization consideration of riparian and forested areas to select an alignment and associated workspace that avoids and minimizes impacts to forested areas. Additional avoidance and minimization was achieved during micro-routing along the alignment.

- Analysis of potential habitats that could support the Indiana bat within its known distribution and range identified locations of suitable foraging and nesting habitat, potentially suitable roost trees, and through acoustic and mist net surveys have confirmed the locations that are utilized by the Indiana bat.
- Dakota Access has reduced the typical construction workspace corridor within forested areas to 85 feet wide.
- No maternity roost trees were identified within Action Areas.
- Dakota Access will winter clear all active and potential roost trees in the Action Areas. This shall include all Action Areas that had positive acoustic returns for this species.

5.4.2 Determination of Effect

Based on the results of the habitat assessment field surveys and the analysis contained in this BA, the Corps has determined that if the avoidance measures are implemented and selective tree clearing is employed and the only resultant potential impact within the Action Areas is general tree clearing of non-roosting trees during the roosting season, then the discharge of dredged or fill material into WOUS, and work in or under navigable waters, for the construction of utility pipeline crossings, within the Corps Action Areas, **may affect, but is not likely to adversely affect,** the Indiana bat. This determination is based on selective cutting of active and potential roost trees within the Action Areas during the wintertime (October 1 to March 31) or wintertime clearing of all forested areas within the Action Areas.

5.5 Northern Long-eared Bat

The range of the northern long-eared bat includes all portions of the Action Areas in North Dakota, South Dakota, Iowa, and Illinois. The USFWS has issued an interim 4(d) rule to allow for more flexible implementation of the ESA and "to tailor prohibitions to those that make the most sense for protecting and managing at-risk species." The implementation of the interim 4(d) rule for the northern long-eared bat exempts certain activities within the WNS buffer zone – those areas within 150 miles of WNS-positive counties – provided certain conservation measures are implemented. In areas outside of the 150-mile WNS buffer zone, incidental take from lawful activities would be exempted. All of North Dakota, all of South Dakota, and Lyon and Sioux Counties in Iowa fall outside of the WNS 150-mile buffer zone; thus, construction of the DAPL within the Action Areas in those portions of North Dakota, South Dakota, and Lyon and Sioux Counties in Iowa would be exempt from the ESA take prohibition. However, the remaining 16 Iowa counties (O'Brien, Cherokee, Buena Vista, Sac, Calhoun, Webster, Boone, Story, Polk, Jasper, Mahaska, Keokuk, Wapello, Jefferson, Van Buren, and Lee Counties) and all of the Illinois counties are included in the WNS buffer zone.

Bat habitat assessment field surveys were guided by the *2015 Range-Wide Indiana Bat Summer Survey Guidelines (USFWS, 2015)*. Using these standardized sample methods, data were collected for forest type resources including canopy closure/density, dominant tree species, number of suitable snags, and percent of trees 3-inch dbh or greater with exfoliations (e.g., shagbark hickory, suitable shellbark hickory, and suitable dead trees). During the bat habitat field surveys, water resource data was collected onsite including notes on ephemeral, intermittent, and perennial streams as well as agricultural drainage ditches. Information collected during the field surveys and supporting desktop studies were used to determine the presence and quantity of northern long-eared bat roosting habitat within the proposed Action Areas.

The Action Areas were assessed to locate and describe potential habitat for the northern long-eared bat to support Corps and USFWS consultations. The assessment included a desktop analysis followed by habitat assessment field surveys. The results of the desktop evaluations, followed by habitat assessment field surveys within WNS areas of Iowa and Illinois, indicate that a total of 142 acres of potential habitat for the northern long-eared bat could be affected by the proposed DAPL within the Action Areas. Evaluations for potential roost trees (live trees and dead or dying trees with loose bark, exfoliating bark, cracks, crevices, hollows, or cavities) were completed within potential habitats present within the Action Areas. Based on these evaluations, 123 potential roost trees in Iowa, 416 trees in Illinois Rock Island District, and 283 trees in Illinois St. Louis District would be located or affected in Action Areas. Table 5-3 summarizes the results of habitat evaluations completed for the northern long-eared bat in areas Action Areas.

Table 5-3: Summary of Northern Long-eared Bat Habitat Evaluations Completed for the DAPL within Iowa and Illinois Action Areas

State & Corps District	Forested Habitat Affected by the Action Areas (acres)[a]	Available Habitat Within a 5-mile Buffer of the Action Areas (acres)	Percentage of Available Habitat Affected by the Action Areas	Potential Roost Trees Within the Construction Workspace in Action Areas	Confirmed Active Roost Trees Within Construction Workspace in Action Areas
Iowa, Rock Island	24	117,610	0.02%	123	1
Illinois, Rock Island	43	57,050	0.08%	416	0
Illinois, St. Louis	75	205,240	0.04%	283	0
Total	**142**	**379,900**	**0.04%**	**822**	**1**

(a) Acreage includes those areas that contain potential foraging or roosting habitat within the proposed footprint of the DAPL within Action Areas.

Acoustic and mist net surveys have been conducted per the *2015 Range-Wide Indiana Bat Summer Survey Guidelines (USFWS, 2015)* and in coordination with the USFWS, along the Action Areas to determine where the northern long-eared bat occurs and if potential roost trees are utilized by the northern long-eared bat. Resulting analysis identified one roost tree in an Iowa Action Area and no roost trees in Illinois within the Action Areas and/or within 100 feet of the Action Areas. This roost tree was found within IA 17A. Based on the emergence counts, this is a non-maternity roost tree, no bats were observed exiting the tree over two nights of observations.

Thirteen Action Areas occur within northern long-eared bat colony buffers, totaling approximately 12 acres of foraging habitat within these Action Areas. This acreage represents approximately 0.20 percent of the available habitat for the northern long-eared bat within the colony buffers. Table 5-4 below depicts the Action Areas by bat colony along with the respective acreage and suitable roost trees. The complete results of acoustic and mist net surveys for the Northern long-eared bat are presented in the September 30, 2015 *Indiana and Northern Long-eared Bat Summer 2015 Survey Report.*

Table 5-4: Summary of Action Areas within Northern Long-eared Bat Colonies Identified for the DAPL within Iowa and Illinois

Colony	Associated Action Areas	Forested Acreage within Workspace in the Colony Buffer within Action Areas	Forested Acreage in the 1.5 Mile Colony Buffer	Percentage of Workspace within the Colony Buffer in Action Areas	Potential Roost Trees within Workspace in the Colony Buffer in Action Areas
Colony 1	IA17, IA17A, IA18, IA19	3.92	2,678	0.15%	9[b]
Colony 6	IA57, IA58, IA59	1.4	1,974	0.07%	22
Colony 7[a]	ILRI15, ILRI16, ILRI17, ILRI18, ILRI19, ILRI20	6.68	1,348	0.50%	58
Total		**12**	**6,000**	**0.20**	**89**

(a) Colony occupied by both Indiana bat and northern long-eared bat.
(b) Indicates an active roost tree was identified within a respective Action Area.

5.5.1 Conservation Measures

Through discussions with the USFWS, Dakota Access has identified and would implement numerous conservation measures to avoid and minimize the potential or adverse effects to the northern long-eared bat. Conservation Measures include:

- As noted in Section 2.5, the preliminary routing analysis included avoidance and minimization consideration of riparian and forested areas to select an alignment and associated workspace that avoids and minimizes impacts to forested areas. Additional avoidance and minimization was achieved during micro-routing along the alignment.
- Analysis of potential habitats that could support the northern long-eared bat within its known distribution and range identified locations of suitable foraging and nesting habitat, potentially suitable roost trees, and through acoustic and mist net surveys have confirmed the locations that are utilized by the northern long-eared bat.
- Dakota Access has limited the typical construction workspace corridor within forested areas to 85 feet wide.
- No maternity roost trees are being affected by the Action Areas of the project.
- Dakota Access will winter clear all active and potential roost trees in the Action Areas. This shall include all Action Areas that had positive acoustic returns for this species.

5.5.2 Determination of Effect

Based on the results of the habitat assessment field surveys and the analysis contained in this BA, the Corps has determined that if the avoidance measures are implemented and selective tree clearing is employed and the only resultant potential impact within the Action Areas is general tree clearing of non-roosting trees during the roosting season, then the construction of the DAPL, within Action Areas, **may affect, but is not likely to adversely affect,** the northern long-eared Bat. This determination is based on selective cutting of active and potential roost trees within the Action Areas during the wintertime (October 1 to March 31) or wintertime clearing of all forested areas within the Action Areas.

5.6 Topeka Shiner

In Iowa, critical habitat for the Topeka shiner has been designated along stream segments in Lyon, Sac, Calhoun, Webster, and Boone Counties; however, the Action Areas do not cross streams at locations that are designated critical habitat. The Corps, in consultation with the USFWS, determined that 12 streams in Iowa along the Action Areas are either upstream of designated critical habitat or have known occurrences of the Topeka shiner: North Raccoon River, Cedar Creek, West Fork Camp Creek, Camp Creek, Lake Creek, Purgatory Creek, West Cedar Creek, East Cedar Creek, Hardin Creek, West Buttrick Creek, a tributary to East Buttrick Creek, and East Buttrick Creek.

5.6.1 Topeka Shiner Habitat in Iowa

Of the 12 streams identified in Iowa as potentially containing suitable habitat for the Topeka shiner, two waterbodies, the North Raccoon River and Cedar Creek, would be crossed using HDD construction

methods. The remaining 10 streams that have been determined to contain potentially suitable habitat for the Topeka shiner, and would be crossed using dry open-cut construction methods, were assessed to locate and describe potential spawning habitat for the Topeka shiner. The results of the habitat assessments at each of the 10 streams revealed that no suitable spawning habitat is present at the crossing location as the features are highly channelized. Descriptions of all 12 crossings identified as having potential habitat for the Topeka shiner in Iowa are provided below. Representative photographs of each stream at each proposed crossing location are provided in Appendix D.

North Raccoon River: USGS identifies this as a perennial stream in Buena Vista County, Iowa. Based on aerial photography and field observations, the North Raccoon River maintains a meandering channel and does not appear to have been historically channelized. At the proposed crossing location, this stream exhibits a width at the ordinary high water mark (OHWM) of approximately 100 feet and maintains an average water depth of greater than 1 foot. Dakota Access plans to utilize HDD construction methods for this crossing location, thus avoiding impacts to any potential habitats at the proposed crossing location.

Cedar Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor has a narrow riparian fringe along deeply incised banks and crosses through crop fields. Based on aerial photography and as evidenced by numerous cut-off oxbows, this stream appears to have been channelized upstream and downstream of the proposed pipeline crossing. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 50 feet and maintains and average water depth of greater than 1 foot. Dakota Access plans to utilize HDD construction methods for this crossing location, thus avoiding impacts to any potential habitats at this proposed crossing location.

West Fork Camp Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream has been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 10 feet and appears to maintain an average water depth of approximately 1 foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within West Fork Camp Creek at this location and is not likely within 6 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

Camp Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream has been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 10 feet and maintains an average water depth of 1 foot or less. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within Camp Creek at this location and is not likely within 9 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

Lake Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream has been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 20 feet and maintains an average water depth of greater than 1 foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within Lake Creek at this location and is not likely within 2 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

Purgatory Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream has been channelized upstream and downstream of the proposed pipeline and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream has an OHWM of approximately 10 feet and an average water depth of greater than 1 foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within Purgatory Creek at this location and is not likely within 9 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

West Cedar Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream appears to have been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 10 feet and a water depth of approximately 1

foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within West Cedar Creek at this location and is not likely within 3 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

East Cedar Creek: USGS identifies this as a perennial stream in Calhoun County, Iowa. This stream corridor does not exhibit steeply incised banks but has been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 33 feet and maintains an average water depth of greater than 1 foot. The proposed pipeline corridor crosses East Cedar Creek approximately 0.74 mile upstream and northeast from designated critical habitat for the Topeka shiner on this stream segment. Based on field evaluations, potential spawning habitat does not occur at the proposed crossing location but this stream channel has greater potential for the occurrence of Topeka shiner due to potential spawning habitats that could be located outside of the Action Area. However, through the implementation of conservation measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

Hardin Creek: USGS identifies this as a perennial stream in Webster County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream appears to have been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 10 feet and maintains an average water depth of greater than 1 foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within Hardin Creek at this location and is not likely within 7 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

West Buttrick Creek: USGS identifies this as a perennial stream in Webster County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields and also receives stormwater runoff from the adjacent crop fields. Based on aerial photography, the stream appears to have been channelized upstream and downstream of the proposed pipeline crossing. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 10 feet and a water depth of approximately 1 foot. The proposed pipeline corridor crosses West Buttrick Creek approximately 1.3 miles upstream and northeast from the designated critical habitat for the Topeka shiner. However, based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present

within West Buttrick Creek at this location and is not likely within at least 1-mile up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

Tributary to East Buttrick Creek: USGS identifies this as a perennial stream in Webster County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields and also receives stormwater runoff from the adjacent crop fields. Based on aerial photography, the stream appears to have been channelized upstream and downstream of the proposed pipeline crossing. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 10 feet and a water depth of approximately 1 foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within this tributary to East Buttrick Creek at this location and is not likely within 2 miles up or down stream. Through the implementation of conservations measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location.

East Buttrick Creek: USGS identifies this as a perennial stream in Webster County, Iowa. This stream corridor has deeply incised banks and crosses through crop fields. Based on aerial photography, the stream has been channelized upstream and downstream of the proposed pipeline crossing and also receives stormwater runoff from the adjacent crop fields. At the proposed crossing location, this stream exhibits a width at the OHWM of approximately 4 feet and a water depth of less than 1 foot. Based on field evaluations, suitable Topeka shiner spawning habitat such as pooling areas with sand/gravel substrates is not present within East Buttrick Creek at this location and is not likely within 2 miles up or down stream. Through the implementation of conservation measures outlined in Section 5.6.2, no adverse effects to the Topeka shiner are anticipated at this proposed crossing location

5.6.2 Conservation Measures

Conservation measures to avoid and minimize impacts to the Topeka shiner have been developed through discussions with the Corps and USFWS in addition to findings from literatures review and field surveys of known and potential habitats impacted by Action Areas. Recommended Conservation Measures were also reviewed by Mr. David C. Frederick, of Frederick Environmental Consulting, LLC, to confirm the adequacy of these measures based on documented stream characteristics. Conservation Measures outlined below would be implemented to the extent practicable at each stream crossing that has been identified as potentially containing suitable habitat for the Topeka shiner in Iowa:

- As noted in Section 2.5, the preliminary routing analysis included consideration of critical habitats and avoided these locations through alignment selection.
- In Iowa, two streams, the North Raccoon River and Cedar Creek, would be crossed using HDD construction methods, thus, avoiding impacts to these streams and any potential habitat to the Topeka shiner at these crossing locations.
- All temporary storage facilities for petroleum products, other fuels, and chemicals shall be located and protected to prevent accidental spills from entering the stream or its tributaries within the Project area. In the event of an accidental spill, Dakota Access would follow established reporting procedures.
- Temporary stream crossings would not contain fine sediment particles that may enter the stream channel and impair water quality. In addition, temporary stream crossings should be removed immediately after final restoration, and the area of impact would be restored to pre-construction conditions.
- There would be no side casting of trench spoil material into waterbodies. Temporary stockpiles would be stored above the top-of-bank and properly protected with BMPs (e.g., silt fencing) to avoid and minimize erosion and sedimentation into the stream.
- Temporary culverts for equipment crossings would be installed in a manner that does not impede the natural stream flow or prevent the formation of fish barriers.
- Temporary BMPs would be utilized to minimize erosion and sedimentation into the waterbody. Appropriate temporary erosion control measures and/or temporary grass seeding should be in place within one week of land disturbance adjacent to each stream crossing. Additional site-specific BMPs would be implemented at each stream crossing as necessary to prevent sediment loading into the stream.
- In East Cedar Creek and West Buttrick Creek, turbidity curtains will be utilized during construction to prevent sediment from traveling downstream.
- In-stream construction would be expedited to the extent practical and typically be limited to 72 hours or less, with a goal to cross all in 24 to 48 hours.
- All areas denuded of vegetation as a result of the permitted action, including the pipeline right-of-way adjacent to each stream, shall be reseeded within one month following completion of construction in that area. U.S. Department of Agriculture, NRCS-approved native grasses, in addition to any other native “quick” rooting grasses, would be utilized as the permanent seeding mix in non-agricultural areas.
- Special attention would be taken to protect any off-channel wetland complexes, such as old oxbow meanders that are present near any of the stream crossings. Appropriate BMPs and

construction practices as required under Nationwide Permit 12 and General Conditions would be followed for construction through each of these areas to protect these habitats. Following construction in each area, the right-of-way and each waterbody crossing would be restored to pre-construction contours and elevations.

- Dakota Access would inform all contractors of the construction practices and BMPs required to protect these sensitive habitats and complete installation of the pipeline in compliance with permit conditions.

5.6.3 Determination of Effect

The project may affect the Topeka Shiner; however, it should be noted that adverse effects are not anticipated at any of the respective river crossings in Iowa.

Of the 12 streams identified in Iowa as potentially containing suitable habitat for the Topeka shiner, two waterbodies, the North Raccoon River and Cedar Creek, would be crossed using HDD construction methods, thus avoiding impacts to the Topeka shiner at these locations. Though suitable spawning habitat does not occur at the 10 proposed open-cut crossing locations of any the streams in Iowa, it is possible that Topeka shiners could occur within these systems based on information provided by the USFWS. Dakota Access would implement the Conservation Measures outlined in Section 5.6.2 to avoid adverse effects to the Topeka shiner at each of these stream crossings. Therefore, construction of the proposed DAPL **may affect, but is not likely to adversely affect** the Topeka shiner in Iowa.

5.6.4 Topeka Shiner Habitat in South Dakota

Critical habitat for the Topeka shiner has not been designated in any of the South Dakota counties crossed by the DAPL Project. A total of nine waterbodies crossed by the DAPL Project in South Dakota were identified by the USFWS South Dakota Ecological Field Office as containing known Topeka shiner occurrences (James River, Shue Creek, Pearl Creek, Middle Pearl Creek, Redstone Creek, Rock Creek, West Fork Vermillion River, East Fork Vermillion River, and Big Sioux River). Four waterbodies (James River, Pearl Creek, East Fork Vermillion River, and Big Sioux River) would be crossed using HDD construction methods, thus avoiding direct adverse effects to the Topeka shiner at these locations. Field surveys of the remaining five waterbodies identified that one of these waterbodies, the West Fork Vermillion, would be crossed at the headwaters of the stream where it is an emergent wetland with no perennial flow. Therefore, the West Fork Vermillion River crossing is not suitable habitat for the species. The four remaining streams (Shue Creek, Redstone Creek, Middle Pearl Creek, and Rock Creek) include known occurrences and potential suitable spawning habitat.

Though potentially suitable spawning habitat was identified in Shue Creek, Redstone Creek, Middle Pearl Creek, and Rock Creek, Dakota Access would implement the reasonable and prudent measures outlined in the *Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the Topeka Shiner in South Dakota*, issued by the USFWS South Dakota Ecological Field Services on October 6, 2014 to minimize take of the species.

The Corps has determined that the work meets the Terms and Conditions of NWP 12 for Utility Line Activities, and has requested formal consultation with the South Dakota office of the U.S. Fish and Wildlife Service by letter dated January 7, 2016 (see Appendix H) under an existing Biological Opinion dated October, 2014. However, it is the Corps' understanding that the Service will consult on the Topeka shiner under a separate Biological Opinion in response to this BA.

5.6.5 Conservation Measures

Conservation measures to avoid and minimize impacts to the Topeka shiner in South Dakota have been developed through discussions with the USACE and USFWS in addition to findings from literatures review and field surveys of known and potential habitats crossed by the DAPL Project. Recommended Conservation Measures were also reviewed by Mr. David C. Frederick, of Frederick Environmental Consulting, LLC, to confirm the adequacy of these measures based on documented stream characteristics. Conservation Measures outlined below would be implemented to the extent practicable at each stream that has been identified as potentially containing suitable habitat for the Topeka shiner in Iowa:

- As noted in Section 2.6, the preliminary routing analysis included consideration of critical habitats and avoided these locations through alignment selection.
- In Iowa, two streams, the North Raccoon River and Cedar Creek, would be crossed using HDD construction methods, thus, avoiding impacts to these streams and any potential habitat to the Topeka shiner at these crossing locations.
- All temporary storage facilities for petroleum products, other fuels, and chemicals shall be located and protected to prevent accidental spills from entering the stream or its tributaries within the Project area. In the event of an accidental spill, Dakota Access would follow established reporting procedures.
- Temporary stream crossings would not contain fine sediment particles that may enter the stream channel and impair water quality. In addition, temporary stream crossings should be removed immediately after final restoration, and the area of impact would be restored to pre-construction conditions.

- There would be no side casting of trench spoil material into waterbodies. Temporary stockpiles would be stored above the top-of-bank and properly protected with BMPs (e.g., silt fencing) to avoid and minimize erosion and sedimentation into the stream.
- Temporary culverts for equipment crossings would be installed in a manner that does not impede the natural stream flow or prevent the formation of fish barriers.
- Temporary BMPs would be utilized to minimize erosion and sedimentation into the waterbody. Appropriate temporary erosion control measures and/or temporary grass seeding should be in place within one week of land disturbance adjacent to each stream crossing. Additional site-specific BMPs would be implemented at each stream crossing as necessary to prevent sediment loading into the stream.
- In-stream construction would be expedited to the extent practical and typically be limited to 72 hours or less, with a goal to cross all in 24 to 48 hours.
- All areas denuded of vegetation as a result of the permitted action, including the pipeline right-of-way adjacent to each stream, shall be reseeded within one month following completion of construction in that area. U.S. Department of Agriculture, NRCS-approved native grasses, in addition to any other native "quick" rooting grasses, would be utilized as the permanent seeding mix in non-agricultural areas.
- Special attention would be taken to protect any off-channel wetland complexes, such as old oxbow meanders that are present near any of the stream crossings. Appropriate BMPs and construction practices as required under Nationwide Permit 12 and General Conditions would be followed for construction through each of these areas to protect these habitats. Following construction, the right-of-way and each waterbody crossing would be restored to pre-construction contours and elevations.
- Dakota Access would inform all contractors of the construction practices and BMPs required to protect these sensitive habitats and complete installation of the Project in compliance with permit conditions.
- In South Dakota, four streams (James River, Pearl Creek, East Fork Vermillion River, and Big Sioux River) would be crossed using HDD construction methods and, thus, would avoid impacts to the Topeka shiner or its potential habitat at these locations. For the other streams in South Dakota that contain potential habitat (Shue Creek, Redstone Creek, Middle Pearl Creek, and Rock Creek) for the Topeka shiner and would be crossed by dry open-trench construction methods, Dakota Access would implement the reasonable and prudent measures outlined in the *Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the*

Topeka Shiner in South Dakota, issued by the USFWS South Dakota Ecological Field Services on October 6, 2014.

5.6.6 Determination of Effect

The project may affect the Topeka Shiner; however, it should be noted that adverse effects are not proposed at any of the respective river crossings in Iowa and are authorized under an existing programmatic biological opinion for locations in South Dakota.

A total of 21 streams were identified as potential habitat for the Topeka shiner in South Dakota and Iowa. Of these, one contained no suitable habitat and six streams would be crossed by HDD, thus resulting in no effect to the Topeka shiner at these seven locations. The four remaining streams in South Dakota (Shue Creek, Redstone Creek, Middle Pearl Creek, and Rock Creek) exhibit potential spawning habitat for the Topeka shiner and would be crossed via dry open cut methods. Dakota Access proposes to follow the reasonable and prudent measures outlined in the *Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the Topeka shiner in South Dakota*, issued by the USFWS South Dakota Ecological Field Services on October 6, 2014, to minimize impacts to Topeka shiner and streams containing their habitat. Even though the implementation these conservation measures would reduce the likelihood of potential adverse effects to the Topeka shiner, the Programmatic Biological Opinion authorizes incidental **take** of the Topeka shiner during construction of the DAPL Project. Therefore, construction of the DAPL Project **may affect, and is likely to adversely affect,** the Topeka shiner within Shue Creek, Redstone Creek, Middle Pearl Creek, and Rock Creek. However, with the implementation of the conservation measures and programmatic biological opinion, the affects would not jeopardize the continued existence of the species. Refer to Appendix I for specific information in the Programmatic BO and coordination with the U.S. Fish and Wildlife Service in South Dakota.

5.7 Cumulative Effects

The Corps is not aware of any other specific proposed non-federal development projects within the Corps' Regulatory Action Areas that could result in cumulative effects that would negatively impact any of the species considered in this BA. The proposed DAPL Project crosses through agricultural areas that have historically been and are currently used for crop production. Additionally, the region crossed by the proposed DAPL Project includes many existing, operational linear facilities (roadways, overhead electric transmission lines, overhead and buried communications lines, and buried water, natural gas, and petroleum pipelines). Existing agriculture and infrastructure development in the area has already affected the terrestrial and aquatic habitats in the vicinity of the proposed DAPL Project. The area is likely to

experience future agricultural use and infrastructure development as facilities are built, reconfigured, and upgraded.

6.0 CONCLUSION AND DETERMINATION

For this Regulatory portion of the BA, the areas that would be physically affected by construction were assessed for the potential to affect federally listed threatened or endangered species that are known or likely to occur within the proposed DAPL alignment in Corps Action Areas. Determinations of no effect were reached in Regulatory Action Areas with respect to all species with the exception of three. A summary of those species and the determination of effect likely to result through the construction of the DAPL within the Regulatory Action Areas are provided in Table 6-1. For specific determinations of effect at individual PCN crossings, please refer to the Regulatory Action Areas Table provided in Appendix F.

Table 6-1: Federally Listed Threatened and Endangered Species That May be Affected by Construction of the DAPL within Regulatory Action Areas

Species Name	Federal Status[a]	Designated Critical Habitat Within Action Areas	Effects Determination
Mammals			
Indiana bat *Myotis sodalis*	E	No	**May Affect, Not Likely to Adversely Affect** If suitable roost trees within the Action Areas are cleared during the non-roosting season in IL and IA.
Northern long-eared bat *Myotis septentrionalis*	T	No	**May Affect, Not Likely to Adversely Affect** If suitable roost trees within the Action Areas are cleared during the non-roosting season in IL and IA.
Fish			
Topeka shiner *Notropis topeka*	E	No	**May Affect, Not Likely to Adversely Affect,** for Iowa with additional conservation measures being implemented to avoid adverse effects. **May Affect, Likely to Adversely Affect,** for South Dakota (under an existing Programmatic BO – see Appendix I)

(a) Federal status abbreviations: E= Endangered species; T= Threatened species.
Source for species name, Federal status, and presence of critical habitat within DAPL: USFWS Environmental Conservation Online System (https://ecos.fws.gov/ecp/; Accessed May 15, 2015); USFWS Midwest Region site (http://www.fws.gov/midwest/endangered/lists/cty_indx.html; Accessed May 15, 2015).

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APPENDIX A - FIGURES

APPENDIX B - REGULATORY ACTION AREAS TYPICAL EXHIBITS

APPENDIX C - PROVIDED AT APPLICANT'S AND FWS'S REQUEST. THIS APPENDIX CONTAINS INFORMATION ON DAKOTA ACCESS PIPELINE IMPACTS OUTSIDE OF CORPS ACTION AREAS.

APPENDIX D - REPRESENTATIVE PHOTOGRAPHS TOPEKA SHINER STREAMS

APPENDIX E - HDD CONTINGENCY PLAN

APPENDIX F - REGULATORY ACTION AREAS TABLE

APPENDIX G – CORPS SECTION 408 BA, NORTH DAKOTA

APPENDIX H – CORPS SECTION 408 BA, ILLINOIS

APPENDIX I – TOPEKA SHINER IN SOUTH DAKOTA