

TransCanada Keystone Pipeline, L.P. Keystone XL Pipeline

Responses to June 30, 2020 Administrative Completeness Review of the Keystone XL Project, Application for Certification, MDEQ Water Quality Certification No. MT4011079

Montana Department of Environmental Quality

Project Number:

TAL-00050388-73

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**KXL Pipeline Project – MDEQ 401 Certification
Responses to June 30, 2020 Request for Additional Information
July 24, 2020**

The Montana Department of Environmental Quality reviewed the 401 water quality certification application for the Keystone XL Pipeline Project dated June 8th, 2020. Additional information requests (listed below) were identified in order to determine the application administratively complete. The requests for additional information are:

1. ARM 17.30.103(3)(b)(i) The applicant shall provide the volume of discharge at each permanent disturbance associated with the project within the state.

Response to ARM 17.30.103(3)(b)(i):

The following are the permanent impacts associated with the Project in Montana and the volume of discharge associated with each permanent impact.

In Montana, the construction of the Project will result in the permanent disturbance of 0.06 acres of wetlands due to the construction of the permanent access road CAR-128 (see Table 1 of this response). Approximately 50 cubic yards of clean rock will be placed in the wetlands to improve this road for permanent use. These wetlands that are crossed by this access road are fringe wetlands adjacent to waterbodies that will be crossed by “flume with rock fill”.

Table 1. Summary of Permanent Impacts to Wetlands within Montana for the Keystone XL Pipeline Project

Milepost	State	County	Wetland ID	Wetland Type	Access Road ID	Access Road Type	Crossing Method	Temporary Impacts (acres)	Permanent Impacts (acres)	Type/Quantity of Fill Material
198.37	MT	Dawson	W1023620DA002	PEM	CAR-128	Permanent	Rock Fill	0.04	0.04	30 Cubic Yards of Rock
199.86	MT	Dawson	W1023620DA001	PEM	CAR-128	Permanent	Rock Fill	0.02	0.02	20 Cubic Yards of Rock

In Montana, the construction of the Project will result in the permanent disturbance of 0.037 acres of waterbodies due to the construction of the permanent access roads CAR-004A and CAR-128 (see Table 2 of this response). The construction of these two access roads will result in the placement of approximately 116 cubic yards of clean rock. The fill material (will be used to secure the placement of flume(s) in the waterbody to allow for the conveyance of water under the permanent access roads. For the calculation of fill material in instances where two crossing methods were identified as an option such as “Flume with Rock Fill” or “Bridge with Construction Mats”, the fill estimates provided in Table 2 are based on the use of flume with rock fill as this crossing method could result in the greater amount of fill and this is what will be used during operation of the permanent road. The “bridge with construction mats” option may be selected for just during construction. The detail drawings identified in Table are included in Attachment B of this response.

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Table 2. Summary of Permanent Impacts to Waterbodies within Montana for the Keystone XL Pipeline Project

Milepost	State	County	Waterbody Name	Waterbody Type	Waterbody ID	Access Road ID	Type of Access Road	Crossing Method	Temporary Impacts (acres)	Permanent Impacts (acres)	Type/Quantity of Fill Material
20.41	MT	Phillips	Corral Coulee	EPH	S112PH001	CAR-004A	Permanent	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^a	0.00	0.01	36 Cubic Yards of Rock
198.37	MT	Dawson	Tributary to The Yellowstone River 01	PER	S1023620DA004	CAR-128	Permanent	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^a	0.00	0.01	17 Cubic Yards of Rock
198.42	MT	Dawson	Tributary to The Yellowstone River 02	EPH	S1023620DA002	CAR-128	Permanent	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^a	0.00	0.004	20 Cubic Yards of Rock
198.45	MT	Dawson	Tributary to The Yellowstone River 03	EPH	S1023620DA003	CAR-128	Permanent	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^a	0.00	0.01	23 Cubic Yards of Rock
199.87	MT	Dawson	Tributary to The Yellowstone River 04	PER	S1023620DA001	CAR-128	Permanent	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^a	0.00	0.003	20 Cubic Yards of Rock

Notes:

a: The option of the two different crossing methods is for construction only. The permanent crossing method will be flume with rock fill.

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2. ARM 17.30.103(3)(b)(ii) The applicant shall provide a complete description of the biological, chemical, physical, and radiological characteristics of the discharge at each permanent disturbance associated with the project within the state:

Response to ARM 17.30.103(3)(b)(ii):

The permanent disturbance to wetlands and waterbodies in Montana due to the construction of the Project will result in the placement of approximately 166 cubic yards of fill material. Of this amount, 116 cubic yards of rock fill will be placed into the waterbodies and 50 cubic yards of rock fill into wetlands. The rock would come from an existing commercial source and would consist of clean material without known contaminants. Keystone will not construct any borrow sites for the acquisition of any fill material.

Within waterbodies the rock will be used to secure the placement of flume(s) in the waterbody to allow for the conveyance of water under the permanent access road. The use of flume(s) will allow for the natural flow of the waterbody and will have negligible impacts to the biological, chemical, physical, and radiological characteristics of each of the waterbodies identified in Table 2 provide in response to data request No. 1. The flume(s) and access road across the features will be placed to avoid and minimize erosion and the flume(s) sized to ensure it can handle anticipated high flow volumes to reduce any potential for flooding.

Within wetlands, the rock fill will be used to provide a suitable driving surface for the passage of Project vehicles. Though the wetland vegetation will be lost, the total surface area of rock fill is minimal, and the rock fill will provide a permeable surface for the inflow of precipitation. Due to the relatively small surface area of the wetland that will be filled, the rock fill will have negligible impacts to the biological, chemical, physical, and radiological characteristics of each of the adjacent wetlands and waterbodies and fill will be sourced from an existing commercial source without known contaminants.

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3. ARM 17.30.103(3)(b)(iv): The applicant shall provide all environmental impact assessments, additional information, maps and photographs which have been provided to the U.S. Army Corps of Engineers pertaining to Section 404 of the CWA.

Response to ARM 17.30.103(3)(b)(iv):

Attachment A of this response contains Keystone's responses to the U.S. Army Corp of Engineers (USACE) June 16, 2020 Request for Information and Attachment B is the Keystone's response to USACE July 21, 2020 Request for Information. Keystone submitted these responses on July 7, 2020 and July 24, 2020, respectively.

Attachment A

Response to USACE June 16, 2020 RFI

TransCanada Keystone Pipeline, L.P. Keystone XL Pipeline

Responses to June 16, 2020 Request for Information for the June 1, 2020 Federal Dredge and Fill Permit Application

U.S. Army Corps of Engineers Omaha District

Project Number:

TAL-00050388-73

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**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to June 16, 2020 Request for Information
July 6, 2020**

The Omaha District has reviewed the subject project application for an Individual Permit received on June 1, 2020. Currently, the application is incomplete per 33 CFR 325.1(d). The following information is required for a complete application

1. Block 20 of the application form states “*Temporary fill would be primarily restricted to spoil material from the pipe ditch and timber mats, or similar, to aid in stabilization for equipment and to prevent topsoil mixing during construction.*”
 - a. Is there “secondary” temporary fill material? In addition to the “spoil material from the pipe ditch and timber mats”, will any of the pipe construction methods in aquatic resources require fill material (i.e. to backfill the trench, access, etc.)? If yes, please provide the source(s) of the material; the purpose of the discharge, a description of the type, composition and quantity of the material and the location(s) of the disposal site(s).

Response to RFI No. 1:

Trench spoil temporarily sidecasted will be returned to the pipeline trench and the original contours and elevations will be re-established to the extent practical. Some types of secondary fill could be left in place after restoration such as erosion control blankets, sand padding, or other permanent erosion control measures as outlined in the Project’s Construction Mitigation and Reclamation Plan (CMRP [Appendix B of the Individual Permit Application]). Any sand used for padding would be “clean sand” from a commercial source. The volume of these materials cannot be determined until the trench is excavated and the site-specific measures outlined in the CMRP can be implemented.

Other temporary erosion control measures as outlined in the CMRP will be removed and disposed of in an approved upland site following construction and stabilization of the right-of-way.

For temporary access roads, the crossing of some waterbodies could result in the placement of flume(s) and the associated temporary fill material (i.e., rock). The flume and rock fill will be placed to allow for the conveyance of water under the temporary access road. See the response to RFI No. 2b. for the type and estimated quantity of temporary fill material that will be used for the crossing of waterbodies by temporary access roads.

For permanent access roads, the crossing of wetlands and waterbodies could result in the placement of culvert(s) and the associated fill material (i.e., rock). The culverts and rock fill will be placed to allow for the conveyance of water under the permanent access road. See the response to RFI No. 2b. for the type and estimated quantity of permanent fill material that will be used for crossing of wetlands and waterbodies by permanent access roads.

Disposal sites for any temporary fills or materials are currently unknown at this time, but will be in approved disposal sites or upland areas. Keystone will not construct any borrow sites for the acquisition of any fill material.

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2. Block 21 of the application form states “Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards: Amount in Cubic Yards = 107 CY crushed stone; Amount in Cubic Yards = 2,956 CY native improved material; Amount in Cubic Yards 480,740 CY excavated material”.
- a. For the “crushed stone”, “native improved material”, and “excavated material” please provide the source(s) of the material; the purpose of the discharge, a description of the type, composition and quantity of the material and the location(s) of the disposal site(s). Also clarify what is meant by “native improved material”.
 - b. Will any of the temporary or permanent access roads in AQUATIC RESOURCES require fill material? If yes, please provide the source(s) of the material; the purpose of the discharge, a description of the type, composition and quantity of the material and the location(s) of the disposal site(s).
 - c. Aside from the “pipe ditch and timber mats” and temporary and permanent access roads, are there any other activities involving the discharge of dredged or fill material in aquatic resources? If yes, please provide the source(s) of the material; the purpose of the discharge, a description of the type, composition and quantity of the material and the location(s) of the disposal site(s).

Response to RFI No. 2:

- a. Based on a detailed review of the crossing method of wetlands and waterbodies by access roads to provide a response to RFI No. 6, Keystone has modified the type and quantities of the fill material that was originally stated in in Block 21 of the application. Based on the response to RFI No. 6, Keystone will utilize either temporary construction mats or flume and rock for the crossings of waterbodies by temporary access roads and will only use temporary construction mats for the crossing of wetlands by temporary access roads. As part of this update, the use of “Native Improved Material” has been eliminated, in favor of solely relying on rock as the temporary fill material . See the response to RFI No. 6 for the crossing method for both temporary and permanent access roads across wetlands and waterbodies.

The following are the updated types and quantities of fill material that will be discharged

- 1,051 cubic yards of rock (e.g., gravel/crushed rock)
- 480,740 cubic yards of excavated material

The rock would come from an existing commercial source and would consist of clean material. Keystone will not construct any borrow sites for the acquisition of any fill material. The excavated material will be the material that is excavated from the pipeline trench, and will be used to backfill the trench.

The final source and disposal site for the fill material will be determine by the Construction Contractor. At this time of this submittal Keystone has not selected the contractors. Disposal of materials will be in approved disposal sites or upland locations.

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- b. Fill material will be required for the construction of temporary and permanent access roads. Table RFI No. 2 provides an estimate of the quantity of fill material that will be required for the construction of access roads.

Table RFI No. 2 - Description of Fill Material for the construction of the Project Access Roads

Type of Access Road	Aquatic Resource	Amount of Fill (cubic yards)	Type of Fill
Permanent Access Road	Wetland	59	rock
	Waterbody	116	rock
Temporary Access Road	Wetland	None (only temporary use of construction mats)	None
	Waterbody	876	rock

For temporary access roads, rock will be used as temporary fill material to secure the placement of flumes in the waterbody to allow for the conveyance of water under the temporary access road. See the response to RFI No. 6 for the location along access roads where waterbodies will be crossed by flume and rock.

For permanent access roads, the permanent fill will be used to create a permeable road surface to the permanent aboveground facilities. In some cases, culverts may need to be placed in the road to convey a water feature under the permanent access road and the rock fill would be used to secure the culvert. The culvert size will be determined prior to construction to meet local and state regulatory requirements.

- c. No, there are no other activities involving the discharge of dredged or fill material in aquatic resources aside from the “pipe ditch and timber mats” and temporary and permanent access roads.

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3. Section 1.3: The application discusses avoidance and minimization in aquatic resources, but does not specifically address compensatory mitigation of aquatic resources. Provide either a statement describing how impacts to waters of the United States are to be compensated for, or a statement explaining why compensatory mitigation should not be required for the proposed impacts.

Response to RFI No. 3:

Keystone is not proposing compensatory mitigation to offset the permanent impacts to waters of the U.S. resulting from the construction of the Project. Keystone has evaluated impacts to wetlands and waterbodies, as well as other environmental impacts, throughout the route selection process. The project design incorporated routing selection and construction techniques to avoid and minimize impacts to wetlands, to the maximum extent practical.

The construction of permanent access roads will result in the permanent loss of a cumulative 0.13 acres of palustrine emergent (PEM) wetlands, which is far less than 1% of the Project's impacts to PEM wetlands. This impact calculation is a total impact of multiple independent crossings of PEM wetlands along the entire 830+ mile Project. Each crossing of a water of the U.S. by a permanent access road will result in far less than a tenth of an acre of impact. The acreage calculations are provided in Table H-1 in Appendix H of the Individual Permit Application.

Of the cumulative 0.21 acres of PFO wetlands that will be temporarily disturbed during construction, 0.12 acres of the PFO wetlands will be allowed to restore to pre-construction condition as this portion of the ROW will not be required to be maintained in an herbaceous state. Following construction, this 0.12 acres of PFO wetlands will be planted with tree and shrub species consistent with dominant woody species currently observed in the wetland complexes. Keystone anticipates the planting of 1 to 3-inch saplings on 10 to 15-foot centers within the restored workspace.

The construction of the Project will require the permanent cover class conversion of the remaining 0.09 acres of PFO wetlands from PFO to PEM because of the maintenance of a 30-foot corridor centered on the pipeline centerline in herbaceous cover for inspection and aerial patrol during operations. However, this 0.09 acres is based on several crossings of waters of the U.S. with impacts at each individual wetland being far less. As Keystone is only proposing to maintain a 30-foot corridor in an herbaceous state, the functional wetland impact in these locations is minimal. Keystone has implemented many measures to ensure that wetland and waterbody impacts are avoided or minimized along the Project. Keystone believes that additional compensatory mitigation for the limited amount of converted PFO is not warranted.

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4. Section 1.4: The anticipated date for the Project to be in service was provided, but what is the anticipated schedule/timeframe/duration of construction in aquatic resources? Will the “12 spreads” be constructed in 12 phases, or some simultaneously?

Response to RFI No. 4:

Keystone has limited construction plans for the Project during 2020. None of the 2020 construction activities will result in the discharge of dredged or fill material into waters of the U.S.

The remaining portions of the Project is planned to be constructed during 2021 and Keystone will utilize a construction schedule that will include the construction of spreads concurrently in order to complete construction in 2021. Keystone is still developing the schedule for 2021, so durations of impacts to aquatic resources is not completely known at this time. Consistent with Keystone’s commitments in the CMRP, the Project will minimize impacts to aquatic resources by limiting duration of impacts to that necessary to construct the Project.

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5. Appendix E - Names and addresses of adjoining property owners:
- a. Provide the property owner/point of contact and their address for the following listed in Table E-1 under the "Owner's Name and Address":
 - i. MT: BURLINGTON NORTHERN/ SANTA FE, Little Missouri River, UNKNOWN, State of Montana DNR, State of Montana,
 - ii. SD: WHITE RIVER, Town of Buffalo,
 - iii. NE: KEYA PAHA RIVER, NIOBRARA RIVER, US HWY 20 / 863RD RD, UNION PACIFIC RAILROAD COMPANY
 - b. The last landowner listed in Table E-1 is "TransCanada Keystone Pipeline, LP". Please provide the name and address of the owner of the next abutting parcel(s) owned by someone other than the applicant..

Response to RFI No. 5:

- a. The Adjoining Landowner List (Table E-1) has been updated to provide the owner/point of contact and associated address for the requested property owners has been included. The supplemental table contains Privileged and Confidential information and it is contained in Attachment A of this response.
- b. The Adjoining Landowner List (Table E-1) has been updated to provide the name and address of the property owner of the next abutting parcels to the "TransCanada Keystone Pipeline, LP" parcel. See Attachment A of this response for the updated Table E-1.

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6. Construction Mitigation and Reclamation Plan (CMRP)/Table H-2 and Table I-2:
- a. DTLs 16, 17 and 18 are “typical” temporary access bridges/”Vehicle Access and Equipment Crossing” for waterbody crossings. If these DTL crossing methods (or other DTL crossing methods) are to be used at any of the crossings listed in Table I-2, include a column identifying the appropriate “DTL” in the “Table I-2: Keystone XL Pipeline Project Waterbody Crossings by the Access Roads within USACE Omaha District” (similar to the “Method” column in Tables H-1 and I-1). Currently, Table I-2 has a column for “Type of Access Road” identifying permanent or temporary, but the actual filling activity/material/crossing method should be identified.
 - b. Section 6.3 of the CMRP, Vehicle Access and Equipment Crossing in wetlands, states: “If equipment must operate within a wetland containing standing water or saturated soils, the Contractor shall use the following methods for equipment access unless otherwise approved by Keystone based on site-specific conditions: wide-track or balloon-tire construction equipment; and conventional equipment operated from timber and slash (riprap) cleared from the right-of-way, timber mats, or prefabricated equipment mats.”

While there are no “DTLs” identified in the CMRP for these crossings, the fill material/method to be used at each crossing (timber, slash, riprap, mats) should be included in “Table H-2: Keystone XL Pipeline Project Wetland Crossings by Access Roads within USACE Omaha District”. Currently, Table H-2 has a column for “Access Road Type” identifying permanent or temporary, but the actual filling activity/material/crossing method should be identified

Response to RFI No. 6:

See Attachment B of this response for the updated versions of Tables H-2 and I-2. The updated tables include the crossing method for each aquatic resource by a Project access road.

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7. The application has statements that include the terms “waters of the U.S.” and “jurisdiction” or “jurisdictional”, however, a jurisdictional determination has not been completed nor requested for this project (within the last 5 years). Please provide a statement clarifying whether a jurisdictional determination is/is not being requested at this time. For example, the following language was included in the previous Preconstruction Notifications: “Keystone has adopted the USACE Regulatory Guidance Letter 16-01, dated October 31, 2016, on jurisdiction of waters of the U.S. and is not requesting a jurisdictional determination.”

Response to RFI No. 7:

Keystone is not requesting a jurisdictional determination for the Project. The statement “*Keystone has adopted the USACE Regulatory Guidance Letter 16-01, dated October 31, 2016, on jurisdiction of waters of the U.S. and is not requesting a jurisdictional determination*” has been added to Section 1.0 of the revised text of the application that is being submitted with these RFI responses.

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8. Throughout the application package, reference is made to the “operation” of the project impacting/affecting wetlands/waters/aquatic resources. For example, page 13 states “Keystone is submitting this Federal Dredge and Fill Permit Application for a Standard (Individual) Permit to address impacts to waters of the U.S. that will result from the construction and operation of the Project”. Please explain what activities (structures, work, filling, dredging, excavation, draining, inundating, etc.) associated with the operation of the project would have affects/impacts to aquatic resources, and what those affect/impacts are. (Please note that USACE regulates the discharge of dredged or fill material into waters of the United States under section 404 of the Clean Water Act, and the construction of structures and work in navigable waters of the United States under section 10 Rivers and Harbors Act. This authority does not extend to the operation of the project after construction is complete.) The term “operation” should be removed from the application where applicable in regard to the USACE’s authority.

Response to RFI No. 8:

Keystone acknowledges that the USACE’s authority does not extend to the operation of the Project after construction is complete.

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The following additional information is requested in order to expedite our review:

9. Provide waterbody data sheets and a wetland/waterbody delineation report that includes the delineation methodology and results.

Response to RFI No. 9:

Attachment C of this submittal contains the *Wetland Assessment Methodology and Results* document for the Project. This document describes the methodology used for the delineation of wetlands and waterbodies within the Project study area.

The waterbody datasheets for the field delineated waterbodies included in the application are provided in Attachment D of this response. Datasheets were not provided for those waterbodies that were desktop delineated.

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10. Complete the attached “ORM_Upload_Sheet_Consolidated_Rapanos_20191223.xlsm” spreadsheet. a. Complete the AqResources and Impacts worksheets.

11.

- a. The “Waters names” should use the following naming convention:
- b. KXL_AR#_stream/wetland, where the AR refers to the wetland/waterbody ID, for example: “KXL_S31VA002_stream”, “KXL_W_UTM13_03718_wetland”, “KXL_W306HT005_wetland”
- c. The Meas_Type / Units for wetlands should include the entire area of wetland delineated (not just the linear feet of impact) in acres.
- d. “Waters Type” for all of them should be “DELINEATE”.
- e. The “Local_Waterway” for wetlands should be the nearest named/unnamed tributary, if applicable.

Response to RFI No. 10:

An updated ORM table will be provided to the USACE under a separate cover.

Attachment A

RFI No. 5

Updated Table E-1

*Updated Table E-1 Adjoining Property Owners
Confidential Information*

Attachment B

RFI No. 6

Updated Tables H-1 and I-1

**KXL Pipeline Project – June 1, 2020 Individual Permit Application
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Revised Table H-2: Keystone XL Pipeline Project Wetland Crossings by Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Wetland ID	Wetland Type ^a	Access Road ID	Access Road Type	Length Crossed (feet) ^{b,c}	Crossing Method ^e	Subbasin	Latitude	Longitude	Temporary Disturbance ^e	Permanent Disturbance	Map Page ^f
1	149.26	MT	McCone	W0725619MC001	PEM	CAR-439	Temporary	2.27	Construction Mat	Redwater	47.446986	-105.514454	0.03	0.00	AR 66
2	149.27	MT	McCone	W0725619MC001	PEM	CAR-439	Temporary	NC	Construction Mat	Redwater	47.447001	-105.514097	See above	0.00	AR 66
3	198.37	MT	Dawson	W1023620DA002	PEM	CAR-128	Permanent	10.74	Construction Mat	Lower Yellowstone	46.876414	-104.955603	0.04	0.04	AR 78
4	198.37	MT	Dawson	W1023620DA002	PEM	CAR-128	Permanent	6.87	Construction Mat	Lower Yellowstone	46.87634	-104.955636	See above	See above	AR 78
5	199.86	MT	Dawson	W1023620DA001	PEM	CAR-128	Permanent	14.10	Construction Mat	Lower Yellowstone	46.874525	-104.936281	0.02	0.02	AR 79
6	199.87	MT	Dawson	W1023620DA001	PEM	CAR-128	Permanent	4.26	Construction Mat	Lower Yellowstone	46.87454	-104.936229	See above	See above	AR 79
7	289.04	SD	Harding	W109HA001	PEM	CAR-163	Permanent	45.75	Flume Culvert with Rock Fill	Upper Little Missouri	45.863552	-103.989438	0.06	0.06	CL 216; AR 97
8	289.11	SD	Harding	W109HA001	PEM	CAR-163	Permanent	NC	Construction Mat	Upper Little Missouri	45.863519	-103.987676	See above	See above	CL 216; AR 97
9	296.14	SD	Harding	W302HA001	PEM	CAR-041	Temporary	56.60	Construction Mat	Upper Little Missouri	45.801494	-103.87182	0.04	0.00	AR 101
10	321.12	SD	Harding	W0906620HA002	PEM	CAR-469	Temporary	240.40	Construction Mat	South Fork Grand	45.577767	-103.545045	0.18	0.00	AR 115
11	321.13	SD	Harding	W0906620HA002	PEM	CAR-469	Temporary	312.01	Construction Mat	South Fork Grand	45.577964	-103.543593	0.23	0.00	AR 115
12	327.52	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	NC	Construction Mat	South Fork Grand	45.534826	-103.421649	0.60	0.00	AR 118
13	327.52	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	144.60	Construction Mat	South Fork Grand	45.534468	-103.421696	See above	0.00	AR 118
14	327.55	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	223.82	Construction Mat	South Fork Grand	45.533755	-103.421673	See above	0.00	AR 118
15	327.58	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	489.82	Construction Mat	South Fork Grand	45.532729	-103.421558	See above	0.00	AR 118

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Revised Table H-2: Keystone XL Pipeline Project Wetland Crossings by Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Wetland ID	Wetland Type ^a	Access Road ID	Access Road Type	Length Crossed (feet) ^{b,c}	Crossing Method ^e	Subbasin	Latitude	Longitude	Temporary Disturbance ^e	Permanent Disturbance	Map Page ^f
16	421.05	SD	Meade	W09196198ME001	PEM	CAR-471	Temporary	NC	Construction Mat	Lower Cheyenne	44.632848	-102.059908	0.00	0.00	AR 148
17	434.59	SD	Haakon	W0808620HK001	PEM	CAR-313-ALT	Temporary	54.43	Span Bridge with Railcar Bridge	Lower Cheyenne	44.463294	-101.941166	0.08	0.00	AR 156
18	486.16	SD	Haakon	W0810620HK001	PEM	CAR-462	Temporary	70.29	Construction Mat	Bad	44.076185	-101.104368	See above	0.00	CL 364; AR 173
19	659.18	NE	Holt	W306HT005	PEM	CAR-293	Temporary	22.09	Construction Mat	Lower Niobrara	42.555484	-98.667553	0.02	0.00	CL 493; AR 197
20	780.92	NE	Colfax	W0505702CO002	PEM	VAR-46G	Permanent	5.73	Flume Culvert with Rock Fill	Lower Platte-Shell	41.402361	-97.197366	0.01	0.01	CL 584; AR 214; AR 213
21	781.16	NE	Colfax	W0508702CO004	PEM	CAR-374	Temporary	NC	Construction Mat	Lower Platte-Shell	41.399544	-97.194577	0.00	0.00	CL 584; AR 214; AR 213
22	818.74	NE	Seward	W0926618SE001	PEM	CAR-435	Temporary	237.15	Construction Mat	West Fork Big Blue	40.890346	-97.262183	0.16	0.00	CL 613; AR 220
23	834.73	NE	Seward	W0602702SE001	PEM	CAR-395	Temporary	0.46	Construction Mat	West Fork Big Blue	40.705479	-97.100753	0.01	0.00	CL 625; AR 223

a: PEM - palustrine emergent wetland; PSS- palustrine scrub-shrub wetland; and PFO - palustrine forested wetland.

b: Crossing distance is measured along the proposed access road centerline

c: "-" Indicates the wetland or waterbody is not cross the proposed access road centerline, but is encroached upon by access road workspace.

d: Based on field inspection, if Keystone discovers an existing bridge or culvert at the roads crossing of the feature, Keystone will utilize this existing structure as the crossing method

e: Due to the orientation and shape of certain wetland features, some are crossed multiple times by the access road centerline. Each individual crossing is listed so that some features are listed multiple times. Due to the short distance between separate crossings of the same feature, it is expected that during construction these features will be treated as a single crossing. Impact acreage is provided for the entire feature and is not repeated for multiple crossings of the same feature. The note 'See Above' is used in these instances.

f: This column identifies the specific page(s) of the corresponding mapbook (Appendix J of this Federal Dredge and Fill Application) that depicts the wetland. The abbreviations are: CL – centerline, AR – access road.

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	Milepost	State	County	Waterbody Name	Waterbody Type ^a	Waterbody ID	Access Road ID	Type of Access Road	Crossing Length (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Impacts (acres) ^e	Permanent Impacts (acres)	Map Page ^f
1	20.41	MT	Phillips	Corral Coulee	EPH	S112PH001	CAR-004A	Permanent	11.66	Flume with Rock Fill or Construction Mats	Frenchman	48.767917	-107.287414	0.00	0.01	AR 9
2	24.78	MT	Phillips	Frenchman Creek	PER	S0903620PH002	CAR-327	Temporary	75.07	Bridge with Railcars	Frenchman	48.69125	-107.24346	0.05	0.00	AR 16
3	33.07	MT	Valley	Papoose Creek	EPH	S_MDEQ_0028	CAR-008	Temporary	NC	Construction Mats	Rock	48.646058	-107.090427	0.01	0.00	CL 25; AR 20
4	33.08	MT	Valley	Papoose Creek	EPH	S_MDEQ_0028	CAR-008	Temporary	NC	Construction Mats	Rock	48.64593	-107.090342	See above	0.00	CL 25; AR 20
5	39.44	MT	Valley	Rock Creek	PER	S109VA002-1	CAR-010A	Temporary	27.51	Flume with Rock Fill or Railcar Bridge	Rock	48.570921	-107.004852	0.02	0.00	AR 22
6	59.16	MT	Valley	Spring Creek	INT	S802VA001	CAR-084	Temporary	24.35	Flume with Rock Fill or Railcar Bridge	Lower Milk	48.370044	-106.739497	0.02	0.00	AR 33; AR 34
7	129.87	MT	McCone	Unnamed Tributary to East Fork Prairie Elk Creek	INT	S32MC001	CAR-025	Temporary	78.93	Flume with Rock Fill or Railcar Bridge	Prairie Elk-Wolf	47.6163	-105.811039	0.05	0.00	AR 58
8	130.13	MT	McCone	East Fork Prairie Elk Creek	INT	S32MC002	CAR-025	Temporary	51.27	Flume with Rock Fill or Railcar Bridge	Prairie Elk-Wolf	47.615782	-105.805137	0.04	0.00	AR 58
9	131.09	MT	McCone	Pond on Tributary to East Fork Prairie Elk Creek	Man-Made Waterbody	S0725618MC001	CAR-025A	Temporary	NC	Construction Mats	Prairie Elk-Wolf	47.609724	-105.788236	0.00003	0.00	AR 59
10	153.14	MT	McCone	Gyp Creek 01	INT	S105MC005	CAR-109	Temporary	NC	Flume with Rock Fill or Railcar Bridge	Redwater	47.394388	-105.47397	0.00	0.00	CL 114; CL 115; AR 68
11	153.14	MT	McCone	Gyp Creek 02	INT	S105MC006	CAR-109	Temporary	73.20	Flume with Rock Fill or Railcar Bridge	Redwater	47.394357	-105.473932	0.04	0.00	CL 114; CL 115; AR 68
12	198.37	MT	Dawson	Tributary to The Yellowstone River 01	PER	S1023620DA004	CAR-128	Permanent	5.28	Flume with Rock Fill or Construction Mats	Lower Yellowstone	46.876364	-104.955618	0.00	0.01	AR 78

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13	198.42	MT	Dawson	Tributary to The Yellowstone River 02	EPH	S1023620DA002	CAR-128	Permanent	1.74	Flume with Rock Fill or Construction Mats	Lower Yellowstone	46.873366	-104.962073	0.00	0.004	CL 148; AR 78
14	198.45	MT	Dawson	Tributary to The Yellowstone River 03	EPH	S1023620DA003	CAR-128	Permanent	4.09	Flume with Rock Fill or Construction Mats	Lower Yellowstone	46.873932	-104.958907	0.00	0.01	AR 78
15	199.87	MT	Dawson	Tributary to The Yellowstone River 04	PER	S1023620DA001	CAR-128	Permanent	2.05	Flume with Rock Fill or Construction Mats	Lower Yellowstone	46.874524	-104.936252	0.00	0.003	AR 79
16	258.21	MT	Fallon	Pond on Tributary to Little Beaver Creek	Man-Made Waterbody	S0731620FA001	CAR-452	Temporary	NC	Construction Mats	Upper Little Missouri	46.247478	-104.205041	0.0006	0.00	AR 93
17	258.21	MT	Fallon	Pond on Tributary to Little Beaver Creek	Man-Made Waterbody	S0731620FA001	CAR-452	Temporary	NC	Construction Mats	Upper Little Missouri	46.247416	-104.204988	See above	0.00	AR 93
18	258.22	MT	Fallon	Pond on Tributary to Little Beaver Creek	Man-Made Waterbody	S0731620FA001	CAR-452	Temporary	NC	Construction Mats	Upper Little Missouri	46.247315	-104.205	See above	0.00	AR 93
19	262.80	MT	Fallon	Gravel Pit on Tributary to Dry Creek	Man-Made Waterbody	S0905620FA001	CAR-467	Temporary	11.51	Construction Mats	Upper Little Missouri	46.139157	-104.330699	0.02	0.00	AR 94
20	289.82	SD	Harding	Unnamed Tributary to Wagoner Creek	INT	S500HA012	CAR-163	Permanent	67.89	Span Bridge with Railcar Bridge	Upper Little Missouri	45.863566	-103.970169	0.00	0.14	AR 97; AR 98
21	292.61	SD	Harding	Shaw Creek	PER	S109HA002	CAR-150	Temporary	52.89	Flume with Rock Fill or Railcar Bridge	Upper Little Missouri	45.833189	-103.929441	0.03	0.00	CL 218; CL 219; AR 99; AR 100
22	296.13	SD	Harding	Kimble Creek	INT	S104HA004	CAR-041	Temporary	29.29	Flume with Rock Fill	Upper Little Missouri	45.801513	-103.872007	0.02	0.00	AR 101
23	321.13	SD	Harding	South Fork Grand River	PER	S0906620HA004	CAR-469	Temporary	NC	Construction Mats	South Fork Grand	45.577753	-103.544897	0.00	0.00	AR 115
24	327.56	SD	Harding	Clark Fork Creek	PER	S0528618HA001	CAR-231	Temporary	20.46	Flume with Rock Fill or	South Fork Grand	45.53343	-103.421631	0.01	0.00	AR 118

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										Railcar Bridge						
25	342.47	SD	Harding	Unnamed Tributary to Red Butte Creek	PER	exp-WB-13034	CAR-232	Temporary	8.36	Flume with Rock Fill or Construction Mats	Upper Moreau	45.357573	-103.265116	0.01	0.00	CL 256; AR 124
26	382.00	SD	Meade	Maurine Lake	Man-Made Waterbody	S0807620ME001	CAR-447	Temporary	66.07	Construction Mats	Upper Moreau	45.029876	-102.605665	0.05	0.00	AR 139
27	408.63	SD	Meade	Pond on Tributary to Spring Creek	Man-Made Waterbody	S0907620ME001	CAR-454	Temporary	5.25	Construction Mats	Cherry	44.708139	-102.316297	0.004	0.00	CL 305; CL 306; AR 144
28	429.72	SD	Meade	Tributary to Luis Creek 01	INT	S1010620ME001	CAR-434	Temporary	5.07	Span Bridge with Construction Mats	Lower Cheyenne	44.555548	-102.001667	0.01	0.00	AR 149
29	429.73	SD	Meade	Tributary to Luis Creek	INT	S1010620ME003	CAR-434	Temporary	NC	Span Bridge with Construction Mats	Lower Cheyenne	44.541481	-102.003136	0.01	0.00	AR 149; AR 150
30	429.73	SD	Meade	Tributary to Luis Creek	EPH	S1010620ME002	CAR-434	Temporary	12.91	Span Bridge with Construction Mats	Lower Cheyenne	44.549559	-102.001399	0.02	0.00	AR 149
31	430.79	SD	Pennington	Unnamed Tributary to Cheyenne River	PER	S307PN001	CAR-079A	Temporary	22.66	Span Bridge with Construction Mats or Railcar Bridge	Lower Cheyenne	44.50158	-102.002042	0.05	0.00	CL 322; AR 152; AR 153
32	434.22	SD	Haakon	Tributary to Bridger Creek	EPH	S0808620HK001	CAR-313-ALT	Temporary	4.11	Span Bridge with Construction Mats	Lower Cheyenne	44.462009	-101.948739	0.00	0.00	AR 157; AR 156
33	434.49	SD	Haakon	Bridger Creek	INT	S0808620HK002	CAR-313-ALT	Temporary	36.36	Span Bridge with Railcar Bridge	Lower Cheyenne	44.461903	-101.943311	0.04	0.00	AR 156
34	440.33	SD	Haakon	Pond Above Elm Tree Draw	Man-Made Waterbody	S0809620HK002	CAR-451	Temporary	2.50	Span Bridge with Construction Mats	Lower Cheyenne	44.428952	-101.858069	0.00	0.00	CL 329; AUX 29; AR 161

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35	453.36	SD	Haakon	Tributary to West Plum Creek	PER	S0531620HK002	CAR-449	Temporary	4.20	Construction Mats	Lower Cheyenne	44.314107	-101.657592	0.01	0.00	AR 166; AR 167
36	453.77	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	NC	Construction Mats	Lower Cheyenne	44.311075	-101.650459	0.01927	0.00	AR 166; AR 167
37	453.77	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	NC	Construction Mats	Lower Cheyenne	44.310965	-101.650544	See above	0.00	AR 166; AR 167
38	453.77	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	NC	Construction Mats	Lower Cheyenne	44.310682	-101.650765	See above	0.00	AR 166; AR 167
39	453.89	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	1.07	Construction Mats	Lower Cheyenne	44.309908	-101.648588	See above	0.00	AR 167
40	486.24	SD	Haakon	Tributary to Bad River	EPH	S0810620HK001	CAR-462	Temporary	1.18	Flume with Rock Fill or Construction Mats	Bad	44.076229	-101.102063	0.001	0.00	CL 364; AR 173
41	544.02	SD	Tripp	Little Dog Creek	INT	S106TR001	CAR-236	Temporary	21.59	Flume with Rock Fill or Construction Mats	Lower White	43.675418	-100.152315	0.02	0.00	CL 407; AR 180
42	834.73	NE	Seward	Unnamed Tributary to West Fork Big Blue River 01	EPH	S0602702SE002	CAR-395	Temporary	NC	Construction Mats	West Fork Big Blue	40.705462	-97.100397	0.01	0.00	CL 625; AR 223
43	835.14	NE	Seward	Unnamed Tributary to West Fork Big Blue River 01	EPH	S0602702SE002	CAR-395	Temporary	NC	Construction Mats	West Fork Big Blue	40.705445	-97.099134	See above	0.00	CL 625; AR 223
44	834.73	NE	Seward	Unnamed Tributary to West Fork Big Blue River 02	INT	S0602702SE001	CAR-395	Temporary	3.68	Flume with Rock Fill or Construction Mats	West Fork Big Blue	40.705474	-97.100698	0.004	0.00	CL 625; AR 223

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<p>a: EPH – ephemeral; INT – intermittent; PER – perennial</p> <p>b: Crossing distance is measured along the proposed access road centerline between the ordinary high water mark</p> <p>c: “NC” Indicates the waterbody is not crossed by the access road centerline. In these instances, the feature would be used for temporary construction workspace.</p> <p>d: Based on field inspection, if Keystone discovers an existing bridge or culvert at the roads crossing of the feature, Keystone will utilize this existing structure as the crossing method</p> <p>e: Due to the orientation and shape of certain waterbody features, some are crossed multiple times by the access road. Each individual crossing is listed so that some features are listed multiple times. Due to the short distance between separate crossings of the same feature, it is expected that during construction these features will be treated as a single crossing. Impact acreage is provided for the entire feature and is not repeated for multiple crossings of the same feature. The note 'See Above' is used in these instances.</p> <p>f: This column identifies the specific page(s) of the corresponding mapbook (Appendix J of this Federal Dredge and Fill Application) that depicts the wetland. The abbreviations are: CL – centerline, AR – access road, AUX – auxiliary site</p>															

Attachment C

RFI No. 9

Wetland Assessment Methodology and Results

TransCanada Keystone Pipeline, L.P. Keystone XL Pipeline

Wetland Assessment Methodology and Results Omaha District – Montana, South Dakota, and Nebraska

Project Number:

TAL-00050388-75

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Rev	Date (yyyy-mm-dd)	Issue	Prepared by	Checked by	Approved by	Project Manager	Client
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Acronyms and Abbreviations

CWA	Clean Water Act
ESA	Environmental Study Area
FAC	facultative
FACW	facultative-Wet
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GPS	Global Positioning System
Keystone	TransCanada Keystone Pipeline, LP
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate
ORM	OMBIL Regulatory Module
PCN	Pre-Construction Notification
Project	Keystone XL Pipeline Project
RHA	Rivers and Harbors Act
RPW	Relatively Permanent Waters
TNW	Traditional Navigable Waters
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1.0 Introduction

TransCanada Keystone Pipeline, LP (Keystone) conducted both desktop and field analyses of wetlands and waterbodies from June 2008 through October 2019 for the proposed Keystone XL Pipeline Project (Project) in Montana. The wetland and waterbody assessment and delineation were conducted to determine if potential jurisdictional waters of the United States (U.S.) exist within the proposed Project areas and to determine the approximate boundaries of each feature. All features that were identified within the proposed construction footprint (as part of the Environmental Survey Area [ESA]), are summarized in this document and listed within Appendix H and I and on the wetland and waterbody mapbook in Attachment J of the Individual Permit Application.

1.1 Regulations and Definitions

The U.S. Army Corps of Engineers (USACE) regulates waters of the United States under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA).

The USACE and the U.S. Environmental Protection Agency (USEPA) define wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands typically include swamps, marshes, bogs, and other similar areas” (USACE 1987). This definition takes into consideration three distinct environmental parameters: hydrology, soil, and vegetation.

The CWA (1977) defines the term "waters of the United States" as:

- a. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- b. All interstate waters including interstate wetlands;
- c. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 1. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 2. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 3. Which are used or could be used for industrial purpose by industries in interstate commerce.
- d. All impoundments of waters otherwise defined as waters of the United States under the definition;
- e. Tributaries of waters identified in paragraphs (a) through (d) above;
- f. The territorial seas;
- g. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (g).

1. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 Code of Federal Regulations 123.11(m), which also meet the criteria of this definition) are not waters of the United States.

- h. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the USEPA.

1.2 Technical Approach

In addition to applying the definition of waters of the U.S. to its assessment effort, Keystone also included the guidance from the USACE *Approved Jurisdictional Determination Form* (Appendix B; 2007) in both the desktop and field analyses. In particular, Keystone principally applied:

- Section II: Summary of Findings:
 - A. RHA Section 10; Navigable waters;
 - B. CWA Section 404;
 1. Waters of the U.S.;
 - a. Presence: Traditional Navigable Waters (TNWs); Relatively Permanent Waters (RPWs); Non-RPWs; Wetlands adjacent to, directly abutting TNWs, RPWs, Non-RPWs; Direct/indirect flow into TNWs, RPWs, Non-RPWs; Impoundments; and Isolated waters.
- Section III: CWA Analysis:
 - B. Characteristics of tributary and its adjacent wetlands;
 1. Characteristics of non-TNWs that flow directly or indirectly into TNW;
 - (ii) Physical Characteristics;
 - (c) Flow regime, Defined bed and bank, Observable ordinary high-water mark, and Discontinuous ordinary high water mark.
 2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW;
 - (i) Physical Characteristics
 - (c) Wetland Adjacency Determination with Non-TNW.
 - C. Significant Nexus Determination: Carry capacity; habitat/lifecycle; nutrient transfer; other physical relationship.
- Section IV: Data Sources:
 - A. Supporting Data: USACE navigable waters listing; U.S. Geological Survey (USGS) National Hydrography Dataset (NHD); USGS Topographic Mapping; U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Surveys; National Wetlands Inventory (NWI) Mapping; Federal Emergency Management Agency (FEMA) Floodplain Mapping; Aerial Photography; and previous determinations.

2.0 Assessment Methods

The following sections describe the background information that was utilized and methods that were implemented by trained biologists. The Project's proposed construction footprint (as part of the ESA), including the pipeline, pump stations, and other auxiliary areas whether permanent or temporary, were evaluated to determine the location of wetlands and waterbodies and land use type.

2.1 Desktop Analysis

Prior to conducting the environmental field survey activities, Keystone completed a desktop analysis of the construction footprint (as part of the ESA) using the following sources:

- USGS NHD.
- USGS 7.5-minute Topographic Quadrangle Maps.
- USDA NRCS Soil Surveys.
- U.S. Fish & Wildlife Service (USFWS) NWI Maps.
- Aerial Photography (2008 through 2018).
- FEMA floodplain/flood hazard mapping.
- USGS Land Use and Land Cover Data.

The objectives of this data review using the above-mentioned sources were to identify waters of the U.S. intersected by the proposed Project areas. If necessary, further delineations will be conducted at the request of the USACE Omaha District.

The desktop analysis was recently reassessed in 2017 applying the most current versions of the multiple sources noted above including National Agriculture Imagery Program aerial photography dated 2016.

For all wetland delineation datasheets dated before 2017, a review was conducted by WESTECH Environmental to confirm that the field conditions described for the original delineated wetlands still reflected the current conditions of the wetlands to ensure compliance with USACE Regulatory Guidance Letter No. 05-02. WESTECH Environmental compared historical aerial photographs from the year of the original delineation to Project-specific high-resolution aerial imagery from 2018, as well existing wetland delineation data for the Project, and field notes from other surveys proximal to the delineated features. The results of the analysis concluded that the conditions of the wetlands documented in the original field delineation surveys are representative of the current field conditions. Appendix N of the Individual Permit Application contains a table of the wetlands that were evaluated and the finding of the analysis.

2.1.1 Field Survey

Accessible areas selected for field verification were surveyed by trained biologists. The ESA corridor along the proposed pipeline alignment was 300 feet in width centered on the proposed pipeline. In areas where the Project is collocated with existing pipelines, the survey width was adjusted to 100 feet on the collocated portion of the proposed centerline and 200 feet on the non-collocated side. Access roads were surveyed 100 feet in width aligned on the centerline of each proposed access road. Pump stations and temporary facilities were surveyed in their entirety. Land parcels were only surveyed if landowner permission for access was granted.

Using common wetland survey tools such as shovels and soil augers, the Munsell Soil Color Chart, USACE field data sheets, plant indicator lists, and visual observation for plant identification, the biological survey crews implemented the "three-parameter" approach set forth in the 1987 *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland*

Delineation Manual: Great Plains Region (2.0; USACE 2010). Biologists collected data points within the ESA corridor and analyzed vegetation, soils, and hydrology to determine upland/wetland boundaries.

Dominant vegetation was identified and classified according to the *National List of Plant Species that Occur in Wetlands: North Plains Region 4* (USFWS 1988). In order for an area to be considered to support wetland vegetation, more than 50 percent of the dominant species identified must be considered obligate (OBL), facultative-wet (FACW), or facultative (FAC). A list of species identified within the survey area was then recorded and an assessment of the dominant species made. Hydrophytic vegetation indicators including the rapid test for hydrophytic vegetation, the dominance test, the prevalence index, morphological adaptations, and problematic hydrophytic vegetation were calculated and assessed to determine if the vegetation met the requirements that would allow the area to be classified as an area dominated by hydrophytic vegetation.

Soils were examined in the field by excavating soil pits ranging from 12 to 20 inches deep. Color characteristics (hue, value, and chroma) were recorded using *Munsell Soil Color Charts* (Kollmorgen Corporation 1992). Soils were then evaluated to determine whether indicators of hydric (wetland) soils were present.

Hydrological characteristics were determined by field observation as well as examining aerial photographs, USGS topographic maps, FEMA Flood Hazard Maps, and NWI maps to identify distinct features that are typically associated with wetlands and wetland habitats. Field observations were made to determine if primary and secondary indicators of wetland hydrology were present (e.g. saturated soils, standing surface water, drainage patterns).

Applicable data were gathered for each waterbody feature including ordinary high-water mark, bank height, bank slope, stream flow direction and type, water appearance, stream substrate, aquatic habitats, channel conditions, and disturbances. Waterbody Data Sheets were completed for each surveyed stream crossing.

2.1.2 Documentation

As described in the *USACE Wetland Delineation Manual* (USACE 1987), areas where all three parameters met the wetland criteria were labeled as wetlands. Vegetation, soil, and hydrology data were collected at each data point within the wetlands and in immediately adjacent uplands and were then entered onto a standardized wetland delineation field data form. Photographs were taken showing a representative view of each wetland visited.

Trimble® GPS Pathfinder™ and Trimble GeoXT™ Global Positioning System (GPS) units were used to record wetland and waterbody locations with sub-meter accuracy.

Identified features along the survey corridor were distinctly named to distinguish each feature. Features were labeled in the following manner: F-N-CC-000, where:

F = Feature Type (stream, wetland habitat, etc.)

N = team number

CC = two-letter County abbreviation

000 = number of features within each county, representative to each team

Alternatively, some features were labeled with additional symbols where desktop delineation was conducted (e.g., “exp”) and/or extensions of previously identified features were delineated during subsequent surveys. In addition to the nomenclature described above, these features were labeled using one of the following systems:

F_UTM_000, where

UTM = Universal Transverse Mercator

or

F_TROW_000, where

TROW = company name

or

exp_F_000, where

exp = company name

or

F0000, where

0000 = number of features within county, representative to each team

or

S0ADD 00, where

S0ADD = desktop stream feature

After collection, GPS/Geographical Information System (GIS) data were added to a GIS database that was created using ESRI ArcMap™ 10.7 software. Maps were created in GIS to illustrate the locations of surveyed features within the proposed Project construction footprint (Attachment J of the Individual Permit Application). Additionally, field data sheets, photographs, and GPS survey data were compiled and maintained by Keystone.

3.0 Results

The results of the wetland and waterbody desktop assessments and field surveys for the Project are presented in the following sections.

3.1 Wetlands

Wetlands were classified according to the Cowardin System, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979). This hierarchical system aids resource managers and others by providing uniformity of concepts and terms used to define wetlands using hydrologic, geomorphic, chemical, and biological factors.

Table 3-1 summarizes the number of individual wetlands that were identified within the proposed Project construction footprint, in the USACE Omaha District.

Table 3-1: Number of Wetlands Identified within the Project Workspace

Project Component	Wetland Type		
	Number of Palustrine Emergent Wetlands	Number of Palustrine Scrub-Shrub Wetlands	Number of Palustrine Forested Wetlands
Montana	22	2	0
South Dakota	36	1	0
Nebraska	77	0	9
Project Total	135	3	9

3.2 Waterbodies

Waterbodies included linear water features (i.e., streams, rivers, and man-made ditches) as well as open water features (i.e., ponds, lakes). Linear waterbodies were classified by use as observed in the field and/or as determined from reviewing available data (e.g., maps) and include man-made ditches, streams, and rivers. Open waterbody features were classified as ponds or lakes. The majority of waterbodies that were identified consist of intermittent/ephemeral streams/washes with well to poorly defined bed and bank structures. Many perennial waterbodies were identified as well. These perennial features generally hold water year-round and contain a well-defined bed and bank with channelized structure.

Table 3-2 provides a summary of the waterbodies crossed by the proposed Project construction footprint in the USACE Omaha District in Montana, South Dakota, and Nebraska.

Table 3-2: Waterbodies Crossings by Right-of-Way and Access Road Workspace

Project Component	Waterbody Crossing			
	Number of Crossings of Ephemeral Stream	Number of Crossings of Intermittent Stream	Number of Crossings of Perennial Stream	Number of Crossings of Man-made Waterbody
Montana ¹	124	52	21	6
South Dakota ¹	74	70	28	7
Nebraska ¹	22	63	55	4
Project Total	220	185	104	17
Notes:				
¹ A waterbody crossing was recorded each time the right-of-way or access road workspace crossed the waterbody				

Attachment D

RFI No. 9

Waterbody Datasheets

TransCanada Keystone Pipeline, L.P. Keystone XL Pipeline

Federal Dredge and Fill Permit Application U.S. Army Corps of Engineers Omaha District

Project Number:
TAL-00050388-73

Submitted By:
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Rev	Date (yyyy-mm-dd)	Issue	Prepared by	Checked by	Approved by	Project Manager	Client
A	2020-05-27	IFU	JZ	MA	JAS	SS	TCE
B	2020-06-26	IFU	JZ	MA	JAS	SS	TCE

FORM 4345

Acronyms and Abbreviations

ABB	American burying beetle
bpd	barrels per day
BLM	U.S. Bureau of Land Management
BMP	best management practice
BA	Biological Assessment
BO	Biological Opinion
BOR	Bureau of Reclamation
CFR	Code of Federal Regulations
CMRP	Construction Mitigation and Reclamation Plan
CWA	Clean Water Act
DSEIS	Draft Supplemental Environmental Impact Statement
DOS	U.S. Department of State
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FR	Federal Register
HDD	horizontal direction drill
ITP	Incident Take Permit
Keystone	TransCanada Keystone Pipeline, LP
LB	Legislative Bill
MAR	Mainline Alternative Route
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NWP12	Nationwide Permit 12
NDEQ	Nebraska Department of Environmental Quality
NE PSC	Nebraska Public Service Commission
NOA	Notice of Availability
PA	programmatic agreement
PCN	pre-construction notification
PEM	palustrine emergent
PFO	palustrine forested
Project	Keystone XL Pipeline Project
PSS	palustrine scrub-shrub
PUC	Public Utilities Commission

ROW	right-of-way
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasure
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WCSB	Western Canadian Sedimentary Basin

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1.0 Introduction

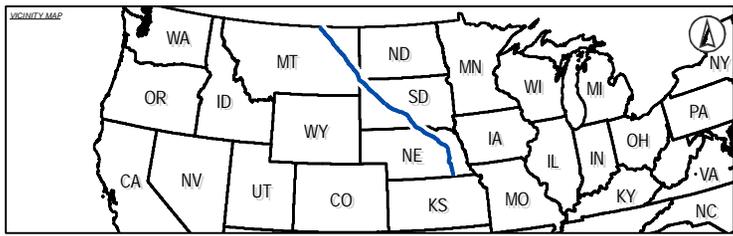
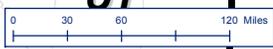
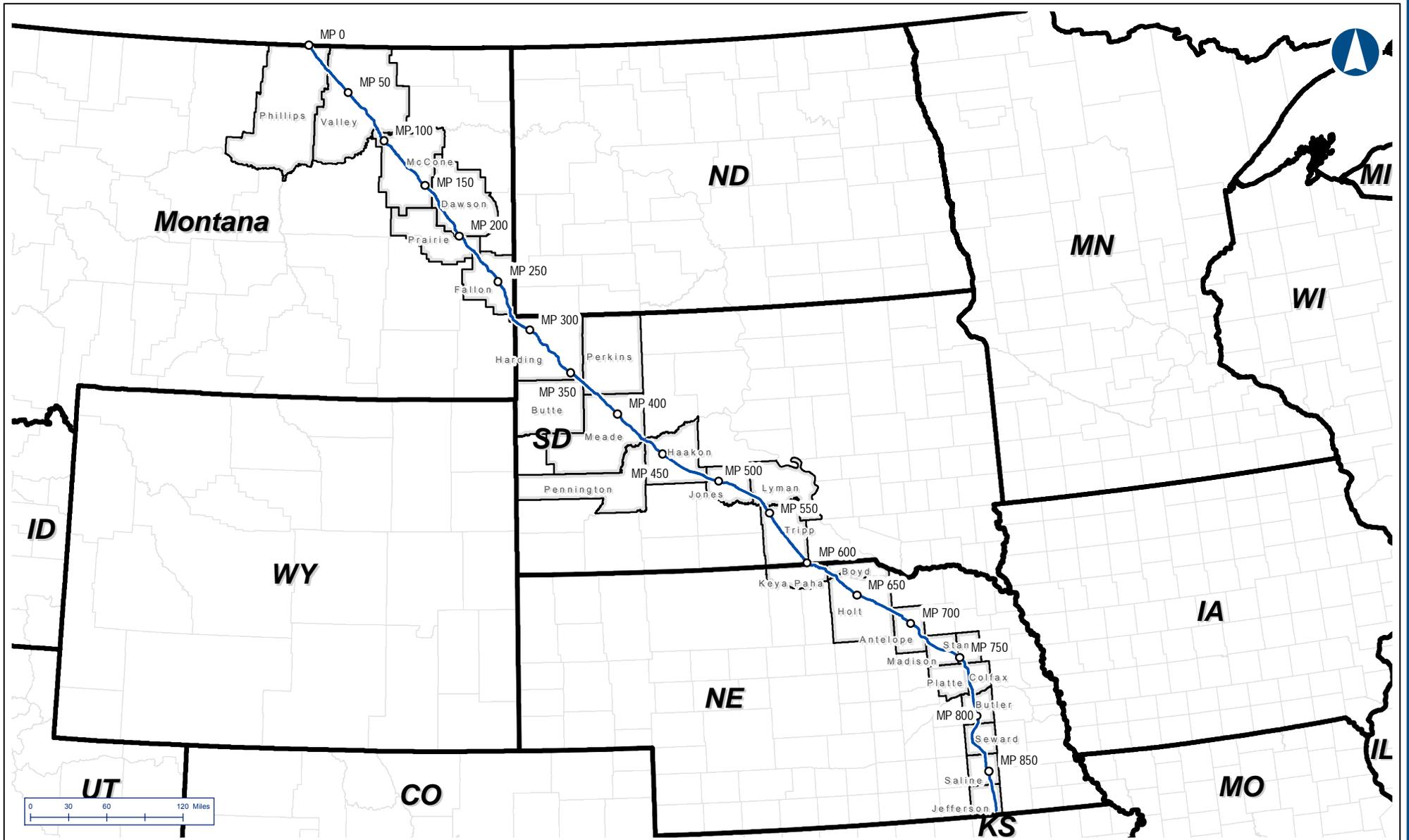
TransCanada Keystone Pipeline, L.P. (Keystone) proposes to construct, connect, operate, and maintain a pipeline system and ancillary facilities (e.g., access roads, pump stations and construction camps) that would transport Western Canadian Sedimentary Basin (WCSB) heavy crude oil from its existing facilities in Hardisty, Alberta, Canada, and Bakken crude oil from an on-ramp in Baker, Montana, to Steele City, Nebraska (referred to as the Keystone XL Project, or Project). The proposed pipeline would connect to the existing Keystone Cushing Extension pipeline, which extends from Steele City, Nebraska, to Cushing, Oklahoma. In total, the Project will consist of approximately 1,209 miles of new, 36-inch-diameter pipeline, with approximately 327 miles of pipeline in Canada and approximately 882 miles in the United States (U.S.). The Project will cross the international border between Saskatchewan, Canada, and the U.S. near Morgan, Montana, and will include pipeline generally within a 110-foot-wide temporary construction right-of-way (ROW) and a 50-foot-wide permanent ROW in Montana, South Dakota, and Nebraska. Figure 1-1 shows the Project route through Montana, South Dakota, and Nebraska.

In 2008, Keystone filed an initial Presidential Permit application with the Secretary of State requesting authorization to construct, operate and maintain the Project at the U.S.-Canada border in Phillips County, Montana. The U.S. Department of State (DOS) prepared a Final Environmental Impact Statement (EIS) in 2011 (2011 Keystone XL Final EIS) that evaluated the Project consistent with the National Environmental Policy Act (NEPA) of 1969 (as implemented by the regulations of the Council on Environmental Quality, found at 40 *Code of Federal Regulations* (CFR) 1500–1508). The initial Presidential Permit application was followed by Project route modification, and a new Presidential Permit application was submitted in 2012 and reviewed by the DOS. In 2014, the DOS released the January 2014 Final Supplemental Environmental Impact Statement (SEIS) for the Keystone XL Project (2014 Keystone XL Final SEIS).

In 2018, as a result of a ruling by the U.S. District Court for the District of Montana, the DOS initiated NEPA review of the proposed Mainline Alternative Route (MAR) for the Nebraska portion of the route. In December 2019, the DOS, with several cooperating federal agencies including the U.S. Army Corps of Engineers (USACE), issued the Supplemental Final Environmental Impact Statement (2019 Keystone XL Supplemental FSEIS), which evaluated the integration of the MAR into the Preferred Route for the Project, as well as addressing additional issues identified in the court's ruling.

On March 29, 2019, the President issued a Presidential Permit authorizing construction, connection, maintenance and operation of the Project at the U.S.-Canada border. See Appendix A for a summary of the DOS's actions and environmental review of the Project. Keystone initiated construction of the Project in April 2020 at the U.S./Canada border crossing with the installation of approximately 1.4 miles of pipe to the first U.S. mainline valve. Construction of the border crossing segment was completed in May 2020. The construction of this portion of the Project did not impact any waters of the U.S.

To comply with Section 404 of the Clean Water Act (CWA), Keystone requested the USACE conduct review of the proposed activities in Montana and South Dakota on May 25, 2017, and for Nebraska on May 30, 2017. The USACE authorized the horizontal directional drill (HDD) installation of the Yellowstone River crossing in Montana and the Cheyenne River crossing in South Dakota on September 8, 2017, and August 4, 2017, respectively. On June 22, 2017, the USACE determined the Project did not involve a regulated discharge of dredged or fill material under Section 404 of the CWA that required verification for the state of Nebraska.



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▭ Project Centerline Impact - Counties

KEYSTONE XL PROJECT		
- Figure 1-1 - Project Location Map		
COUNTRY: NA	DRAWN BY: JC	
STATE: MT / SD / NE	CHECKED BY: CW	
REV. NO.: 0	REVISION	DATE
	ISSUED FOR REVIEW	2020-05-15
DATE: 2020-05-15	PROJECTION: NAD83 UTM 1314 N	

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DWG: 0801-06-018 SHEET: FIGURE 1

The USACE requested on June 14, 2019, that Keystone withdrawal the USACE verifications for the Project under Nationwide Permit 12 (NWP12) and subsequently the USACE suspended the verifications on August 2, 2019, due to the Project's 2013 issued Biological Opinion (BO) being withdrawn by the U.S. Fish and Wildlife Service (USFWS).

On February 3, 2020, Keystone submitted a new pre-construction notification (PCN) package for the Project requesting the USACE Omaha District review for verification and authorization under NWP12. The USACE accepted the PCNs and had initiated their review and issued requests for additional information to address data gaps. On April 15, 2020, the U.S. District Court in Montana ruled that the USACE violated the Endangered Species Act (ESA) when it failed to programmatically consult with the USFWS on potential impacts to species before reissuance of NWP12 in 2017. The district court vacated NWP12 with respect to all utilities and enjoined USACE from authorizing Keystone to engage in any activities under NWP12. On May 11, 2020, the district court modified its April 15 order to limit its scope but left in place vacatur and injunction with respect to the use of NWP12 for the construction of new oil and gas pipelines. The Department of Justice, TC Energy, and other parties have appealed the district court's decision to the U.S. Court of Appeals for the Ninth Circuit. On May 29, 2020, the Ninth Circuit denied motions for a stay of the district court's orders, pending resolution of the appeals. At this time, USACE is not able to grant Keystone CWA 404 authorization under NWP12. Therefore, Keystone is submitting this Federal Dredge and Fill Permit Application for a Standard (Individual) Permit to address impacts to waters of the U.S. that will result from the construction of the Project.

Keystone has adopted the USACE Regulatory Guidance Letter 16-01, dated October 31, 2016, on jurisdiction of waters of the U.S. and is not requesting a jurisdictional determination.

Keystone was granted permission, pursuant to 33 U.S.C. Section 408, for the proposed alteration, through the installation of pipeline, on USACE lands south of the Missouri River in McCone County, Montana on January 21, 2020. This USACE land is part of the federally authorized Fort Peck Civil Works project. Keystone is proposing an alteration to the USACE civil works project for the installation of the 36-inch diameter pipeline and ancillary facilities. The pipeline will be installed by HDD method under the Missouri River from private lands on the north side of the river to USACE land on the south side of the river. The pipeline will be installed by conventional methods south of this location on the USACE lands. A mainline isolation valve (260-VLLEY-04C), will be located on the federal property on the south side of the river. Keystone will maintain a 50-foot-wide permanent ROW and a permanent access road to the valve site. It should be noted that Keystone is not altering the upstream dam or spillway south of the Fort Peck Civil Works project, nor will the installation or operation of the pipeline impair the usefulness of the dam or spillway.

The Project activities within the states of South Dakota and Nebraska do not cross or impact any federal civil works project that require Section 408 permission from the USACE.

1.1 Purpose and Need

As articulated in the original EIS issued in 2011, and subsequent final and supplemental EISs, the primary purpose of the Project is to provide the infrastructure to transport up to 830,000 barrels per day (bpd) of crude oil from the WCSB in Canada and the Bakken Shale Formation in the U.S. to existing pipeline facilities near Steele City, Nebraska, for onward delivery to Cushing, Oklahoma and the U.S. Gulf Coast area.

The WCSB and the Bakken are both projected to have significant increases in production. In the WCSB, most of this increase is projected to come from the oil sands. Most of the long-term additional crude oil production in the WCSB is projected to come to the market as heavy crude oil, in the form of diluted bitumen. In the Bakken, the increased production is part of a broader development in the U.S. of increasing crude oil production from tight oil areas which produce a light crude oil. The exact mix and volumes of crude oil types that would be transported by the Project (as well as the final destination of those crude oils) would be determined by market forces but are fully analyzed in the three EISs completed for this Project (2011, 2014, 2019).

Keystone has firm, long-term contracts to transport approximately 680,000 bpd of WCSB crude oil on the Project to existing Gulf Coast area delivery points and 105,000 bpd of WCSB crude oil to Cushing, Oklahoma. Keystone would make available up to 100,000 bpd of capacity on the proposed Project for crude oil from the Bakken, subject to commercial demand.

In order to consider the validity of the need for the proposed Project since the 2014 Keystone XL Final SEIS, the DOS re-evaluated the current market conditions in Section 1.4 of 2019 Keystone XL Supplemental FSEIS. The DOS evaluated the state of the global crude oil market, western Canadian market and infrastructure to support western Canadian market demand. Overall, the updated market analysis, similar to the market analysis sections in the 2011 Keystone XL Final EIS and 2014 Keystone XL Final SEIS, concluded that there is continued strong demand for transport of WCSB by pipeline, including by the Project, under current and projected market conditions. This market analysis considers the most recent information from the U.S. Energy Information Administration, the International Energy Agency, and the Canadian Association of Petroleum Producers.

1.2 Project Overview

The following is a summary of the Project facilities that focuses on the potential impact that the construction of each facility will have on waters of the U.S. A more detailed description of each facility can be found in Section 2.1 of the 2014 Keystone XL Final SEIS and Section 2.4 of the 2019 Keystone XL Supplemental FEIS.

1.2.1 Pipeline Facilities

Construction of the pipeline facilities will require trees and vegetation to be cleared from the ROW. Grading of the work area will establish a stable and safer work surface for pipe installation. Once grading is complete, a trench will be excavated to a depth sufficient to provide approximately 4 feet of soil cover over the buried pipeline in wetland and upland areas and a minimum of 5 feet of cover for waterbody crossings. Where wetland conditions permit topsoil stripping during excavation, soil conservation will be conducted through salvaging topsoil from the reduced 85-foot wide construction corridor and temporarily storing the topsoil within the ROW limits. After the welded pipeline is installed in the trench, the subsoil will be backfilled into the trench and the topsoil will be replaced on top of the subsoil. Standard industry boring techniques will be employed to cross under significant features such as specific wetlands or waterbodies, highways, and railroad crossings.

Construction across wetlands will be similar to typical conventional upland cross-country construction, with modifications to reduce the potential for effects to wetland hydrology and soil structure. The wetland crossing methods used will depend largely on the stability of the soils at the crossing location at the time of construction. The 110-foot pipeline construction corridor width will be reduced to a width of 85 feet for wetlands in Montana and Nebraska, and 75 feet for wetlands in South Dakota, unless conditions require a wider construction corridor. In instances where the wetland is supersaturated or inundated, the corridor ROW may be increased to ensure safe construction conditions. For typical wetland crossings, the width of the permanent ROW will be 50 feet in all three states. Wetland construction methodology is discussed further in Section 4.1 of this Federal Dredge and Fill Permit Application. See Appendix B, the Project's Construction Mitigation and Reclamation Plan (CMRP), for typical drawings for the proposed crossing methods.

For construction across waterbodies, Keystone will adopt the standard open-cut (wet or dry) crossing method or use the HDD crossing method depending on the regulatory requirements and the site specific environmental and engineering characteristics of each waterbody. Waterbody construction methodology is discussed further in Section 4.1 of this Federal Dredge and Fill Permit Application.

1.2.2 Auxiliary Facilities

1.2.2.1 Pump Stations

A total of 19 pump stations will be constructed adjacent to the pipeline ROW on sites that will vary from 7 to 15 acres in size. The number of pump stations in each state is as follows:

- Montana – Six pump stations (PS-09, PS-10, PS-11, PS-12, PS-13, PS-14).
- South Dakota – Seven pump stations (PS-15, PS-16, PS-17, PS-18, PS-19, PS-20, PS-21).
- Nebraska – Six pump stations (PS-22, PS-23, PS-23B, PS-24, PS-25, PS-26).

Pump stations will require electrical power that will be supplied by regional power utilities suppliers. Power lines will be constructed and operated by electrical power utilities and all relevant construction and operational permits will be obtained by these utilities through their applicable approval processes. **There will be no temporary or permanent fill in waters of the U.S. for construction of pump stations.**

1.2.2.2 Valves

Pipeline valves will be located within pump station facilities and at intervals along the pipeline ROW within fenced enclosures. Valves generally will be located near existing roads to allow easy access. **There will be no temporary or permanent fill in waters of the U.S. for construction of valves.**

1.2.2.3 Permanent Access Roads

Permanent access roads will be required for pump stations and certain valve locations. Keystone currently intends to use existing roads for the permanent access roads to the extent practicable. Impacts to wetlands or waterbodies located adjacent to or crossed (either by existing bridging or culverts) by the existing roads will be avoided as practicable during construction. **The construction of permanent access roads will result in temporary fill to waters of the U.S. and the construction of four of these access roads will result in permanent fill to waters of the U.S. as discussed in Sections 3.1 and 4.1.**

1.2.3 Temporary Facilities

1.2.3.1 Contractor Yards

Each pipeline construction segment (spread) will have at least one contractor yard, generally 30 acres in area. Contractor yards will be used as muster points, for equipment and personnel mobilization, equipment storage and maintenance, training, and other pipeline construction support activities. **There will be no temporary or permanent fill in waters of the U.S. for contractor yards.**

1.2.3.2 Pipe Storage Yards

Pipe storage yards will be required to stage pipe along the pipeline route to reduce haul times and facilitate efficient transport to the ROW. Pipe storage yards will be approximately 30 acres in area. **There will be no temporary or permanent fill in waters of the U.S. for pipe storage yards.**

1.2.3.3 Railroad Sidings

Several railroad sidings will be used to facilitate the unloading of pipe from railcars. **There will be no temporary or permanent fill in waters of the U.S. for railroad sidings.**

1.2.3.4 Contractor Camps

Contractor Camps may be established to minimize the effects of the pipeline work force on communities with limited housing resources. Each spread will have approximately 1,000 members in the total workforce, including contractors, inspection staff, and construction management staff. **There will be no temporary or permanent fill in waters of the U.S. for contractor camps.**

1.2.3.5 Temporary Access Roads

Temporary access roads will be necessary to provide ingress and egress for vehicles and equipment at regular intervals along the pipeline route. **The construction of temporary access roads will result in temporary impacts to waters of the U.S. as discussed in Sections 3.1 and 4.1.**

1.2.3.6 Water Appropriation Intake Devices

Keystone intends to appropriate water from waterbodies throughout the pipeline route to accommodate certain activities during construction, such as dust suppression, concrete mixing, HDD, and hydrostatic testing. Water will be appropriated in accordance with applicable state water use laws and permits.

At some locations or waterbodies, Keystone may need to temporarily disturb the bank of the waterbody to allow access to the water for the placement of the water intake device. The temporary disturbance could include vegetation clearing or the grading of steep slopes. Following the temporary water withdrawal, Keystone will restore the banks to pre-construction conditions. Keystone may also be required to excavate a small depression (less than 10 cubic yards) in the streambed to allow placement of the water intake device (typically a screened box attached to the water intake hose). The intake device will be suspended in the water column above the streambed to minimize the accrual of sediments and to prevent the device from rising above the waterline and subsequently drawing in air. Excavated sediments will be spread in an upland area adjacent to the waterbody or hauled offsite to an upland approved disposal location. Following the temporary use of the intake device, Keystone will remove the box from the streambed and sedimentation will occur naturally into the depressional area.

1.3 Avoidance and Minimization

Keystone is committed to protecting waterbodies, wetlands, and their associated resources. The pipeline route construction procedures and compliance program are designed to minimize environmental impacts during construction and restoration.

The pipeline route has been refined several times to reduce waterbody and wetland impacts through:

- Avoiding waterbody and wetland crossings where practicable;
- Minimizing the number of times that a single waterbody is crossed;
- Crossing waterbodies perpendicularly where practicable; and
- Reducing the width of the ROW to 85 feet in wetlands in Montana and Nebraska and 75 feet in South Dakota, where practicable.

During consultation with federal and state agencies and local stakeholders, additional reroutes were incorporated to avoid or minimize impacts to significant resources or identified concerns (including forested wetlands and certain waterbodies). In addition, timing windows were established in the Project schedule to protect biological resources, such as spawning fish and threatened/endangered species. Additional mitigation measures are described in the Project's CMRP (Attachment B), and include:

- Erosion and sediment controls implemented during and after construction;
- Environmental training of all Project workers and supervisors;
- Best management practices (BMPs) incorporated into the Project design and construction;
- Wetland and waterbody construction procedures designed to minimize impacts during construction and reclamation of the crossings;
- Spill prevention and clean-up procedures;
- Hazardous materials handling guidelines; and
- Clean-up, seeding, and reclamation details to ensure effective stabilization of the ROW and Project disturbances.

The Project’s CMRP provides typical construction methods (including drawings) for wetland and waterbody crossings, as well as erosion and sediment control measures that will be installed during construction and stabilization/revegetation of the Project. Temporary equipment or materials installed to provide access (e.g., timber mats, timber rip-rap, and rock and flume crossing materials) will be removed from wetlands and waterbodies at the completion of construction. Disturbances associated with temporary equipment access methods will be restored and stabilized after the bridging equipment and access materials are removed. Wetlands and waterbodies will be restored to pre-construction conditions.

Keystone will use several different construction techniques to avoid and/or minimize impacts where practicable. Keystone will minimize impacts by reducing the construction ROW width in wetlands to 85 feet in Montana and Nebraska and 75 feet in South Dakota. Keystone will also utilize trenchless HDDs and conventional boring methods to avoid impacts to some specific waterbodies and wetlands. No discharge of dredge or fill material into waters of the U.S. is anticipated at HDD or bored crossings.

In the event of inadvertent releases of drilling mud at the surface of the ground as a result of the trenchless crossing technique, Keystone will implement the measures outlined in the attached HDD Frac-Out Contingency Plan (Attachment C). Attachment D contains site specific HDD drawings for the proposed HDD crossings of perennial waterbodies listed in Table 1-1.

Table 1-1: Listing of HDD Crossings of Major Perennial Waterbodies

Milepost	State	County	Waterbody Name	Waterbody ID
25.28	Montana	Philips	Frenchman River	S106PH013
83.45	Montana	Valley	Milk River	S14VA008
89.68	Montana	Valley and McCone	Missouri River ^a	S7AMC001
198.21	Montana	Dawson	Yellowstone River ^a	S23DA001
295.09	South Dakota	Harding	Little Missouri River	S312HA001
430.17	South Dakota	Meade	Cheyenne River	exp-WB-13552
433.82	South Dakota	Haakon	Bridger Creek	S8AHK003
486.24	South Dakota	Haakon	Bad River	S8AHK008
541.59	South Dakota	Tripp	White River	S7ALY001
617.10	Nebraska	Keya Paha	Keya Paha River	S0819618KP001
626.70	Nebraska	Holt	Niobrara River	exp-WB-0235
717.23	Nebraska	Antelope	Elkhorn River	S0427703AT001
782.07	Nebraska	Colfax and Butler	Platte River	S0913702BT002
808.75	Nebraska	Seward	Big Blue River	S0509702SE001
Notes:				
a: Navigable water under Section 10 of the Rivers and Harbors Act				

1.4 Construction Schedule

Keystone initiated construction of the Project in April 2020 at the U.S./Canada border crossing with the installation of approximately 1.4 miles of pipe to the first U.S. mainline valve. Construction of the border crossing was completed in May 2020. The construction of this portion of the Project did not impact any waters of the U.S. Keystone will commence construction of the remaining Project facilities upon receipt of all necessary authorizations and permits. Keystone anticipates that the Project will be placed into service approximately 2-3 years after receiving such authorizations. As currently planned, the Project will be constructed using 12 spreads of approximately 43 to 94 miles long. Final spread configurations and the final construction schedule may result in the use of more or fewer spreads than those indicated.

1.5 Adjoining Property Owners

The Project traverses the property of numerous property owners. A complete list of property owners adjoining the Project footprint at waters of the U.S. crossings is provided in Appendix E.

1.6 Additional Federal, State, and Local Certificates and Approvals

In addition to this Federal Dredge and Fill Permit Application for Section 10/404 authorization from the USACE, Keystone has obtained or is still seeking a number of additional federal, state, and local authorizations, certifications, and approvals for the Project. A complete list of permits and authorizations for the Project are included in Appendix F.

2.0 Alternative Analysis

In compliance with NEPA, the DOS performed a robust alternative analysis pursuant to 40 CFR 1502.14. The analysis included the evaluation of three categories of alternatives, including the No Action Alternative, major pipeline route alternatives, and other alternatives considered but eliminated from detailed analysis. Alternatives were eliminated on the basis of the relative potential environmental, logistical, economic, safety, and engineering costs and benefits of each aspect. Due to complexity of the regulatory environment during the permitting of this Project, the DOS completed three NEPA documents, with each document evaluating new route alternatives as part of the process of identifying and evaluating the Proposed Action. A major contributing factor in evaluation and selection of the proposed route within each state, was each state's siting process and authorization. The following is brief summary of the alternative analysis conducted by the DOS. For a detailed description of the alternatives considered in the development of the current Project route refer to Section 3.14 of the 2011 Keystone XL Final EIS, Section 2.2 of 2014 Keystone Final SEIS, and Chapter 2.0 of the 2019 Keystone XL Supplemental FEIS.

The 2011 Keystone XL Final EIS evaluated the original Preferred Route and its alternatives. For this document, the proposed project included two segments, the Steele City Segment, and the Gulf Coast Segment, for a project route that extended from the Canada/U.S. border near Morgan, Montana to Nederland, Texas. The original project that was evaluated by the 2011 Keystone XL Final EIS was modified by Keystone by creating two separate projects, the Steele City segment became the basis of scope the of the current Project and Gulf Coast segment was constructed during 2012 and 2013 by TransCanada as the Gulf Coast Pipeline Project. The alternatives analysis for the Steele City segment is the basis for the current route through Montana and South Dakota. An extensive analysis of alternative modes of transporting the oil was also conducted in the 2011 Keystone XL Final EIS, including rail and truck transportation, as well as other existing pipeline systems.

The Preferred Route evaluated in the 2014 Keystone XL Final SEIS included a route in Montana and South Dakota that was largely unchanged from the route analyzed in the 2011 Keystone XL Final EIS. In Nebraska, route alternatives were evaluated and incorporated into the Preferred Route that avoided the Sand Hills Region, as identified by the Nebraska Department of Environmental Quality (NDEQ). Additionally, the Keystone XL route terminated at Steele City, Nebraska.

After the statute authorizing NDEQ review of the route was challenged in court, Keystone sought approval of a pipeline route in Nebraska through the Nebraska Public Service Commission (NE PSC). The 2019 Keystone XL Supplemental FEIS documents the analysis conducted to evaluate three routes through Nebraska, which concluded with the NE PSC selecting the MAR. The MAR is approximately 162 miles long and traverses Antelope, Madison, Stanton, Platte, Colfax, Butler, Seward, Saline and Jefferson counties. In developing the range of reasonable alternatives for the 2019 Keystone Supplemental FEIS, the DOS considered the NE PSC's review and approval of the MAR. The following criteria were used in its development:

- Site new pipeline and supporting facilities to minimize impacts to environmentally sensitive areas (e.g., surface waters, wetlands, protected species and their habitat, and heritage resources);
- Site new pipeline to maximize the use of existing ROW, access roadways and pipeline infrastructure to the greatest extent possible to minimize impacts to landowners and land uses;
- Minimize the route length and the construction of permanent aboveground facilities;
- Avoid wellhead protection areas; and

- Cross the Niobrara River at a location not designated as scenic or recreational under the National Wild and Scenic River Act of 1968.

In conjunction with each EIS, an ESA review and Section 106 of the National Historic Preservation Act (NHPA) review were conducted. The ESA review resulted in completion of a Biological Assessment (BA) in November 2019 and issuance of the BO by the USFWS in December 2019. In 2013, a Programmatic Agreement (PA) was adopted to ensure the Project's and the permitting agencies' compliance with Section 106 of the NHPA during and after the NEPA analysis was completed. A copy of the BO and PA are found in Appendix K and L, respectively.

3.0 Wetland Resources

The Project traverses several wetland types in Montana, South Dakota, and Nebraska, including herbaceous wetland meadows, depressions (potholes), marshes, scrub-shrub wetlands, forested wetlands, and riparian wetlands associated with rivers and streams. Wetland systems within the Project area are defined in Table 4-1 and are classified as palustrine based on vegetation and/or surface water cover. These types of wetlands are characterized by a dominance of trees, shrubs, persistent emergent herbaceous vegetation, or open water. Palustrine wetland types occur in various locations in the landscape, including along streams or rivers, adjacent to open water ponds or lakes, on slopes, or within depressions. Subsystems of the jurisdictional palustrine wetland types within the Project area include palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Datasheets for all the jurisdictional wetlands located within the Project footprint are in Appendix G. For all wetland delineation datasheets dated before 2017, a review was conducted by WESTECH Environmental to confirm that the field conditions described for the original delineated wetlands still reflected the current conditions of the wetlands to ensure compliance with USACE Regulatory Guidance Letter No. 05-02. WESTECH Environmental compared historical aerial photographs from the year of the original delineation to Project-specific high-resolution aerial imagery from 2018, as well existing wetland delineation data for the Project, and field notes from other surveys proximal to the delineated features. The results of the analysis concluded that the conditions of the wetlands documented in the original field delineation surveys are representative of the current field conditions. Appendix N contains a table of the wetlands that were evaluated and the finding of the analysis.

Table 3-1: Wetland Types in the Project Area

Wetland Type	Wetland Code	Description
Palustrine emergent wetland	PEM	Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except those irregularly exposed. In areas with relatively stable climatic conditions, emergent wetlands maintain the same appearance year after year. In other areas, such as the prairies of the central U.S., climatic fluctuations cause them to revert to an open water phase in some years. Emergent wetlands are known by many names, including marsh, wet meadow, fen, prairie pothole, and slough.
Palustrine scrub-shrub wetland	PSS	Scrub-shrub wetlands include areas dominated by woody vegetation less than 6 meters tall. Vegetation forms found in this wetland type include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. Scrub-shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable communities. Scrub-shrub wetlands are often associated with riparian areas within the Project area, but occur in non-riparian areas as well.
Palustrine forested wetland	PFO	Forested wetlands are characterized by woody vegetation that is 6 meters tall or taller. Forested wetlands are most common in the eastern U.S. and in those sections of the West where moisture is relatively abundant, particularly along rivers and in the mountains. Forested wetlands normally possess an overstory of trees, an understory

Table 3-1: Wetland Types in the Project Area

Wetland Type	Wetland Code	Description
		of young trees or shrubs, and an herbaceous layer. Forested wetlands are most often associated with riparian areas within the Project area.

3.1 Wetland Impacts

Construction of the pipeline will result in temporary impacts to wetlands from vegetation clearing, grading, excavation, and filling. Construction-related impacts will occur within the 110-foot construction ROW as a result of proposed pipeline installation activities. The 110-foot construction corridor width will be reduced to 85 feet for wetlands in Montana and Nebraska, and 75 feet for wetlands in South Dakota, unless conditions require a wider construction corridor.

Within wetlands, Keystone will maintain a 50-foot wide permanent ROW, except for in PFO wetlands where only a 30 foot wide corridor will be maintained within the 50-foot wide permanent easement.

Pipeline construction will cross wetlands with one of the following crossing methods:

- Standard Wetland Crossing Method (DTL 9);
- Push/Pull Wetland Crossing Method (DTL 10);
- Typical HDD Crossing Method (DTL 15); or
- Typical Uncased Bore Crossing Method (DTL 21).

A description of the construction methodology and a typical construction drawing for of each of these crossing methods can found in Section 6 of the Project’s CMRP (Appendix B). The use of the HDD crossing method will result in the avoidance of impacts to some wetlands.

The construction of the Project will result in a total of 32.70 acres of temporary impacts to PEM wetlands and 0.12 acres of PFO wetlands across the approximately 882 miles of pipeline and approximately 17,668 acres of disturbance in Montana, South Dakota, and Nebraska. The construction of the Project will result in the permanent loss of 0.13 acres of PEM wetlands (less than 1% of the PEM wetland impacts) for installation of three access roads (CAR-128, CAR-163, and VAR-46G) and the permanent functional conversion of 0.09 acres of PFO wetlands from PFO to PEM wetlands. Table 4-2 provides a summary of the wetland impacts by state as result of the construction of the Project. See Appendix H for a complete list of all wetland crossings by the Project and the proposed crossing method and subsequent impact total for each wetland. Mapbooks for each state that contain figures providing the location of wetlands crossed by the Project are provided in Appendix I.

The construction of pump stations, valves, contractor yards, pipe storage yards, railroad sidings, and contractor camps will not result in any temporary or permanent impacts to wetlands. Two jurisdictional PEM wetlands have been delineated within the boundary of Contractor Yard 09 Site 4B in South Dakota. The two wetlands are exp-WL-0219 (0.03 acres) and exp-WL-018 (0.36 acres), both features were identified via desktop analysis. Keystone will configure the use of this contractor yard to avoid any impact to these wetlands through either fencing or reconfiguring the boundary of the site to avoid the wetland features.

Table 3-2: Wetland Impacts as Result of the Construction of the Project

Project Component	PEM Wetlands		PFO Wetlands	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
Montana				
Pipeline ROW	1.65	0.00	0.00	0.00
Temporary Access Road	0.03	0.00	0.00	0.00
Permanent Access Road	0.06	0.06	0.00	0.00
Total for Montana	1.74	0.06	0.00	0.00

Table 3-2: Wetland Impacts as Result of the Construction of the Project

Project Component	PEM Wetlands		PFO Wetlands	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
South Dakota				
Pipeline ROW	2.95	0.00	0.00	0.00
Temporary Access Road	1.13	0.00	0.00	0.00
Permanent Access Road	0.06	0.06	0.00	0.00
Total for South Dakota	4.14	0.06	0.00	0.00
Nebraska				
Pipeline ROW	26.64	0.00	0.21	0.00
Temporary Access Road	0.18	0.00	0.00	0.00
Permanent Access Road	0.00	0.01	0.00	0.00
Total for Nebraska	26.82	0.01	0.21	0.00
Project Total	32.70	0.13	0.21¹	0.00
Notes: ¹ The temporary disturbance of the 0.21 acres of PFO wetlands will result in the permanent conversion of 0.09 acres of PFO wetlands from PFO to PEM Key: PEM – palustrine emergent PFO – palustrine forested				

Of the 0.21 acres of PFO wetlands that will be disturbed during construction, 0.12 acres of the PFO wetlands will be allowed to restore to pre-construction condition. The construction of the Project will result in the permanent cover class conversion of the remaining 0.09 acres of PFO wetlands from PFO to PEM due to maintaining a 30-foot corridor centered on the pipeline centerline in herbaceous cover for inspection and aerial patrol during operations.

Keystone will restore the 0.12 acres of PFO wetlands to pre-construction conditions through the planting of tree and shrub species based on the dominant woody species observed in the PFO wetlands during wetland delineation field surveys. Keystone anticipates the planting of 1 to 3-inch saplings on 10 to 15-foot centers within the restored workspace. The below table identifies the tree and shrub species that were observed in each of these PFO wetlands during the field surveys.

Table 3-3: Dominant Tree and Shrub Species in PFO Wetlands in Nebraska

Wetland Name	Milepost	Dominant Woody Species Observed within the Wetland
W306HT003	679.91	<i>Salix amygdaloides</i>
W0502702MA002	744.34	<i>Fraxinus pennsylvanica</i> <i>Salix amygdaloides</i>
W0502703PL004	759.36	<i>Salix amygdaloides</i>
W0511702SA002	835.93	<i>Acer saccharinum</i> <i>Ulmus americana</i>

4.0 Surface Waters

The Project will cross various surface water types in Montana, South Dakota, and Nebraska. Surface waters crossed by the Project include streams, rivers, ponds, and man-made features. Streams and rivers were

classified by flow rate, ephemeral, intermittent, or perennial. The Project's crossings of the Missouri River (milepost 88.7) and the Yellowstone River (milepost 197.9) in Montana are regulated under Section 10 of the Rivers and Harbors Act. Figure 4-1 through 4-3 depicts the 8-digit hydrologic units crossed by the Project centerline for Montana, South Dakota, and Nebraska.

4.1 Surface Water Impacts

There are 526 crossings of waters of the U.S. by the workspace of the pipeline ROW and access roads, of which 104 are perennial streams, 185 are intermittent streams, 220 are ephemeral streams, and 17 are man-made waterbodies (i.e., canals or ponds). Table 5-1 provides a summary of the waterbodies crossed by state. The construction of three access roads (CAR-004A, CAR-128, and CAR-163) will result in 0.18 acres of permanent impacts to waterbodies comprised by 0.02 acres of ephemeral waterbodies, 0.14 acres of intermittent waterbodies, and 0.01 acres of perennial waterbodies. All other Project impacts to waterbodies will be temporary in nature. See Appendix J for a complete list of all waterbody crossings by the Project and the proposed crossing method and subsequent impact total for each waterbody. Mapbooks for each state that contain figures providing the location of waterbodies crossed by the Project are in Appendix I.

Table 4-1: Waterbodies Crossings by ROW and Access Road Workspace

Project Component	Waterbody Type			
	Ephemeral Stream	Intermittent Stream	Perennial Stream	Man-made Waterbody
Montana				
Pipeline ROW ^{1,2}	119	47	17	0
Temporary Access Road ²	2	5	2	6
Permanent Access Road ²	3	0	2	0
Total Number of Crossings for Montana	124	52	21	6
South Dakota				
Pipeline ROW	71	64	22	0
Temporary Access Road	3	5	6	7
Permanent Access Road	0	1	0	0
Total Number of Crossings for South Dakota	74	70	28	7
Nebraska				
Pipeline ROW	19	62	55	4
Temporary Access Road	3	1	0	0
Permanent Access Road	0	0	0	0
Total Number of Crossings for Nebraska	22	63	55	4
Project Total	220	185	104	17
Notes:				
¹ The number of crossings of the waterbody includes the crossing of waterbodies by HDD. The use of HDD/Bore crossing method will not result in impacts to the waterbody				
² A waterbody crossing was recorded each time the ROW or access road workspace crossed the waterbody				

Construction of the pipeline will result in temporary impacts to waterbodies from vegetation clearing, grading, excavation, and filling. To install pipelines under waterbodies, Keystone will adopt the standard open-cut (wet or dry) crossing method or use the HDD crossing method. The following are the waterbody crossing methods that will be used:

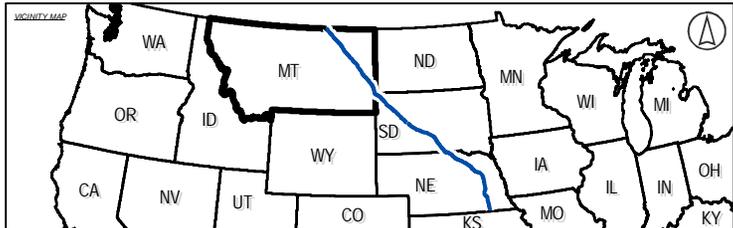
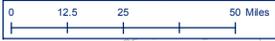
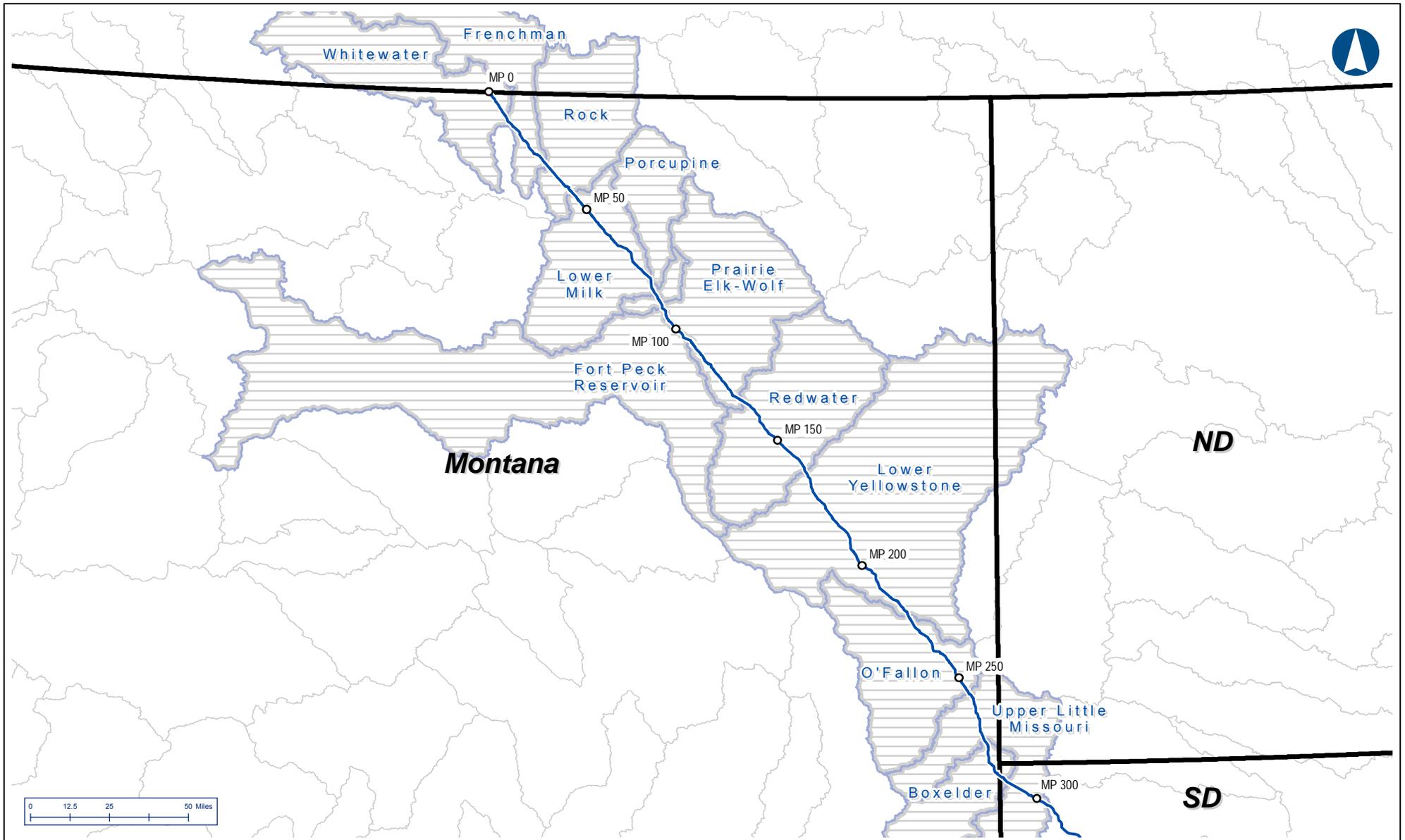
- Typical open cut in non-flowing waterbody (DTL 11);
- Typical open cut in flowing waterbody (DTL 12);
- Typical Dry Flume Crossing Method (DTL 13);
- Typical Dam and Pump Crossing Method (DTL 14);
- Typical HDD (DTL 15) or Bore Crossing Methods (DTL 158 or DTL 21); or
- Conveyance Crossing Method (DTL 161).

Use of trenchless crossing methods including HDD or boring will not involve any permanent or temporary dredge or fill impacts to waters of the U.S. The conventional pipeline crossing technique for each location will be determined based on the presence of water at the time of construction. During open-cut crossing installation, material excavated from the trench line at waterbody crossings less than 30 feet wide will be stored on the banks of the waterbodies. For waterbodies greater than 30 feet in width (width is based on ordinary high water mark), excavated trench materials may be temporarily side cast in-stream while the trench is being excavated and the pipeline carried into place and installed in the trench. Immediately following installation of the pipeline at waterbody crossings, the trench will be backfilled, and original waterbody contours will be restored to pre-construction condition.

The open cut, dry crossing methods involve two different approaches dependent upon waterbody specifications and volume of flow at the time of crossing. The dam and flume dry crossing method involve diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody. The dam and pump dry method is like the dam and flume dry method except that pumps and hoses would be used instead of flume pipes to move water around the construction work area. Once backfilling is completed, the waterbody banks are restored and stabilized as detailed in Appendix B and the dam materials and flume pipes or pump hoses are removed. No permanent fill within waters of the U.S. will be required for the installation of the pipeline.

The construction of temporary and permanent access roads will result in some temporary impacts to waterbodies, see Appendix I for impact totals for each access road. The construction of three permanent access roads (CAR-004A, CAR-128, and CAR-163) will result in 0.18 acres of permanent impact to waterbodies.

The construction of pump stations, valves, contractor yards, pipe storage yards, railroad sidings, and contractor camps will not result in any temporary or permanent impacts to waters of the U.S. Two jurisdictional open water features (exp-WB-0477 and exp-WB-0478) have been delineated with the boundary of Contractor Yard 09 Site 4B in South Dakota and one ephemeral stream (S0821620SE001) was delineated with the boundary of Mud Disposal Site MDS-191 in Nebraska. Keystone will configure the use of this contractor yard and the mud disposal site to avoid any impacts to these waterbodies through either fencing or reconfiguring the boundaries of the site to avoid these waterbodies. Therefore, the construction of the Contractor Yard 09 Site 4B and Mud Disposal Site MDS-191 will not result in any impacts to waters of the U.S.



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▭ Project Impact - Subbasin

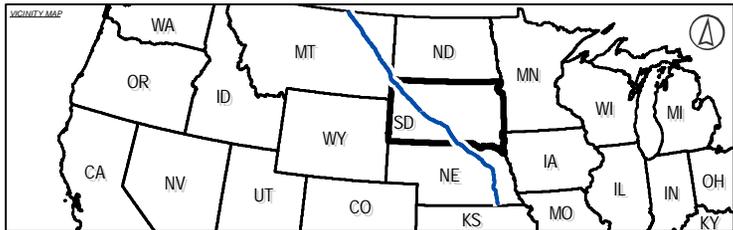
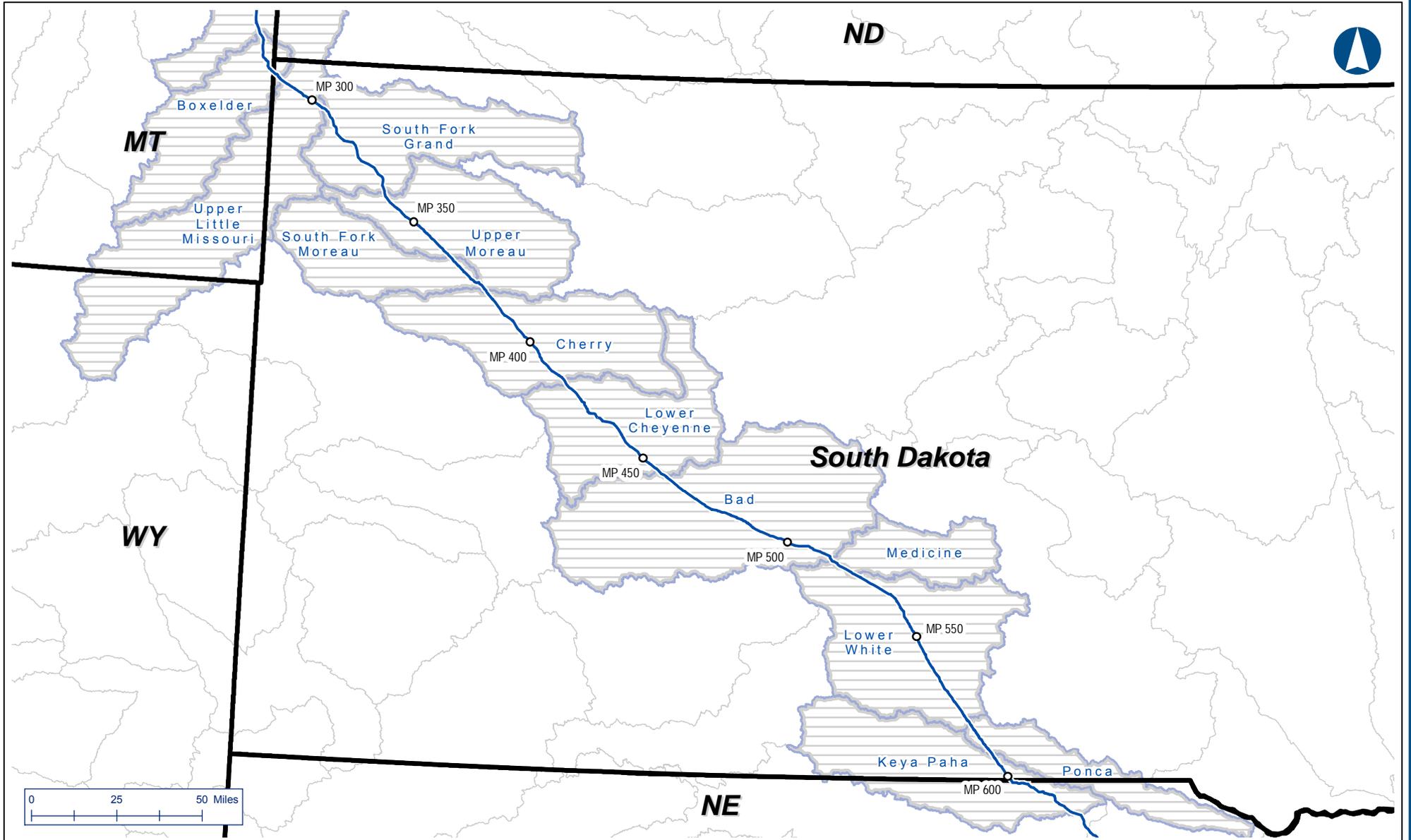
Data source: <http://nhd.usgs.gov>

KEYSTONE XL PROJECT		
- Figure 4-1 -		
MT 8-Digit Hydrologic Unit Boundary Map		
COUNTY: N/A	DRAWN BY: JC	
STATE: MONTANA	CHECKED BY: CW	
REV. NO.: 0	REVISION	DATE
	ISSUED FOR REVIEW	2020-05-15
DATE: 2020-05-15	PROJECTION: NAD83 UTM13N	

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DWG: 0801-06-018 SHEET: FIGURE 4-1



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▭ Project Impact - Subbasin

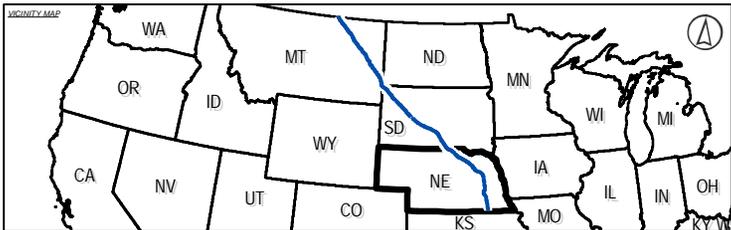
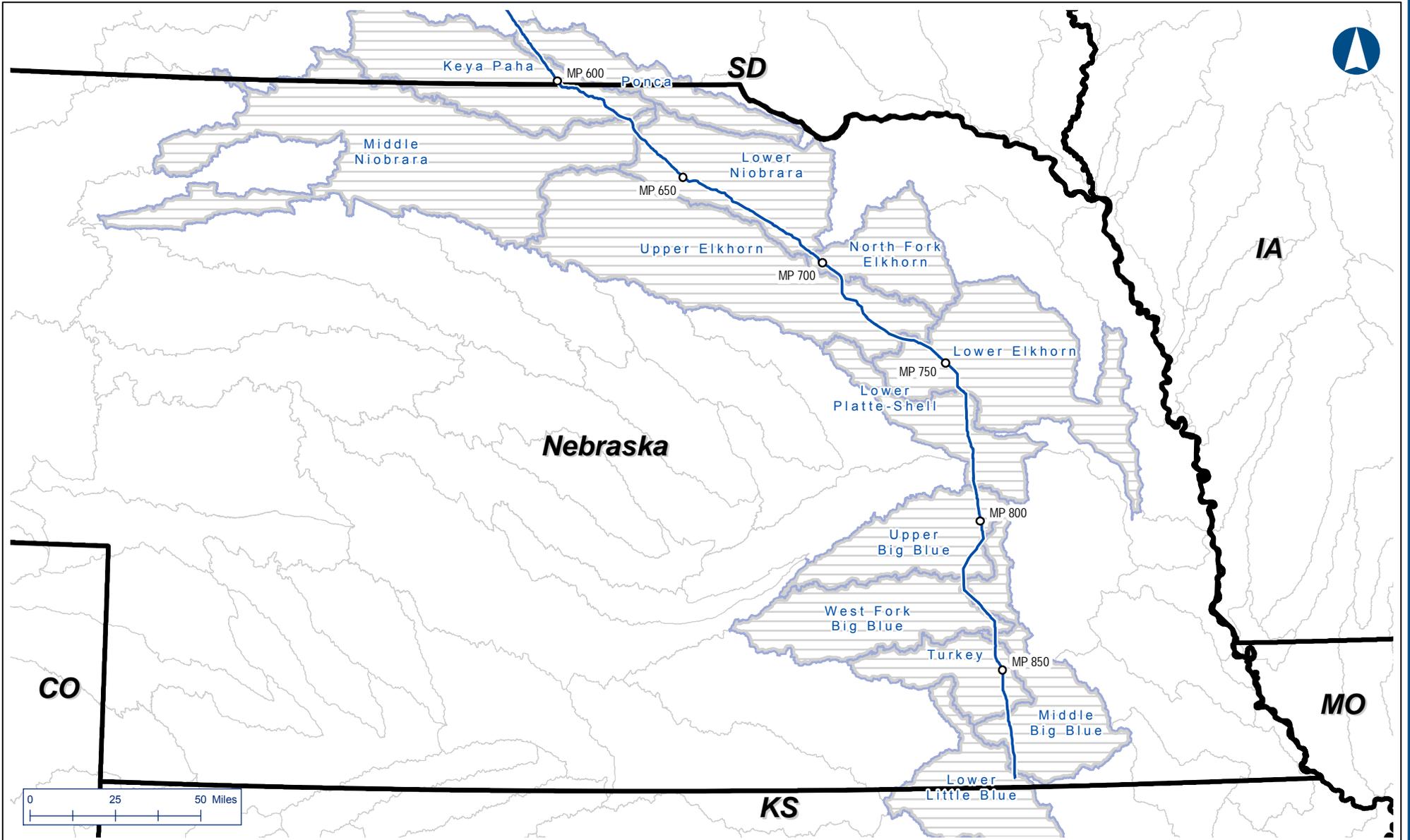
Data source: <http://nhd.usgs.gov>

KEYSTONE XL PROJECT		
- Figure 4-2 -		
SD 8-Digit Hydrologic Unit Boundary Map		
COUNTY:	N/A	DRAWN BY: JC
STATE:	SOUTH DAKOTA	CHECKED BY: CW
REV. NO.:	REVISION	DATE
0	ISSUED FOR REVIEW	2020-05-15
DATE:	2020-05-15	PROJECTION: NAD83 UTM14N

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DWG: 0801-06-018 SHEET: FIGURE 4-2



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▬ State Boundary
- ▨ Project Impact - Subbasin

Data source: <http://nhd.usgs.gov>

KEystone XL PROJECT
- Figure 4-3 -
NE 8-Digit Hydrologic Unit Boundary Map

COUNTY:	N/A	DRAWN BY:	JC
STATE:	NEBRASKA	CHECKED BY:	CW
REV. NO.:	0	REVISION	DATE
	0	ISSUED FOR REVIEW	2020-05-15

DATE: 2020-05-15 PROJECTION: NAD83 UTM14N

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DWG: 0801-06-018 SHEET: FIGURE 4.3

5.0 Federally Listed Species

The information provided below applies to the entire Project including all three states and is not specific to individual states. Some federally listed species may not be applicable to certain states. This section provides the summary of the consultation letter and BO issued by USFWS on December 23, 2019, that applies to the entire Project area in Montana, South Dakota, and Nebraska.

Within the jurisdiction of the USACE Omaha District, Keystone and the federal agencies considered the Project effects on ten different species afforded protection pursuant to the ESA. The November 26, 2019, amended BA prepared by the Bureau of Land Management (BLM) and DOS in coordination with other federal agencies, including the USACE, determined the Project effects on these species. In a consultation letter dated December 23, 2019, the USFWS concurred with the federal agencies determination of “*may effect, not likely to adversely affect*” for eight species including the endangered black-footed ferret (*Mustela nigripes*), interior least tern (*Sterna antillarum*), whooping crane (*Grus americana*), pallid sturgeon (*Scaphyrhynchus albus*), and Topeka shiner (*Notropis topeka*); and the threatened piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), and western prairie fringed orchid (*Platanthera praeclara*). Additionally, the federal agencies determined that the Project may affect the threatened northern long-eared bat (*Myotis septentrionalis*) but relied on the USFWS’ Programmatic BO in Final 4(d) Rule for the northern long-eared bat and Activities Exempted from Take Prohibitions to fulfill the Section 7 consultation requirement. Additionally, the federal agencies made a determination of “*may effect, likely to adversely affect*” for Project effects on the federally endangered American burying beetle (ABB) (*Nicrophorus americanus*). A description of the assessment of the Project effects on the ABB is presented in the BA and in the USFWS’ December 23, 2019, Biological Opinion on the Effects of the Proposed Keystone XL Pipeline to the Federally Endangered American Burying Beetle. The BO discusses the possible Project effects to ABB within the USACE’s federal area of control and responsibility.

The ESA consultation requirements have already been completed between the BLM (in coordination with the USACE) and the USFWS for the Project, including all areas within waters of the U.S and the USACE’s area of control and responsibility in the USFWS’s December 23, 2019, Keystone XL consultation letter and BO. See Appendix K for a copy of the consultation letter and BO. Additionally, Keystone has requested an Incidental Take Permit from the USFWS for the ABB on private lands outside of the USACE’s scope of analysis.

6.0 Cultural Resources

A PA was developed by the DOS, the Advisory Council on Historic Preservation, the State Historic Preservation Officers (SHPOs), and other cooperating parties, including USACE, to ensure Project and agency compliance with Section 106 of the NHPA during and after the NEPA analysis was completed. See Appendix L of this Federal Dredge and Fill Permit Application for a copy of the PA.

Keystone has made significant attempts to avoid impacts to historic properties. In instances where historic properties were identified along the route, Keystone explored multiple options for avoiding or minimizing impacts through detailed planning and mapping efforts. Route and Project footprint modifications have avoided many of these sites. If impacts to a historic property cannot be avoided, in accordance with the PA, the DOS, along with cooperating agencies (including the USACE) and consulting Indian tribes, will coordinate with Keystone to develop a treatment plan.

The following is a discussion of the status and finding of cultural resources for each state crossed by the Project. For all portions of the Project footprint that have not been surveyed, the PA establishes an agreed-

upon process for addressing unsurvey areas which is also outlined in the required coordination plans prepared for each state.

6.1 Montana

Within the jurisdiction of the USACE Omaha District in Montana, cultural resource surveys have been performed along 285.58 miles of the current Project ROW, 77.34 miles of access roads, and 899.48 acres of auxiliary facility sites (e.g., pump stations). Less than one percent of the Project area within Montana still requires cultural resource investigation.

Four historic properties within the current Project footprint in Montana are man-made jurisdictional waterbodies (Table 6-1). These include one historic reservoir and three segments of historic irrigation canals.

The Project will use Frenchman Reservoir, an eligible historic resource (24PH3613), as a water source for the Project. The Project will withdraw water from a point of diversion at the south end of the reservoir on the east end of the dam. At this location, a suction hose will be used to extract water from the diversion point and the water will be piped through two temporary waterlines. No ground disturbance will occur within the site boundary; therefore, the Project will have no adverse effect.

The two segments of the Vandalia South Canal (24VL1194) are part of the larger Milk River Project irrigation system and are eligible for listing on the National Register of Historic Places. A treatment plan was prepared and approved by the DOS and the Montana SHPO (Witt et al. 2012). Both segments of the canal will be bored to avoid all Project impacts and will follow the directives outlined in the 2013 Bureau of Reclamation (BOR) required crossing criteria for reclamation facilities that has been approved for the Project (BOR 2013). The ROW will be fenced to protect the resource and construction will be monitored by an archaeologist. The Project will have no adverse effect on the canal segments.

The segment of 24DW0289 identified as a jurisdictional waterbody is a lateral portion of the main Buffalo Rapids canal system. Although the main canal system is an eligible historic resource, the lateral is a non-contributing portion, therefore the Project will have no adverse effect on this resource.

Table 6-1: Site Locations Associated with Jurisdictional Waterbodies in Montana

Milepost	Site Type	Site Number	Eligibility Determination	Project Effect	Management Recommendation	Report Reference
24.81	Historic Reservoir and Dam– Frenchman Reservoir	24PH3613	Eligible	No Adverse Effect	No Further Work	Ethnoscience 2020
84.99	Canal	24VL1194	Eligible	No Adverse Effect	Fence and Monitor	Berg et al. 2008 and Witt et al. 2012
85.53	Canal	24VL1194	Eligible	No Adverse Effect	Fence and Monitor	Berg et al. 2008 and Witt et al. 2012
197.34	Canal (Lateral 4.7)	24DW0289	Eligible, Non-Contributing	No Adverse Effect	No Further Work	Crossland et al. 2010

6.2 South Dakota

Within the jurisdiction of the USACE Omaha District in South Dakota, cultural resource surveys have been performed along 315.59 miles of the current Project ROW, 70.20 miles of access roads, and 1,151.69 acres of auxiliary facility sites (e.g., pump stations). No historic or cultural properties were identified within the current Project footprint associated with any waters of the U.S. within the state of South Dakota.

Less than one percent of the Project area within South Dakota still requires cultural resource investigation. While these areas have yet to be surveyed by Keystone, primarily due to lack of landowner permissions, cultural investigations based on previous surveys and a literature review have been completed.

6.3 Nebraska

Within the jurisdiction of the USACE Omaha District in Nebraska, cultural resource surveys have been performed along 244.58 miles of the current Project ROW, 13.63 miles of access roads, and 682.10 acres of auxiliary facility sites (e.g., pump stations). No historic or cultural properties were identified within the current Project footprint associated with any waters of the U.S. within the state of Nebraska.

Approximately 526 acres of land within Nebraska still require cultural resource investigation. While these areas have yet to be surveyed by Keystone, primarily due to lack of landowner permissions, cultural investigations based on previous surveys and a literature review have been completed.

7.0 Section 404(B)(1) Compliance

Keystone presents the following Section 404(B)(1) compliance evaluation due to expected impacts to water of the U.S.

7.1 Finding of Practicable Alternatives

The DOS conducted a robust alternatives analysis as part of the Project's NEPA review pursuant to 40 CFR 1502.14. Section 2.0 of this Federal Dredge and Fill Permit Application provides a summary of the alternative analysis and the complete analysis can be found in Section 3.14 of the 2011 Keystone XL Final EIS, Section 2.2 of 2014 Keystone Final SEIS, and Chapter 2.0 of the 2019 Keystone Supplemental FEIS. The results of alternatives analysis conducted concluded that there are no practicable alternatives to the proposed Project that would meet the site selection criteria necessary to meet the purpose and need of the Project.

7.2 Restrictions on Discharge

The Project will result in only 0.13 acres of permanent fill into PEM wetlands and 0.18 acres of permanent fill into waterbodies due to the construction of four permanent access roads to access valve sites and a pump station. The construction of the pipeline ROW, temporary roads, pump stations, temporary storage and contractor yards will not result in the permanent fill in waters of the U.S. Keystone will not discharge any temporary fill material that would:

- Cause or contribute, after consideration of disposal site dilution and dispersion, to violations of any applicable state water quality standards;
- Violate any applicable toxic effluent standard or prohibition under Section 307 of the CWA;
- Jeopardize the continued existence of species listed as endangered or threatened under the ESA, as amended, or results in the likelihood of the destruction or adverse modification of a habitat that is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the ESA, as amended; or
- Violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

Keystone will follow the Project's CMRP (Appendix B), Spill Prevention, Control, and Countermeasure (SPCC) Plan, and in the USFWS's December 23, 2019, Keystone XL consultation letter and BO (Appendix K) to prevent impacts to waters of the U.S. due to stormwater runoff or inadvertent releases. Keystone will also secure Section 401 Water Quality Certification and all other applicable state permits related to water withdrawal or water discharge permits, as applicable, prior to the start of construction within waters of U.S. See Appendix F for a list of environmental permits and authorizations required in each state and the status of the permit or authorization.

The construction and operation of the Project will not jeopardize the continued existence of any federal listed species under the ESA. The ESA consultation requirements for the Project have already been

completed between the BLM (in coordination with the USACE) and the USFWS for all areas within waters of the U.S and the USACE's area of control and responsibility in the USFWS's December 23, 2019, Keystone XL consultation letter and BO. See Appendix K for a copy of the consultation letter and BO.

The construction and operation of the Project will not impact any marine sanctuaries designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

7.3 Findings of Significant Degradation

Keystone will take steps necessary to ensure no effects contributing to significant degradation would occur, including:

- Significantly adverse effects of the discharge of pollutants on human health or welfare, including, but not limited to, effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites;
- Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes;
- Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability (Note: Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of a wetland to assimilate nutrients, purify water, or reduce wave energy.); or
- Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economical values.

During construction, Keystone will follow the Project's CMRP (Appendix B), SPCC Plan, the USFWS's December 23, 2019, Keystone XL consultation letter and BO (Appendix K) and will comply with applicable state discharge permits to minimize, to the extent practical, migration of sediment from work areas into waters of the U.S. and to prevent contaminants associated with construction materials from entering waters of the U.S.

7.4 Findings of Appropriate and Practicable Minimization

As detailed in Section 2, "Alternatives Analysis," Section 4.1, "Wetland Impacts," and Section 5.1, "Surface Waters Impacts," of this Federal Dredge and Fill Permit Application, Keystone has evaluated impacts to wetlands and waterbodies, as well as other environmental impacts, throughout the route selection process. Project design incorporated routing selection and construction techniques to avoid and minimize impacts to wetlands, to the maximum extent practical. Major and minor route alternatives along the proposed route were evaluated to minimize impacts to wetlands and other sensitive environmental resources. Where practical, Keystone has reduced workspace (e.g., reduced construction ROW width) within waters of the U.S. to further minimize impacts to wetlands and waterbodies. Keystone has also added HDD and typical bore crossing to eliminate all impacts to PSS wetlands and to greatly reduce impacts to PFO and PEM wetlands. Across the 882 miles of pipeline and facility construction including a total of approximately 17,668 acres of impact, only 0.13 acres of permanent loss of PEM wetlands and 0.18 acres of waterbodies will be required for the Project. Additional measures that Keystone will implement to minimize impacts to water of the U.S. can be found in Section 1.3 of this Federal Dredge and Fill Permit Application.

The construction and operation of the Project will not jeopardize the continued existence of species afforded protection pursuant to the ESA. Section 7 consultation under the ESA has been completed for the Project and USFWS published the BO for the Project on December 23, 2019. See Section 5.0 of this Federal Dredge and Fill Permit Application for description of the Project's potential impacts to federally listed species and Appendix K for a copy of the BO. Additionally, Keystone is seeking an Incidental Take Permit for the ABB on private lands outside of the USACE's federal control and responsibility pursuant to Section 10 of the ESA.

7.5 Factual Determination

7.5.1 Physical Substrate Determinations

The Project will traverse a wide variety of substrates. A detailed description and analysis of the soils within the Project footprint can be found in Sections 3.2 and 4.2 of the 2014 Keystone XL Final SEIS and Sections 3.3. and 4.3 of the 2019 Keystone XL Supplemental FEIS. Fill material in wetlands during installation of the pipeline will be native material and will generally be restricted to spoil removed from the pipeline trench and, if unsaturated, segregated topsoil. The presence/absence of saturated soils within a wetland feature will depend on the field conditions present during the time of construction. Based on field condition of the wetland as determined by the Environmental Inspector, any portion of the topsoil up to 12 inches that is stackable will be segregated. Topsoil segregation will not occur if the soil is flooded or inundated and the topsoil and subsoil will not stack. Therefore, Keystone will strip and store the topsoil down to the point of saturation, depending on topsoil depth and site-specific water table conditions. The maximum depth that topsoil will be segregated is 12 inches, even in a scenario where more than 12 inches is present. Environmental Inspectors will provide guidance to the construction contractor when and how much topsoil should be segregated within a wetland based on the conditions observed in the field. This determination process for topsoil segregation for wetland construction will be applied to all wetlands features identified in Appendix J that are assigned with a Detail 9 crossing method and will be documented in the Environmental Inspectors reporting documentation. Once installation is complete, the trench spoil will be placed back into the trench. Excess material will be deposited in nearby uplands. Contours will be restored to match pre-construction contours. The construction of the Project will result in 0.13 acres of permanent fill to PEM wetlands due to the construction of permanent access roads to access mainline valve sites and a pump station.

Keystone will follow the Project CMRP (Appendix B) and Construction/Reclamation Plan and Documentation (Appendix R of the 2014 Keystone XL Final SEIS) to minimize soil layer mixing and compaction within wetlands. Keystone does not anticipate a significant impact to the composition of the substrates within waters of the U.S. that are traversed by the Project.

7.5.2 Water Circulation, Fluctuation, and Salinity Determinations

The Project has the potential to impact water circulation and fluctuation of wetlands and waterbodies within the construction footprint. However, these impacts will be temporary in nature and limited to construction of the Project. Keystone will follow the Project's CMRP (Appendix B) during construction. The measures outlined in the CMRP are designed to minimize impacts to wetlands and waterbodies. Operation of the Project will not affect the water circulation, fluctuation, or salinity of the wetlands and waterbodies within the construction footprint.

7.5.3 Suspended Particulate/Turbidity Determinations

Construction of the Project has the potential to temporarily increase the suspended particulates in wetlands and waterbodies traversed by the Project, as well as in adjacent wetlands and waterbodies; however, these impacts will be temporary in nature. Temporary increases in turbidity due to construction activities will be minimized, to the maximum extent practical, by following the Project's CMRP (Appendix B). Once construction is finished and restoration is complete, impacts due to suspended particulates/turbidity within wetlands and waterbodies traversed by the Project and wetlands and waterbodies adjacent to the Project will be insignificant.

7.5.4 Contaminant Determinations

The Project is not anticipated to cross or impact any potentially contaminated sites. In the event that substances that could potentially be considered waste and/or contaminated soils, as defined in applicable federal, state, and local regulations and guidelines are encountered during construction of the Project, Keystone will implement the measures in the Project's Unanticipated Contamination Discovery Plan (Appendix L) to prevent the spread of contamination.

7.5.5 Aquatic Ecosystem and Organism Determinations

Direct impacts to the aquatic ecosystems and organisms will occur during construction and operation of the Project. Impacts resulting from construction within wetlands and waterbodies will be localized, and construction activities will be largely temporary. Construction of the Project will result in 0.13 acres of permanent fill to PEM wetlands due to the construction of two permanent access roads to mainline valve sites. Indirect impacts could result from erosion and sedimentation, as well as impacts due to increased activity associated with construction. These impacts will be temporary and of only a very short duration. To minimize these impacts, Keystone will follow the Project's CMRP (Appendix B) and SPCC Plan. Secondary and indirect impacts are not anticipated as a result of the operation of the Project.

7.5.6 Proposed Disposal Site Determinations

No dredging activities that will require dredge material disposal are proposed for the construction and operation of the Project; therefore, no proposed disposal sites have been identified.

7.5.7 Determination of Cumulative Effects on the Aquatic Ecosystem

A summary of the cumulative effects analysis for wetland resources and surface waters is presented in Section 8.0 of this Federal Dredge and Fill Permit Application. A more detailed analysis is presented in Section 4.15 of the 2014 Keystone XL Project Final SEIS and Section 7.0 of the 2019 Keystone XL Project Supplemental FEIS.

7.5.8 Determination of Secondary Effects on the Aquatic Ecosystem

Secondary effects will include impacts as a result of stormwater runoff, wind erosion, and impacts to wildlife due to increased activity from construction and operation of the Project. During construction, Keystone will implement BMPs measures outlined in the Project's CMRP (Appendix B) and SPCC Plan to minimize impacts to adjacent aquatic resources as a result of stormwater runoff and wind erosion. Impacts to wildlife are addressed in the Sections 3.6 through 3.8 of the 2014 Keystone XL Project Final SEIS and Section 3.7 of the 2019 Keystone XL Supplemental FEIS as well as USFWS's December 23, 2019 consultation letter to the BLM (Appendix M) summarizing the conservation measures for listed species.

8.0 Cumulative Impacts

Cumulative impacts are the result of the incremental impacts of an action that, when added to the impacts of other past, present, and reasonably foreseeable future actions, would affect the same resources, regardless of what agency or person undertakes those actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7). Compliance with NEPA requires an analysis of these cumulative impacts (40 CFR 1508.25(a)(2) and 40 CFR 1508.25(c)(3)).

As a component of the NEPA review of the Project, the DOS evaluated cumulative impacts of a reasonably foreseeable action as one that has a realistic probability of occurring. The DOS focused the analysis on numerous existing, under construction, and planned major capital public and private projects, including oil and gas well fields, major product pipelines, water distribution lines, energy development projects (including wind farms), electric transmission lines project, mining projects, and transportation projects (including highways and rail lines). Key factors in controlling the extent and duration of cumulative effects are mitigation measures designed to reduce or offset effects and/or restore resources impacted by these projects to at or near pre-construction conditions. A more detailed analysis is presented in Section 4.15 of the 2014 Keystone XL Final SEIS and Section 7.0 of the 2019 Keystone XL Supplemental FEIS. The following is a summary of the cumulative impacts for wetlands and waterbodies.

8.1 Wetland Resources

The construction of the Project will result in some temporary and very limited permanent impacts to wetlands as described in Section 3.1 of this Federal Dredge and Fill Permit Application. The potential for the contribution of the Project's wetland resources impacts to cumulative impacts presume that the CMRP (Appendix B) is successful and near pre-construction conditions are restored and maintained within the anticipated timeframes.

In respect to wetland resources, the primary impact concern with respect to potential cumulative effects is the conversion of forested wetlands to emergent wetlands and the general degradation of wetland functions and values for all wetland types (e.g., wildlife habitat, water quality, erosion control, etc.). These impacts represent the primary area for cumulative impacts to occur with other past, present, and reasonably foreseeable future projects. As described above, the Project will mitigate for wetland losses per local, state, and federal requirements, as well as the CMRP (Appendix B). However, it is noted that there is a greater potential for cumulative impacts to forested wetlands, because forested wetlands are a limited resource in the Project area.

Historical activities and past projects are linked to wetland losses. Approximately 53 percent of the wetlands in the conterminous United States were lost between the 1780s and the 1980s (USACE 2012). Since the mid-1970s the rate of loss has decreased dramatically, primarily through the implementation and enforcement of wetland protection measures, public outreach/education, and restoration programs (EPA 2012). Currently, it is estimated that only 40 to 50 percent of the original Prairie Pothole wetlands remain undrained today, and only about 10 percent of the original Rainwater Basin wetlands remain. Farming and placement of drainage tiles have removed many of these features from today's landscape. In Montana (particularly in north-central and eastern Montana), South Dakota (notably in the prairie pothole region), and Nebraska, wetlands conversion to agricultural use (assumed to include livestock grazing) accounts for most historic wetland losses (U.S. Geological Survey 1996); other development activities and urbanization follow in significance.

Even with the proposed mitigation measures that will be used to avoid and minimize wetland impacts (see Sections 1.3 and 3.1 of this Federal Dredge and Fill Permit Application), the wetland impacts resulting from the construction of the Project have the potential to contribute to cumulative wetland impacts, particularly in southeastern Nebraska and east/southeastern Montana regions that are considered candidate areas for cumulative impacts associated with past projects, including this Project.

Current projects such as water delivery systems and highway maintenance and repair in Montana, South Dakota, and Nebraska would be required to avoid, minimize, and mitigate for wetland impacts according to local, state, and federal regulations. Enforcement of these regulations would likely limit the contribution of those projects to cumulative impacts.

Future projects that could potentially contribute to cumulative impacts to wetland resources such as electrical transmission lines, wind power projects, and oil and gas mining activities may also contribute to cumulative impacts where projects could overlap geographically with the Project in east/southeastern Montana and southeastern Nebraska. However, similar to those described above, future projects would be required to implement avoidance and mitigation measures designed to minimize potential impacts to wetland resources, which would likely limit the contribution of those projects to cumulative impacts.

Overall, with respect to the Project in combination with the past, present, and foreseeable future projects, long-term and permanent changes to wetland resources within the pipeline ROW have the potential to contribute to cumulative wetland impacts. Development projects would be required to comply with Section 404 of the CWA to avoid or mitigate impacts to wetlands. However, non-federally protected isolated wetlands may experience a cumulative loss if these resources are not avoided.

8.2 Surface Waters

The construction of the Project will result in temporary and very limited permanent impacts to surface waters as described in Section 4.1 of this Federal Dredge and Fill Permit Application. The potential for the

contribution of the Project's surface water impacts to cumulative impacts presume that the CMRP (Appendix B) is successful and near pre-construction conditions are restored and maintained within the anticipated timeframes.

In summary, with respect to surface water resources, permanent impacts are not expected. In the short term, bank and channel impacts from construction that would not regain full stability or equilibrium in the construction period would be expected to do so in 1 to 3 years post-construction. Operational impacts would be from maintenance activities such as pipe repair, but could also occur in previously impacted areas that are susceptible to the effects of large storm/runoff events. The introduction and transportation of invasive aquatic and plant species is the primary long-term impact concern and there is the potential for cumulative impacts to occur with other past, present, and reasonably foreseeable future projects. Past projects would concurrently affect invasive species to the extent that there is a high density of activity in a geographic area having a similar impact. Southern and eastern Nebraska and the east/southeastern region of Montana are candidate areas for cumulative impacts associated with concurrent projects, including the Project. Although existing projects are not noted to have had long-term impacts to surface water with respect to invasive species, mitigation and restoration measures are available to address these concerns within the context of all of these project activities; thus the overall significance to cumulative impacts is low.

Other current projects such as water delivery systems and highway maintenance and repair are also not expected to result in long-term impacts with respect to invasive species. Therefore, current projects would not contribute to cumulative impacts to surface water resources.

Future projects such as electrical transmission lines, wind power projects, and oil and gas development and mining activities may also contribute to cumulative impacts where projects could overlap geographically with the Project in east/southeastern Montana and southeastern Nebraska. However, similar to those described above, mitigation and restoration measures are available to address these concerns.

Overall, with respect to the Project in combination with the past, present, and foreseeable future projects, permanent changes to surface water resources within the pipeline ROW are considered negligible assuming effective mitigation and restoration efforts with the Project and other projects throughout the Project route.

Attachment B
Response to USACE July 21, 2020 RFI

TransCanada Keystone Pipeline, L.P. Keystone XL Pipeline

Responses to July 21, 2020 Request for Information for the June 1, 2020 Federal Dredge and Fill Permit Application

U.S. Army Corps of Engineers Omaha District

Project Number:

TAL-00050388-73

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**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to July 21, 2020 Request for Information
July 24, 2020**

The Omaha District has reviewed the subject project application for an Individual Permit received on June 1, 2020 as well as the additional information provided on July 6, 2020. Currently, the application is incomplete per 33 CFR 325.1(d). The following information is required for a complete application:

1. Response to RFI No. 1:

- *Some types of secondary fill could be left in place after restoration such as erosion control blankets, sand padding, or other permanent erosion control measures as outlined in the Project's Construction Mitigation and Reclamation Plan (CMRP [Appendix B of the Individual Permit Application]).*
 - **Provide clarification and locations where “secondary” fill could be left in place and if these impacts would be temporary or permanent. Please note that USACE does not classify impacts as primary or secondary; fill is evaluated as permanent or temporary.**

Response to RFI No. 1:

Any “secondary” fill that will be left in place after restoration would be considered permanent fill. The necessity and location of this type of fill will be dependent on site specific conditions that will be evaluated during construction. This type of fill would be replacement material, as its use would not result in the change of pre-construction contours of the wetland or waterbody.

For example, erosion control blankets or coir matting could be installed along stream banks to support stabilization and restoration of the bank until vegetation can be re-established. The placement of erosion control blankets or coir matting along a stream bank would not impact the ability of contractor to restore the disturbed waterbody back to its pre-construction contours and would function to help ensure proper restoration of the stream banks. In compliance with the CMRP, erosion control matting will be made of biodegradable, natural fibers such as straw or coir.

Sand padding around the pipeline may be necessary where rocky conditions are present in the pipeline trench. In this scenario, some of the excavated native material may be removed and replaced with sand to add additional protection for the pipe. Any placement of sand in the trench would not impact the ability of contractor to restore the disturbed wetland or waterbody back to its pre-construction contours, nor impede the replacement of topsoil to its original elevation. Any excess materials removed from the wetland or waterbody would be disposed of in an upland location.

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2. Response to RFI No. 2:

- Will only use temporary construction mats for the crossing of wetlands by temporary access roads.
 - **Table H-2 identifies Wetland Crossings by Access Roads and includes permanent access roads in wetlands using construction mats. Is this accurate? Typically construction mats are for temporary access only. Please explain.**
- Table RFI No. 2 – Description of Fill Material for the construction of the Project Access Roads states for the “Amount of Fill” and “Type of Fill” for wetlands is “None (only temporary use of construction mats)”
 - **Construction mats are considered to be fill material. Revise this table and provide the surface area that would be impacted as a result of placing temporary construction mats.**

Response to RFI No. 2:

A revised Table H-2 is included as Attachment A to this data response. Within the revised Table H-2, permanent access roads will not be crossed with construction mats. The wetland crossing method of permanent access road CAR-128 has been updated from “Construction Mat” to “Rock Fill”. These wetlands that are crossed by this access road are fringe wetlands adjacent to waterbodies that will be crossed by “Flume with Rock Fill”.

As stated above, temporary construction mats will not be used to cross wetlands for permanent access roads. The quantity of rock fill has been updated to reflect the change in crossing method of wetlands along CAR-128.

The following are the updated types and quantities of fill material that will be discharged for the construction of the access roads.

- 1,181 cubic yards of rock for access roads
- 45,000 square feet of construction mat for temporary access roads

The following is revised Table RFI No. 2 that provides the updated fill material description and quantity for the construction of the Project’s access roads.

Revised Table RFI No. 2 - Description of Fill Material for the construction of the Project Access Roads

Type of Access Road	Aquatic Resource	Amount of Fill	Type of Fill
Permanent Access Road	Wetland	119 Cubic Yards	Rock
	Waterbody	186 Cubic Yards	Rock
Temporary Access Road	Wetland	39,300 Square Feet ^a	Construction Mat
	Waterbody	876 Cubic Yards	Rock
		5,700 Square Feet ^a	Construction Mat
Notes:			
^a For the quantity of fill for the construction mats, square footage value was provided in response to the request for the surface area surface area that would be impacted as a result of placing temporary construction mats.			

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For the calculation of fill material in instances where two crossing methods were identified as an option such as “Flume with Rock Fill” or “Railcar Bridge”, the fill estimates provided above are based on the use of “Flume with Rock Fill” as this crossing method that will be used for the permanent road. The options of “Railcar Bridge” or “Bridge with Construction Mats” will just be used during construction.

3. From Revised Table H-2:

- Wetland crossings by access roads
 - **Please provide typical drawings/plans for these types of crossings, and reference the drawing/plans in the Table. Similar to the “DTLs” in the CMRP for the pipe crossings, and listed in tables H-1 and I-1. A minimum of 3 plans would be needed for: (1) Construction Mat, (2) Flume Culvert with Rock Fill, and (3) Span Bridge with Railcar Bridge.**
- Several wetlands within the table show that crossings methods other than mats would be used in wetlands. Response to RFI No. 2 states that only mats would be used in wetlands for temporary access roads.
 - **Provide clarification and revise the statement from Response to RFI No. 2 and/or Table H-2.**
 - **Are the permanent Access Road Types construction mats?**

Response to RFI No. 3:

For the crossing typical for “Span Bridge with Railcar”, Detail 18 from the CMRP reflects this type of crossing and an updated version is included in Attachment B. For the remaining access road crossings the following new crossing details are provided in Attachment B.

- Temporary Construction Mat Crossing (Detail 184)
- Flume with Rock Fill Crossing (Detail 185)
- Span Bridge with Construction Mat Crossing (Detail 186)

Wetlands will be crossed with one of three crossing methods: Temporary Construction Mat Crossing (Detail 184), Flume with Rock Fill Crossing (Detail 185), or Span Bridge with Construction Mat Crossing (Detail 18). See revised Table H-2 in Attachment A for the specific crossing method for each access road crossing of a wetland.

Construction mats will not be used as the crossing method for wetlands on permanent access roads. The wetland crossing method for permanent access road CAR-128 has been changed from “Construction Mat” to “Rock Fill” and this change is reflected in the revised Table H-2 (see Attachment A).

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4. From Revised Table I-2:

- This table does not list or reference a “DTL” for waterbody crossings by access roads (like the “Method” column for Tables H-1 and I-1), but identifies several different methods including: (1) Flume with Rock Fill or Railcar Bridge, (2) Bridge with Railcars, Construction Mats, (4) Span Bridge with Construction Mats, (5) Span Bridge with Railcar Bridge. **Are there associated plans/drawings for each of these methods?**
 - Regarding Vehicle Access and Equipment Crossings in Waterbodies, Section 7.3 of the CMRP states: *Equipment crossings shall be constructed as described in Details 16, 17 and/or 18. Do any of these methods currently listed in Table I- 2 correspond to DTL 16, 17 or 18?*
 - **Please identify/list the appropriate DTL in this Table I-2 (similar to tables H- 1 and I-1). If a method / DTL to be used for a particular crossing is not in the CMRP or does not have a typical drawing/plan already provided, please provide a typical drawing/plan for the proposed crossing method.**

- For several waterbodies, it is listed that construction mats would be permanent. **Is this accurate? Typically construction mats are for temporary access only. Please explain.**

Response to RFI No. 4:

For the crossing typical for “Span Bridge with Railcar”, Detail 18 from the CMRP reflects this type of crossing and an updated version is included in Attachment B. For the remaining access road crossings, the following new crossing details are provided in Attachment B.

- Construction Mat Crossing (Detail 184)
- Flume with Rock Fill Crossing (Detail 185)
- Span Bridge with Construction Mat Crossing (Detail 186)

Details 16 and 17 refer to temporary equipment crossing of waterbodies within the pipeline right-of-way. The details in Attachment B are specific to crossing of wetlands and waterbodies on access roads where the pipeline is not located.

A revised Table I-2 is included as Attachment C of this data response. The revised Table I-2 has been updated to reflect that a “Bridge with Constructions Mats” may be used to cross waterbodies by permanent access roads instead of “Construction Mats”. Temporary construction mats alone will not be used as a crossing method of waterbodies along permanent access roads.

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The following additional information is requested in order to expedite our review:

5. From Response to RFI No. 1:

- *Disposal sites for any temporary fills or materials are currently unknown at this time, but will be in **approved** disposal sites or upland areas. Keystone will not construct any borrow sites for the acquisition of any fill material.*
 - **Who approves the disposal sites?**
 - **Would any contractors construct borrow sites?**
 - **Note that the construction of borrow sites associated with this project would need to be reviewed and approved by USACE prior to construction.**

- *For temporary access roads, the crossing of some waterbodies could result in the placement of flume(s) and the associated temporary fill material (i.e., rock). For permanent access roads, the crossing of wetlands and waterbodies could result in the placement of culvert(s) and the associated fill material (i.e., rock).*
 - **Explain the difference between a flume for a temporary road and a culvert for a permanent road.**

Response to RFI No. 5:

Keystone will be the entity that ultimately approves the disposal sites for temporary fills or materials. All disposal sites will be in upland areas and outside of waters of the U.S. No borrow sites will be constructed by the contractor(s) during the construction of the Project.

The use of the two terms was not intended to refer to two separate construction methods. A flume pipe will be used for the crossing of both temporary and permanent access roads.

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6. From Response to RFI No. 4:

- *Durations of impacts to aquatic resources is not completely known at this time.*
 - **Clarification needed.** Duration of temporary sidecasting of less than 3 months/120 days previously provided in 2020 NWP PCN submittals.

Response to RFI No. 6:

Durations of impacts to aquatic resources is not completely known at this time; however, Keystone will not temporarily side-cast into waters of the U.S. for a period longer than three months during construction of the Project.

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7. From Response to RFI No. 7:

- The term “operation” should be removed from the application where applicable in regard to the USACE’s authority. *Keystone acknowledges that the USACE’s authority does not extend to the operation of the Project after construction is complete.*
 - **Operation language was not removed from the revised application. Please explain / remove operation language where applicable.**

Response to RFI No. 7:

Keystone acknowledges that the USACE’s authority does not extend to the operation of the Project after construction is complete. The term “operation” has been removed from the text of the application except for the following instances:

- Section 1; page 1 – The term operation is used to reflect the authority of the Presidential Permit.
- Section 1; page 3 – The term operation is used in reference of the Section 408 permitting process.
- Section 3.1; page 11 – The term operations is used in reference to the portion of the ROW that will be inspected when the pipeline is in operation.
- Section 7.2, pages 19 and 20 – The term operations is used in regard to the Project’s compliance with the Endangered Species Act and Marine Protection, Research, and Sanctuaries Act.

An updated version of the application text is provided as Attachment D.

**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to July 21, 2020 Request for Information
July 24, 2020**

8. From Revised Table H-2:

- The Crossing Method column seems to have the wrong footnote attached (should be “d” instead of “e”). Footnote “d” is unclear (*d: Based on field inspection, if Keystone discovers an existing bridge or culvert at the roads crossing of the feature, Keystone will utilize this existing structure as the crossing method*). **Please clarify / provide a revised Table H-2.**

Response to RFI No. 8:

To date, field inspections for construction and execution of all of the crossings of wetlands by access roads have not been completed. The purpose of this note is to acknowledge that if during the pre-construction civil survey of the crossing reveals that there is already some type of bridge or culvert system in place along the existing access road that will be sufficient for construction activities, then Keystone will not install new flume or bridge during construction.

The revised Table H-2 is included as Attachment A.

**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to July 21, 2020 Request for Information
July 24, 2020**

9. From Revised Table I-2:

- Same footnote “d” as in Table H-2. **Need clarification. Keystone (or its agents) have already made field inspections in some of these locations. Are existing bridges or culverts expected to be already in place at some crossings?**

Response to RFI No. 9:

See response to No. 8.

Revised Table I-2 is included as Attachment C.

**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to July 21, 2020 Request for Information
July 24, 2020**

General:

10.

- **ORM upload sheets not yet received. Please provide as soon as possible.**
- **Provide the total amount of acres of waterbodies that would be temporarily impacted by the project.**
- **Provide the latitude/longitude of the beginning and ending points of the project within the U.S.**

Response to RFI No. 10:

ORM sheets are being prepared and will be submitted under a separate cover once completed.

The construction of the Project will result in 25.40 acres of temporary impacts to waterbodies.

The following are the latitude/longitude of the beginning and ending points of the project within the U.S.

Northern extent of the Project: Lat: 48.999492/ Long: -107.545602

Southern extent of the Project: Lat: 40.040151/ Long: -96.999162

Attachment A

RFI No. 2

Revised Table H-2

**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to July 21, 2020 Request for Information
July 24, 2020**

Revised Table H-2: Keystone XL Pipeline Project Wetland Crossings by Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Wetland ID	Wetland Type ^a	Access Road ID	Access Road Type	Length Crossed (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Disturbance ^e	Permanent Disturbance	Map Page ^f
1	149.26	MT	McCone	W0725619MC001	PEM	CAR-439	Temporary	2.27	Construction Mat (DTL 184)	Redwater	47.446986	-105.514454	0.03	0.00	AR 66
2	149.27	MT	McCone	W0725619MC001	PEM	CAR-439	Temporary	NC	Construction Mat (DTL 184)	Redwater	47.447001	-105.514097	See above	0.00	AR 66
3	198.37	MT	Dawson	W1023620DA002	PEM	CAR-128	Permanent	10.74	Rock Fill	Lower Yellowstone	46.876414	-104.955603	0.04	0.04	AR 78
4	198.37	MT	Dawson	W1023620DA002	PEM	CAR-128	Permanent	6.87	Rock Fill	Lower Yellowstone	46.87634	-104.955636	See above	See above	AR 78
5	199.86	MT	Dawson	W1023620DA001	PEM	CAR-128	Permanent	14.10	Rock Fill	Lower Yellowstone	46.874525	-104.936281	0.02	0.02	AR 79
6	199.87	MT	Dawson	W1023620DA001	PEM	CAR-128	Permanent	4.26	Rock Fill	Lower Yellowstone	46.87454	-104.936229	See above	See above	AR 79
7	289.04	SD	Harding	W109HA001	PEM	CAR-163	Permanent	45.75	Flume with Rock Fill (DTL 185)	Upper Little Missouri	45.863552	-103.989438	0.06	0.06	CL 216; AR 97
8	289.11	SD	Harding	W109HA001	PEM	CAR-163	Permanent	NC	Rock Fill	Upper Little Missouri	45.863519	-103.987676	See above	See above	CL 216; AR 97
9	296.14	SD	Harding	W302HA001	PEM	CAR-041	Temporary	56.60	Construction Mat (DTL 184)	Upper Little Missouri	45.801494	-103.87182	0.04	0.00	AR 101
10	321.12	SD	Harding	W0906620HA002	PEM	CAR-469	Temporary	240.40	Construction Mat (DTL 184)	South Fork Grand	45.577767	-103.545045	0.18	0.00	AR 115
11	321.13	SD	Harding	W0906620HA002	PEM	CAR-469	Temporary	312.01	Construction Mat (DTL 184)	South Fork Grand	45.577964	-103.543593	0.23	0.00	AR 115
12	327.52	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	NC	Construction Mat (DTL 184)	South Fork Grand	45.534826	-103.421649	0.60	0.00	AR 118
13	327.52	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	144.60	Construction Mat (DTL 184)	South Fork Grand	45.534468	-103.421696	See above	0.00	AR 118
14	327.55	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	223.82	Construction Mat (DTL 184)	South Fork Grand	45.533755	-103.421673	See above	0.00	AR 118
15	327.58	SD	Harding	W0528618HA001	PEM	CAR-231	Temporary	489.82	Construction Mat (DTL 184)	South Fork Grand	45.532729	-103.421558	See above	0.00	AR 118
16	421.05	SD	Meade	W09196198ME001	PEM	CAR-471	Temporary	NC	Construction Mat (DTL 184)	Lower Cheyenne	44.632848	-102.059908	0.00	0.00	AR 148
17	434.59	SD	Haakon	W0808620HK001	PEM	CAR-313-ALT	Temporary	54.43	Span Bridge with Railcar Bridge (DTL 18)	Lower Cheyenne	44.463294	-101.941166	0.08	0.00	AR 156
18	486.16	SD	Haakon	W0810620HK001	PEM	CAR-462	Temporary	70.29	Construction Mat (DTL 184)	Bad	44.076185	-101.104368	See above	0.00	CL 364;

**KXL Pipeline Project – June 1, 2020 Individual Permit Application
Responses to July 21, 2020 Request for Information
July 24, 2020**

Revised Table H-2: Keystone XL Pipeline Project Wetland Crossings by Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Wetland ID	Wetland Type ^a	Access Road ID	Access Road Type	Length Crossed (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Disturbance ^e	Permanent Disturbance	Map Page ^f
															AR 173
19	659.18	NE	Holt	W306HT005	PEM	CAR-293	Temporary	22.09	Construction Mat (DTL 184)	Lower Niobrara	42.555484	-98.667553	0.02	0.00	CL 493; AR 197
20	780.92	NE	Colfax	W0505702CO002	PEM	VAR-46G	Permanent	5.73	Flume with Rock Fill (DTL 185)	Lower Platte-Shell	41.402361	-97.197366	0.01	0.01	CL 584; AR 214; AR 213
21	781.16	NE	Colfax	W0508702CO004	PEM	CAR-374	Temporary	NC	Construction Mat (DTL 184)	Lower Platte-Shell	41.399544	-97.194577	0.00	0.00	CL 584; AR 214; AR 213
22	818.74	NE	Seward	W0926618SE001	PEM	CAR-435	Temporary	237.15	Construction Mat (DTL 184)	West Fork Big Blue	40.890346	-97.262183	0.16	0.00	CL 613; AR 220
23	834.73	NE	Seward	W0602702SE001	PEM	CAR-395	Temporary	0.46	Construction Mat (DTL 184)	West Fork Big Blue	40.705479	-97.100753	0.01	0.00	CL 625; AR 223

a: PEM - palustrine emergent wetland; PSS- palustrine scrub-shrub wetland; and PFO - palustrine forested wetland.

b: Crossing distance is measured along the proposed access road centerline

c: "-" Indicates the wetland or waterbody is not cross the proposed access road centerline, but is encroached upon by access road workspace.

d: Based on field inspection, if Keystone discovers an existing bridge or culvert at the roads crossing of the feature, Keystone will utilize this existing structure as the crossing method

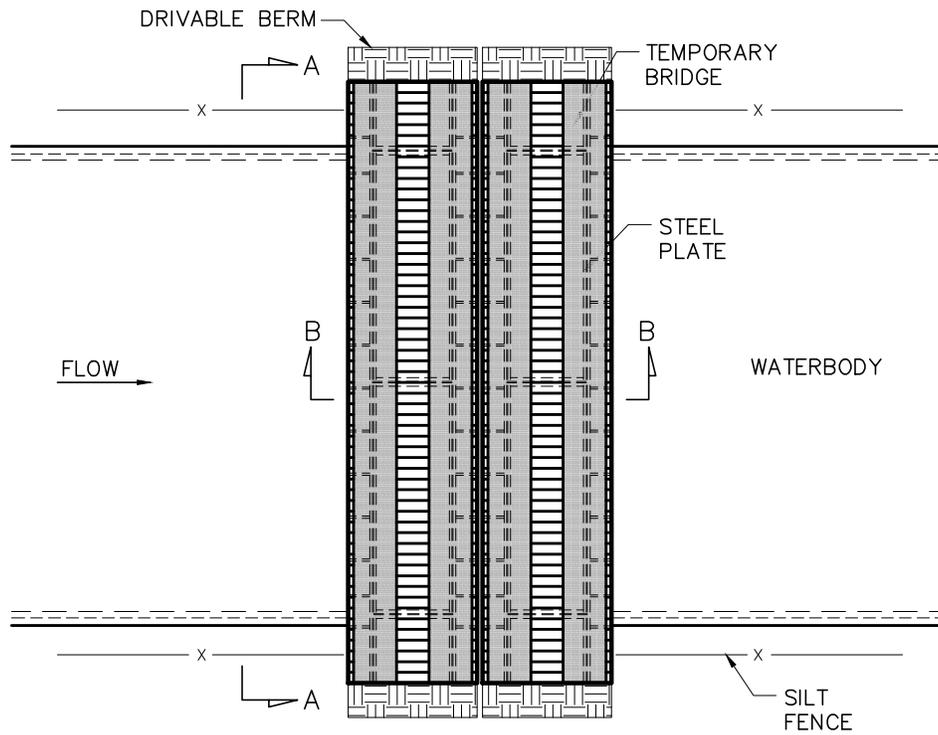
e: Due to the orientation and shape of certain wetland features, some are crossed multiple times by the access road centerline. Each individual crossing is listed so that some features are listed multiple times. Due to the short distance between separate crossings of the same feature, it is expected that during construction these features will be treated as a single crossing. Impact acreage is provided for the entire feature and is not repeated for multiple crossings of the same feature. The note 'See Above' is used in these instances.

f: This column identifies the specific page(s) of the corresponding mapbook (Appendix J of the Federal Dredge and Fill Application) that depicts the wetland. The abbreviations are: CL – centerline, AR – access road.

Attachment B

RFI No. 3

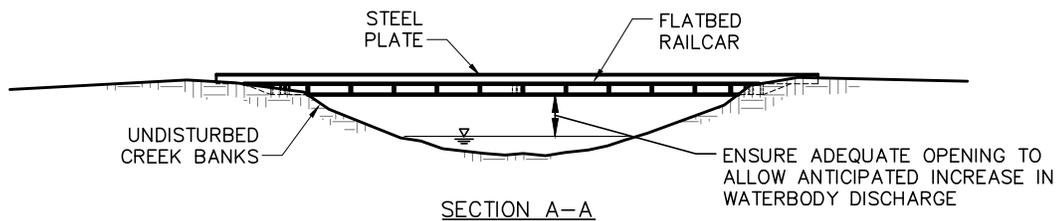
Access Road Crossing Details



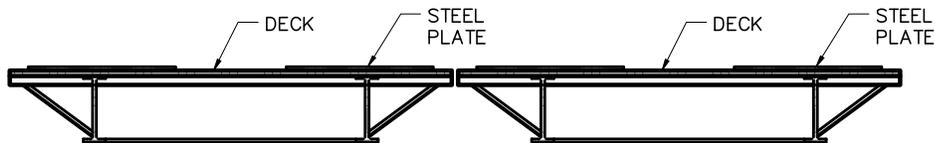
PLAN VIEW

NOTES:

1. SEE DETAIL 18A FOR CONSTRUCTION PROCEDURES.



SECTION A-A



SECTION B-B

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A

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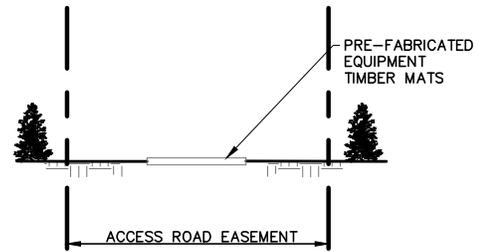
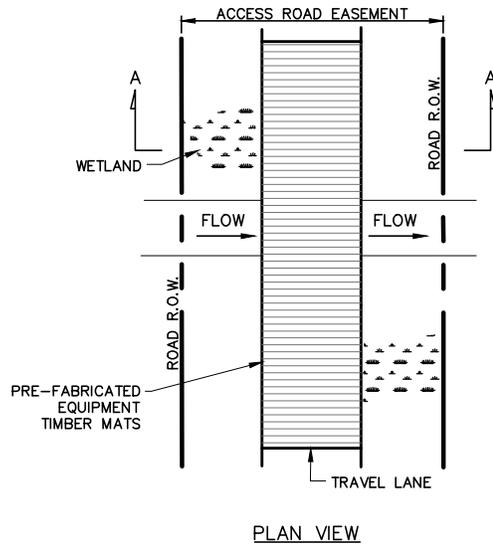
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	CHECKED BY: ADH	DESIGN CHECKER: OTB	TITLE: DETAIL - 18 TYPICAL RAILCAR BRIDGE CROSSING	
<small>EXP Energy Services Inc. t: +1 713 439 3600 f: +1 713 963 9085 1800 West Loop South, Suite 850 Houston, TX 77027 USA www.exp.com</small>		SCALE N.T.S.	DWG # 1399-03-ML-00-067	REV A

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CONSTRUCTION PROCEDURES:

1. THIS TYPICAL DRAWING PROVIDES FOR A RAILCAR BRIDGE EQUIPMENT CROSSING.
2. BRIDGE SHOULD BE A MINIMUM OF 12 FEET LONGER THAN BANK TO BANK WIDTH.
3. BEST MANAGEMENT PRACTICES UTILIZING EROSION CONTROL DEVICES, SUCH AS HAY BALES AND SILT FENCE ARE REQUIRED TO PREVENT SEDIMENTATION OF THE WATERBODY. EROSION PROTECTION SHALL BE PLACED ON THE WATERBODY BANKS AND A DRIVABLE BERM WILL BE ADDED ON BOTH ENDS OF THE BRIDGE.
4. DURING FINAL CLEANUP, REMOVE TEMPORARY EQUIPMENT CROSSINGS AS SOON AS POSSIBLE. INSTALLED MATERIALS, SUCH AS HAY BALES AND SILT FENCE MUST BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS AND REQUIREMENTS. THE WATERBODY BED, BANKS, AND AREAS AFFECTED BY CONSTRUCTION OF THE TEMPORARY EQUIPMENT CROSSING SHOULD BE RESTORED TO A STABLE CONDITION. IF REQUIRED TO PREVENT TRANSPORT OF SEDIMENTATION TO THE WATERBODY, SILT FENCE SHOULD BE INSTALLED AT THE TOP OF THE BANKS.
5. CONTRACTOR TO VERIFY BRIDGE IS CERTIFIED TO SUPPORT EXPECTED LOADS.
6. BRIDGE MUST BE REMOVED PRIOR TO SPRING THAW, OR MUST BE INSTALLED TO MEET SPRING THAW CONDITIONS.
7. CONSTRUCTION MATS MAY BE REQUIRED AT THE ENDS TO SUPPORT THE BRIDGE AND PROVIDE A SAFE FOOTING.

 <small>EXP Energy Services Inc. t +1 713 439 3600 f +1 713 963 9085 1800 West Loop South, Suite 850 Houston, TX 77027 USA www.exp.com</small>	DESIGNER:	GENERAL INFORMATION – KEYSTONE SYSTEM		
	<small>EXP NAME</small> <small>2020-07-23 DATE</small>	<small>FACILITY #</small> 1399	<small>ENG STN:</small>	<small>DISC #</small> 00
<small>CHECKED BY:</small> <small>DESIGN CHECKER:</small> ADH OTB		<small>TITLE</small> DETAIL – 18A TYPICAL RAILCAR BRIDGE CROSSING CONSTRUCTION PROCEDURES		
		<small>SCALE</small> N.T.S.	<small>DWG #</small> 1399-03-ML-00-068	<small>REV</small> A



SECTION A-A

CONSTRUCTION PROCEDURES:

1. FLAG WATERBODY/WETLAND BOUNDARIES PRIOR TO ACCESS ROAD CONSTRUCTION OR IMPROVEMENT ACTIVITIES.
2. IN MONTANA, WETLANDS/WATERBODY TO BE SURROUNDED WITH SILT FENCE EXCEPT IN THE TRAVEL LANE WHERE A DRIVABLE BERM WILL BE INSTALLED IN PLACE OF SILT FENCE TO PREVENT SEDIMENT FROM ENTERING THE WATERBODY/WETLAND.
3. NO REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND/WATERBODY. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND/WATERBODY BOUNDARY. REFUEL STATIONARY EQUIPMENT PER THE PROJECT'S SPILL PREVENTION PROCEDURES.
4. INSTALL TEMPORARY SLOPE BREAKER UPSLOPE WITHIN 100 FEET OF WETLAND/WATERBODY BOUNDARY IF DIRECTED BY COMPANY REPRESENTATIVE.
5. INSTALL TIMBER MATS THROUGH THE ENTIRE LENGTH OF THE WATERBODY/WETLAND AREA. EQUIPMENT NECESSARY FOR ROAD CONSTRUCTION OR IMPROVEMENT MAY MAKE ONE PASS BEFORE CONSTRUCTION AND IMPROVEMENT ACTIVITIES BEFORE MATS ARE INSTALLED.
6. INSTALL STRAW BALE AND/OR SILT FENCE ALONG THE WATERBODY/WETLAND EDGES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
7. NO ACTIVITIES ARE TO BE CONDUCTED OTHER THAN THE USE OF THE ACCESS ROAD UNLESS PRIOR APPROVAL IS GRANTED BY THE ENVIRONMENTAL INSPECTOR.
8. REMOVE TIMBER MATS UPON PROJECT COMPLETION AND USE OF THE ROAD.
9. RESTORE ANY DISTURBED SURFACE OR THE WATERBODY/WETLAND AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
10. DURING WINTER CONDITIONS, IMPROVE SOIL STABILITY IN WATERBODIES/WETLANDS BY CUTTING AND REMOVING VEGETATION AND BY DRIVING FROST INTO SOILS BY PASSING EQUIPMENT ACROSS THE WATERBODY/WETLAND.
11. SILT FENCE MAY BE INSTALLED ACROSS ROAD EASEMENT AT THE APPROACHES TO WATERBODIES/WETLANDS PRIOR TO THE SPRING RUN-OFF.

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A

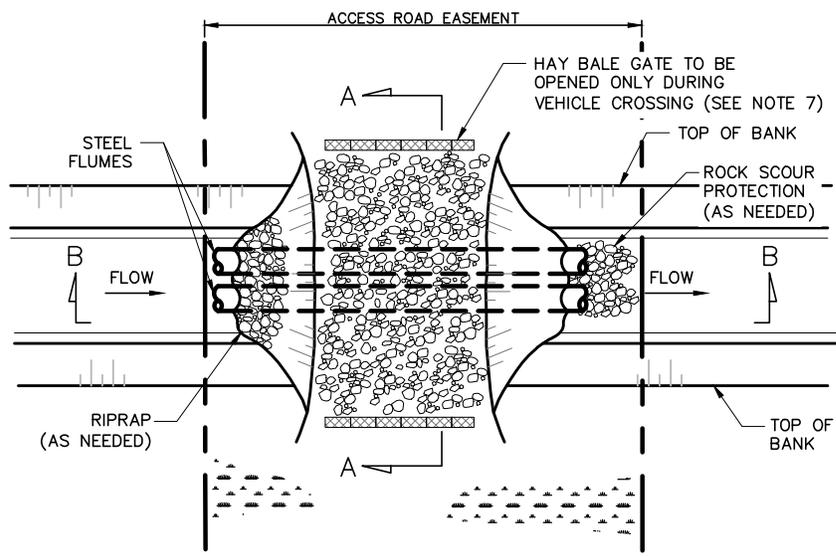
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<small>EXP Energy Services Inc. t: +1 713 439 3600 f: +1 713 963 9085 1800 West Loop South, Suite 850 Houston, TX 77027 USA www.exp.com</small>			SCALE N.T.S.	DWG # 1399-03-ML-00-069
				REV A

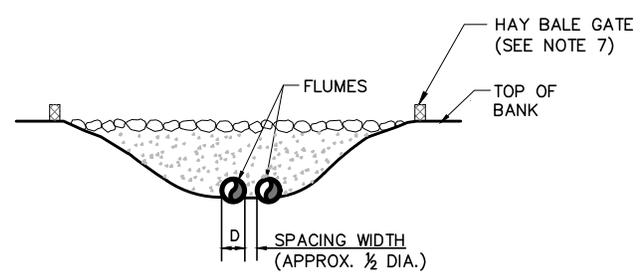
ISSUED FOR REVIEW

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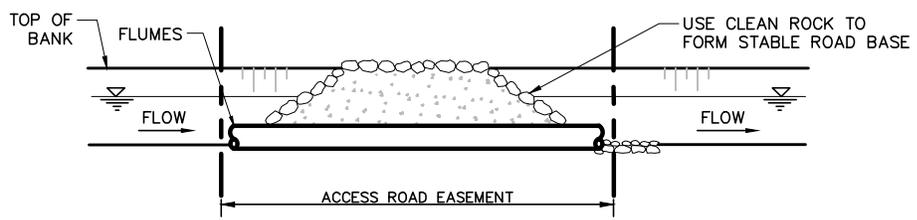
REVISIONS



PLAN VIEW



SECTION A-A



SECTION B-B

	DESIGNER:	GENERAL INFORMATION - KEYSTONE SYSTEM			
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	CHECKED BY: ADH	DESIGN CHECKER: OTB	TITLE: DETAIL - 185		
SCALE N.T.S.		DWG # 1399-03-ML-00-070		REV A	
TYPICAL CONSTRUCTION ACCESS ROAD THROUGH WETLANDS/WATERBODIES, PERMANENT/TEMPORARY FLUME CROSSING					

CONSTRUCTION PROCEDURES:

THE FOLLOWING IS A SEQUENCE OF CONSTRUCTION PROCEDURES AND MEASURES TO BE FOLLOWED AT ALL TEMPORARY FLUME EQUIPMENT CROSSINGS. FOR THE PERMANENT FLUME EQUIPMENT CROSSINGS, MORE MEASURES WILL BE APPLIED TO ENSURE PROPER DEPTH OF EXCAVATION IN REGARDS TO THE REQUIRED SUBGRADE DEPTH, VEGETATION AND ORGANIC MATERIAL STRIPPING DEPTH, ROAD BASE AGGREGATE COMPACTION RATE, AGGREGATE SIZING, ROAD SIDE SLOPES, AND FLUME SIZING.

1. A PORTABLE FLEXI-FLOAT OR TEMPORARY BRIDGE MAY BE SUBSTITUTED FOR THE TEMPORARY FLUME CROSSING.
2. THE LENGTH OF THE FLUME SHALL BE SUFFICIENT TO SPAN THE ENTIRE AREA REQUIRED FOR VEHICULAR ACCESS, EXTENDING 4 FEET BEYOND TOE OF FILL MATERIAL. A LONGER PIPE IS TO BE USED, IF NEEDED, TO MAINTAIN STABLE SIDE SLOPES. FLUME CAPACITY TO BE BASED ON THE MINIMUM 2-YEAR DESIGN FLOW OR MAXIMUM FLOW ANTICIPATED TO OCCUR DURING INSTALLATION, AS SPECIFIED IN CONSTRUCTION DOCUMENTS.
3. WHERE PRACTICAL, BACKFILL AROUND THE PIPES AT THE ROAD WITH CLEAN, COARSE ROCK FILL MATERIAL. IF SCOUR IS POSSIBLE, RIPRAP IS TO BE PLACED ON THE WATERBODY/WETLAND BED DOWNSTREAM OF THE PIPE OUTLET EXTENDING A MINIMUM OF TWO PIPE DIAMETERS. ALTERNATIVELY, TIMBER EQUIPMENT MATS, SAND BAGS OR TIMBER CORDUROY MAY BE USED TO FORM THE TRAVEL SURFACE.
4. TO REDUCE DEBRIS ENTERING THE WATERBODY/WETLAND FROM EQUIPMENT TRACKS, THE APPROACH ROAD LEADING TO THE CULVERT CROSSING MUST BE RAISED AND STABLE SO EQUIPMENT LOADS ARE SUPPORTED A SUFFICIENT DISTANCE BACK FROM THE WATERBODY/WETLAND. IF CUTS ARE NEEDED TO OBTAIN A SATISFACTORY GRADE, THEY ARE TO BE DUG WITH SIDE DITCHES AND STABLE SLOPES. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED TO LIMIT THE POTENTIAL FOR SEDIMENT TO ENTER THE WATERBODY/WETLAND (E.G., CHECK DAMS, SILT FENCE, RIPRAP, SEED AND MULCH, SEDIMENT TRAPS, DRIVABLE BERMS, ETC.).
5. PERIODICALLY CHECK THE TEMPORARY CROSSING INSTALLATION AND REMOVE ANY BUILDUP OF SEDIMENT OR DEBRIS ON THE BRIDGE. DISPOSE OF THIS MATERIAL AT LEAST 100 FEET FROM THE WATERBODY/WETLAND AND ABOVE THE HIGH-WATER LEVEL.
6. RESTORE WATERBODY/WETLAND BANKS AND BOTTOM.
7. NO HAY BALE GATE WILL BE USED ON PERMANENT ACCESS ROADS.
8. SEE BELOW.

MONTANA:

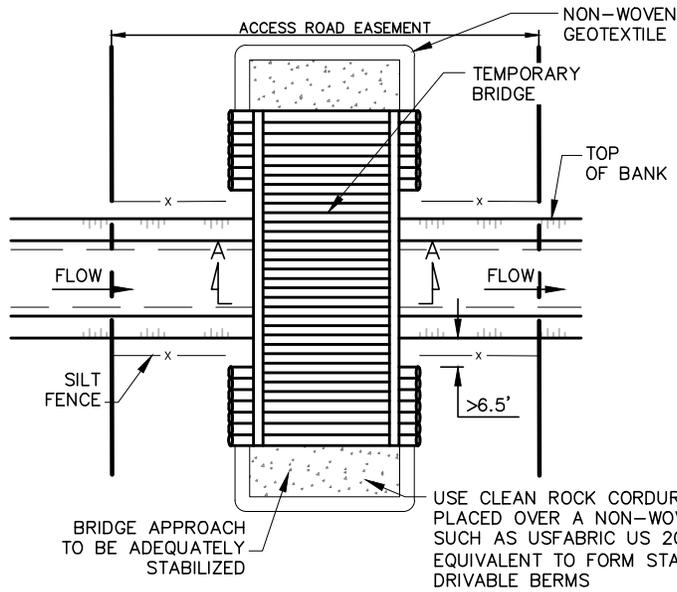
1. CULVERTS SHALL BE INSTALLED IN ACCORDANCE WITH MDEQ 318 PERMIT CONDITIONS OR EQUIVALENT. CULVERTS SHALL BE SIZED FOR MINIMUM 2-YEAR FLOOD ON TEMPORARY ROADS AND A 100-YEAR FLOOD ON PERMANENT ROADS.

SOUTH DAKOTA:

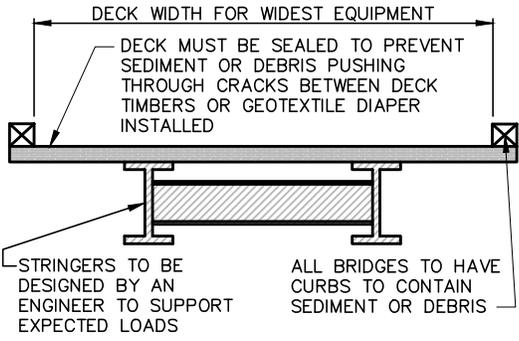
1. IN WATERBODY/WETLAND CHANNELS, THE CULVERT OPENING WIDTH OF A WATERBODY/WETLAND CROSSING SHALL NOT BE LESS THAN THE MEAN BANK TO BANK WIDTH AS MEASURED FROM THE ORDINARY HIGH WATER MARK (OHWM) IN THE AFFECTED WATERBODY/WETLAND REACH. IN STABLE CHANNELS, THE OHWM IS OFTEN FOUND AT THE POINT WHERE OVER-BANK FLOW BEGINS DURING A FLOOD EVENT. IN INCISED CHANNELS THAT DO NOT FREQUENTLY ACCESS A FLOODPLAIN OR UPPER TERRACE, THE OHWM IS GENERALLY LOCATED WITHIN THE ENTRENCHED CHANNEL. THE OHWM MAY BE IDENTIFIED BY OBSERVING INDICATORS SUCH AS A DISTINCT CHANGE IN SLOPE, A CHANGE IN VEGETATION CHARACTERISTICS, OR A CHANGE IN SEDIMENT CHARACTERISTICS, SEE 33 CFR 328.3(E).
2. IN WATERBODIES/WETLANDS WITH INTERMITTENT OR PERENNIAL FLOW AND A STABLE BED, CULVERT WATERBODY/WETLAND CROSSINGS SHALL BE INSTALLED WITH THE CULVERT INVERT SET BELOW THE NATURAL FLOW LINE OF THE CHANNEL ACCORDING TO THE SPECIFICATIONS BELOW. THE REGIONAL CONDITION DOES NOT APPLY IN INSTANCES WHERE THE LOWERING OF THE CULVERT INVERT WOULD ALLOW A HEADCUT TO MIGRATE UPSTREAM OF THE PROJECT INTO AN UNAFFECTED WATERBODY/WETLAND REACH.
3. THE PERMITTEE SHALL INSTALL CULVERTS SO THAT THE CULVERT INVERT IS SET BELOW THE NATURAL FLOWLINE OF THE WATERBODY/WETLAND ACCORDING TO THE FOLLOWING:
 - a. FOR ALL CULVERT TYPES WITHIN A DRAINAGE AREA THAT IS \leq 100 ACRES, A CULVERT INVERT DEPRESSION BELOW WATERBODY/WETLAND GRADE LINE IS NOT REQUIRED;
 - b. FOR CULVERT WITH A PIPE DIAMETER <8 FEET AND WITHIN A DRAINAGE AREA THAT IS 100 TO 640 ACRES, A 0.5 FOOT CULVERT INVERT DEPRESSION BELOW WATERBODY/WETLAND GRADE LINE IS REQUIRED;
 - c. FOR CULVERT WITH A PIPE DIAMETER <8 FEET AND WITHIN A DRAINAGE AREA THAT IS >640 ACRES, A 1-FOOT CULVERT INVERT DEPRESSION BELOW WATERBODY/WETLAND GRADE LINE IS REQUIRED;
 - d. FOR CULVERT WITH A PIPE DIAMETER ≥ 8 FEET AND WITHIN A DRAINAGE AREA OF ANY SIZE, A CULVERT INVERT DEPRESSION BELOW WATERBODY/WETLAND GRADE LINE THAT IS 20 PERCENT OF PIPE DIAMETER IS REQUIRED; AND
 - e. FOR A BOX CULVERT WITHIN A DRAINAGE OF ANY SIZE, A 1-FOOT CULVERT INVERT DEPRESSION BELOW WATERBODY/WETLAND GRADE LINE IS REQUIRED.
4. THE WATERBODY/WETLAND FLOW LINE SHALL BE DEFINED AS THE LONGITUDINAL AVERAGE OF THE LOW-FLOW WATERBODY/WETLAND CHANNEL. THE SLOPE OF THE CULVERT SHOULD BE PARALLEL TO THE SLOPE OF THE WATERBODY/WETLAND FLOW LINE. THE CULVERT INVERT DEPRESSION DEPTH SHALL BE MEASURED AT THE CULVERT INLET FOR CULVERTS INSTALLED AT A SLOPE LESS THAN THE SLOPE OF THE WATERBODY/WETLAND GRADE LINE. RIPRAP INLET AND OUTLET PROTECTION SHALL BE PLACED TO MATCH THE HEIGHT OF THE CULVERT INVERT.

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	DESIGNER:		GENERAL INFORMATION - KEYSTONE SYSTEM				
	EXP NAME	2020-07-23 DATE	FACILITY #	1399	ENG STN:	DISC #	00
	CHECKED BY:		TITLE				
	ADH	OTB	DETAIL - 185A				
		DESIGN CHECKER:		TYPICAL CONSTRUCTION ACCESS ROAD THROUGH WETLANDS/WATERBODIES, PERMANENT/TEMPORARY FLUME CROSSING-CONSTRUCTION PROCEDURES			
				SCALE	DWG #	REV	A
				N.T.S.	1399-03-ML-00-071		

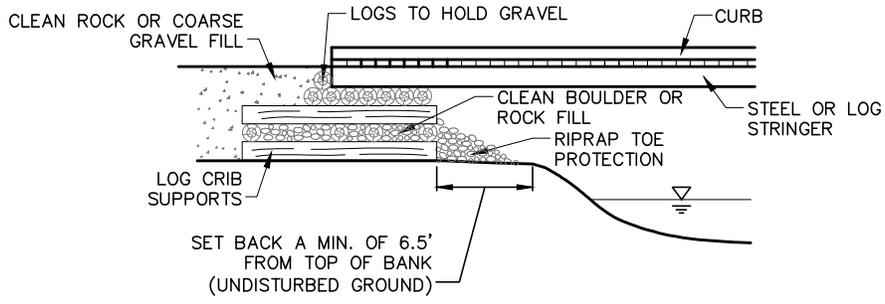


PLAN VIEW

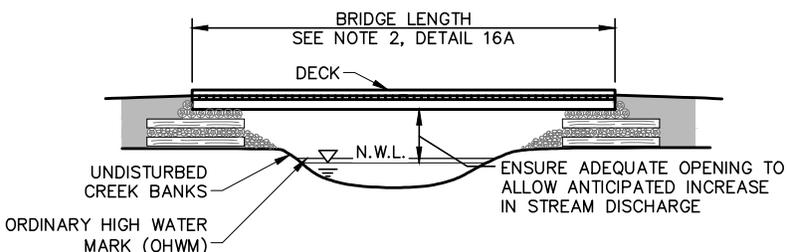


SECTION A-A
TYPICAL TEMPORARY BRIDGE
CROSSING

USE CLEAN ROCK CORDUROY OR COARSE GRAVEL PLACED OVER A NON-WOVEN GEOTEXTILE SUCH AS USFABRIC US 205NW, PROPEX GEOTEX 651, OR EQUIVALENT TO FORM STABLE APPROACH ROADS/DRIVABLE BERMS



TYPICAL TEMPORARY CRIB
ABUTMENT



BRIDGE PROFILE

ISSUED FOR REVIEW

A

REVISIONS

	DESIGNER:	GENERAL INFORMATION - KEYSTONE SYSTEM		
	EXP NAME: _____ DATE: 2020-07-23	FACILITY # 1399	ENG STN:	DISC # 00
	CHECKED BY: ADH	DESIGN CHECKER: OTB	TITLE: DETAIL - 186 TYPICAL TEMPORARY BRIDGE/MAT CROSSING	
<small>EXP Energy Services Inc. t +1 713 439 3600 f +1 713 963 9085 1800 West Loop South, Suite 850 Houston, TX 77027 USA www.exp.com</small>			SCALE N.T.S.	DWG # 1399-03-ML-00-063
				REV A

CONSTRUCTION PROCEDURES:

IN GENERAL TERMS, THE FOLLOWING IS A SEQUENCE OF CONSTRUCTION PROCEDURES THAT ARE RECOMMENDED TO BE FOLLOWED FOR TEMPORARY BRIDGE CROSSINGS:

1. DETERMINE BRIDGE LENGTH REQUIRED AND FOLLOW EITHER METHOD A) OR B) FOR DETERMINING THE OPENING SIZE. IF A) IS FOLLOWED, A MINIMUM 6.5 FOOT SETBACK FROM TOP OF BANK MUST BE PRESERVED AS A "NO DISTURBANCE AREA". IF ABUTMENTS OR PIERS IN THE WATERBODY/WETLAND BED ARE REQUIRED, METHOD B) IS TO BE FOLLOWED.
2. INSTALL THE BRIDGE IN A MANNER THAT WILL MINIMIZE SEDIMENT ENTERING THE WATERBODY/WETLAND. STRINGERS MUST BE DESIGNED TO SUPPORT THE LOADS EXPECTED ON THE BRIDGE. CURBS MUST BE INSTALLED ALONG THE EDGE OF THE DECK TO CONTAIN SEDIMENT AND DEBRIS ON THE BRIDGE. FASTENERS CONNECTING COMPONENTS MUST BE STRONG ENOUGH TO HOLD THEM IN POSITION DURING THE LIFE OF THE BRIDGE. CRIBS ARE TO BE FILLED WITH ROCK OR COBBLE. RIPRAP EROSION PROTECTION IS TO BE PLACED AROUND THE CRIBS AND ON ANY FILL SLOPES PROJECTING INTO THE WATERBODY/WETLAND.
3. ROAD APPROACHES (DRIVABLE BERMS) LEADING TO THE BRIDGE MUST BE RAISED AND STABLE SO EQUIPMENT LOADS ARE SUPPORTED A SUFFICIENT DISTANCE BACK FROM THE WATERBODY/WETLAND TO REDUCE SEDIMENT AND DEBRIS ENTERING THE WATERBODY/WETLAND FROM EQUIPMENT TRACKS. THIS MAY REQUIRE USING MATERIALS SUCH AS GRAVEL, ROCK, OR CORDUROY. ANY GRAVEL OR ROCK USED MUST BE CLEAN. DO NOT USE SOIL TO CONSTRUCT OR STABILIZE EQUIPMENT BRIDGES. IF CUTS ARE NEEDED TO OBTAIN A SATISFACTORY GRADE, THEY ARE TO BE DUG WITH SIDE DITCHES AND STABLE SLOPES. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED TO KEEP SEDIMENT ON LAND (E.G., SILT FENCING, FILTER CLOTH, RIPRAP, SEED AND MULCH, ETC.).
4. MAINTAIN A SILT FENCE ON EACH SIDE OF THE WATERBODY/WETLAND EXTENDING A MINIMUM OF 10 FEET BEYOND THE WIDTH OF DISTURBANCE UNTIL VEGETATION HAS BEEN ESTABLISHED IN UPSLOPE AREAS.
5. REMOVE TEMPORARY CROSSINGS AS SOON AS POSSIBLE AFTER FINAL CLEANUP. MATERIALS PLACED ALONG THE WATERBODY/WETLAND SHOULD BE COMPLETELY REMOVED DURING FINAL CLEANUP. REMOVAL SHOULD NOT OCCUR OUTSIDE THE CONSTRUCTION WINDOWS. COORDINATE WITH COMPANY REPRESENTATIVE FOR APPROVED GRAVEL DISPOSAL METHODS. BRIDGE MATERIALS ARE TO BE REMOVED FROM THE CROSSING AREA. THE WATERBODY/WETLAND BED AND BANKS ARE TO BE RESTORED TO A STABLE ANGLE AND PROTECTED WITH EROSION RESISTANT MATERIAL COMPATIBLE WITH THE EXPECTED FLOW CONDITIONS.
6. DURING WINTER CONDITIONS, A GEOTEXTILE FABRIC WILL BE PLACED UPON THE SURFACE AND/OR SNOW PRIOR TO THE INSTALLATION OF THE BRIDGE SUCH THAT GRAVEL OR DIRT FROM EQUIPMENT USED IN THE CONSTRUCTION OF THE BRIDGE OR EQUIPMENT CROSSING THE BRIDGE CAN BE COLLECTED AND REMOVED WHEN THE BRIDGE IS DISMANTLED.
7. INSTALLATION AND REMOVAL OF BRIDGES SHALL ACCOUNT FOR HIGH WATER LEVELS DURING THE SPRING MELT. WHEN FROZEN CONDITIONS ARE PRESENT, THE CONTRACTOR WILL EITHER REMOVE THE BRIDGE PRIOR TO THE ONSET OF FROZEN CONDITIONS, OR PLAN TO INSTALL THE BRIDGE TO A HEIGHT THAT WILL NOT IMPEDE SPRING RUN-OFF.
8. BRIDGE SHALL BE STABILIZED BY CABLES AND DEADMAN ANCHORS. DEADMAN ANCHORS SHALL BE INSTALLED ABOVE ORDINARY HIGH WATER MARK (OHWM) LEVEL.

ISSUED FOR REVIEW
A
REVISIONS

 	DESIGNER:	GENERAL INFORMATION – KEYSTONE SYSTEM			
	EXP NAME: _____ DATE: 2020-07-23	FACILITY #	1399	ENG STN:	DISC # 00
	CHECKED BY: ADH	DESIGN CHECKER: OTB	TITLE: DETAIL – 186A TYPICAL TEMPORARY BRIDGE/MAT CROSSING CONSTRUCTION PROCEDURES		
			SCALE N.T.S.	DWG # 1399-03-ML-00-064	REV A

Attachment C
RFI No. 4
Revised Table I-2

Revised Table I-2: Keystone XL Pipeline Project Waterbody Crossings by the Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Waterbody Name	Waterbody Type ^a	Waterbody ID	Access Road ID	Type of Access Road	Crossing Length (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Impacts (acres) ^e	Permanent Impacts (acres)	Map Page ^f
1	20.41	MT	Phillips	Corral Coulee	EPH	S112PH001	CAR-004A	Permanent	11.66	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Frenchman	48.767917	-107.287414	0.00	0.01	AR 9
2	24.78	MT	Phillips	Frenchman Creek	PER	S0903620PH002	CAR-327	Temporary	75.07	Bridge with Railcars (DTL 18)	Frenchman	48.69125	-107.24346	0.05	0.00	AR 16
3	33.07	MT	Valley	Papoose Creek	EPH	S_MDEQ_0028	CAR-008	Temporary	NC	Construction Mats (DTL 184)	Rock	48.646058	-107.090427	0.01	0.00	CL 25; AR 20
4	33.08	MT	Valley	Papoose Creek	EPH	S_MDEQ_0028	CAR-008	Temporary	NC	Construction Mats (DTL 184)	Rock	48.64593	-107.090342	See above	0.00	CL 25; AR 20
5	39.44	MT	Valley	Rock Creek	PER	S109VA002-1	CAR-010A	Temporary	27.51	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Rock	48.570921	-107.004852	0.02	0.00	AR 22
6	59.16	MT	Valley	Spring Creek	INT	S802VA001	CAR-084	Temporary	24.35	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Lower Milk	48.370044	-106.739497	0.02	0.00	AR 33; AR 34
7	129.87	MT	McCone	Unnamed Tributary to East Fork Prairie Elk Creek	INT	S32MC001	CAR-025	Temporary	78.93	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Prairie Elk-Wolf	47.6163	-105.811039	0.05	0.00	AR 58
8	130.13	MT	McCone	East Fork Prairie Elk Creek	INT	S32MC002	CAR-025	Temporary	51.27	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Prairie Elk-Wolf	47.615782	-105.805137	0.04	0.00	AR 58
9	131.09	MT	McCone	Pond on Tributary to East Fork Prairie Elk Creek	Man-Made Waterbody	S0725618MC001	CAR-025A	Temporary	NC	Construction Mats (DTL 184)	Prairie Elk-Wolf	47.609724	-105.788236	0.00003	0.00	AR 59
10	153.14	MT	McCone	Gyp Creek 01	INT	S105MC005	CAR-109	Temporary	NC	Flume with Rock Fill (DTL	Redwater	47.394388	-105.47397	0.00	0.00	CL 114; CL 115; AR

Revised Table I-2: Keystone XL Pipeline Project Waterbody Crossings by the Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Waterbody Name	Waterbody Type ^a	Waterbody ID	Access Road ID	Type of Access Road	Crossing Length (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Impacts (acres) ^e	Permanent Impacts (acres)	Map Page ^f
										185) or Railcar Bridge (DTL 18) ^g						68
11	153.14	MT	McCone	Gyp Creek 02	INT	S105MC006	CAR-109	Temporary	73.20	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Redwater	47.394357	-105.473932	0.04	0.00	CL 114; CL 115; AR 68
12	198.37	MT	Dawson	Tributary to The Yellowstone River 01	PER	S1023620DA004	CAR-128	Permanent	5.28	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Lower Yellowstone	46.876364	-104.955618	0.00	0.01	AR 78
13	198.42	MT	Dawson	Tributary to The Yellowstone River 02	EPH	S1023620DA002	CAR-128	Permanent	1.74	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Lower Yellowstone	46.873366	-104.962073	0.00	0.004	CL 148; AR 78
14	198.45	MT	Dawson	Tributary to The Yellowstone River 03	EPH	S1023620DA003	CAR-128	Permanent	4.09	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Lower Yellowstone	46.873932	-104.958907	0.00	0.01	AR 78
15	199.87	MT	Dawson	Tributary to The Yellowstone River 04	PER	S1023620DA001	CAR-128	Permanent	2.05	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Lower Yellowstone	46.874524	-104.936252	0.00	0.003	AR 79
16	258.21	MT	Fallon	Pond on Tributary to Little Beaver Creek	Man-Made Waterbody	S0731620FA001	CAR-452	Temporary	NC	Construction Mats (DTL 184)	Upper Little Missouri	46.247478	-104.205041	0.0006	0.00	AR 93
17	258.21	MT	Fallon	Pond on Tributary to Little Beaver Creek	Man-Made Waterbody	S0731620FA001	CAR-452	Temporary	NC	Construction Mats (DTL 184)	Upper Little Missouri	46.247416	-104.204988	See above	0.00	AR 93
18	258.22	MT	Fallon	Pond on Tributary to Little Beaver Creek	Man-Made Waterbody	S0731620FA001	CAR-452	Temporary	NC	Construction Mats (DTL 184)	Upper Little Missouri	46.247315	-104.205	See above	0.00	AR 93

Revised Table I-2: Keystone XL Pipeline Project Waterbody Crossings by the Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Waterbody Name	Waterbody Type ^a	Waterbody ID	Access Road ID	Type of Access Road	Crossing Length (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Impacts (acres) ^e	Permanent Impacts (acres)	Map Page ^f
19	262.80	MT	Fallon	Gravel Pit on Tributary to Dry Creek	Man-Made Waterbody	S0905620FA001	CAR-467	Temporary	11.51	Construction Mats (DTL 184)	Upper Little Missouri	46.139157	-104.330699	0.02	0.00	AR 94
20	289.82	SD	Harding	Unnamed Tributary to Wagoneer Creek	INT	S500HA012	CAR-163	Permanent	67.89	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Upper Little Missouri	45.863566	-103.970169	0.00	0.14	AR 97; AR 98
21	292.61	SD	Harding	Shaw Creek	PER	S109HA002	CAR-150	Temporary	52.89	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	Upper Little Missouri	45.833189	-103.929441	0.03	0.00	CL 218; CL 219; AR 99; AR 100
22	296.13	SD	Harding	Kimble Creek	INT	S104HA004	CAR-041	Temporary	29.29	Flume with Rock Fill	Upper Little Missouri	45.801513	-103.872007	0.02	0.00	AR 101
23	321.13	SD	Harding	South Fork Grand River	PER	S0906620HA004	CAR-469	Temporary	NC	Construction Mats (DTL 184)	South Fork Grand	45.577753	-103.544897	0.00	0.00	AR 115
24	327.56	SD	Harding	Clark Fork Creek	PER	S0528618HA001	CAR-231	Temporary	20.46	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	South Fork Grand	45.53343	-103.421631	0.01	0.00	AR 118
25	342.47	SD	Harding	Unnamed Tributary to Red Butte Creek	PER	exp-WB-13034	CAR-232	Temporary	8.36	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Upper Moreau	45.357573	-103.265116	0.01	0.00	CL 256; AR 124
26	382.00	SD	Meade	Maurine Lake	Man-Made Waterbody	S0807620ME001	CAR-447	Temporary	66.07	Construction Mats (DTL 184)	Upper Moreau	45.029876	-102.605665	0.05	0.00	AR 139
27	408.63	SD	Meade	Pond on Tributary to Spring Creek	Man-Made Waterbody	S0907620ME001	CAR-454	Temporary	5.25	Construction Mats (DTL 184)	Cherry	44.708139	-102.316297	0.004	0.00	CL 305; CL 306; AR 144
28	429.72	SD	Meade	Tributary to Luis Creek 01	INT	S1010620ME001	CAR-434	Temporary	5.07	Span Bridge with Construction Mats (186)	Lower Cheyenne	44.555548	-102.001667	0.01	0.00	AR 149
29	429.73	SD	Meade	Tributary to Luis Creek	INT	S1010620ME003	CAR-434	Temporary	NC	Span Bridge with Construction	Lower Cheyenne	44.541481	-102.003136	0.01	0.00	AR 149; AR 150

Revised Table I-2: Keystone XL Pipeline Project Waterbody Crossings by the Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Waterbody Name	Waterbody Type ^a	Waterbody ID	Access Road ID	Type of Access Road	Crossing Length (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Impacts (acres) ^e	Permanent Impacts (acres)	Map Page ^f
										Mats (186)						
30	429.73	SD	Meade	Tributary to Luis Creek	EPH	S1010620ME002	CAR-434	Temporary	12.91	Span Bridge with Construction Mats (186)	Lower Cheyenne	44.549559	-102.001399	0.02	0.00	AR 149
31	430.79	SD	Pennington	Unnamed Tributary to Cheyenne River	PER	S307PN001	CAR-079A	Temporary	22.66	Span Bridge with Construction Mats (186) or Railcar Bridge (DTL 18) ^g	Lower Cheyenne	44.50158	-102.002042	0.05	0.00	CL 322; AR 152; AR 153
32	434.22	SD	Haakon	Tributary to Bridger Creek	EPH	S0808620HK001	CAR-313-ALT	Temporary	4.11	Span Bridge with Construction Mats (186)	Lower Cheyenne	44.462009	-101.948739	0.00	0.00	AR 157; AR 156
33	434.49	SD	Haakon	Bridger Creek	INT	S0808620HK002	CAR-313-ALT	Temporary	36.36	Span Bridge with Railcar Bridge (186)	Lower Cheyenne	44.461903	-101.943311	0.04	0.00	AR 156
34	440.33	SD	Haakon	Pond Above Elm Tree Draw	Man-Made Waterbody	S0809620HK002	CAR-451	Temporary	2.50	Span Bridge with Construction Mats (186)	Lower Cheyenne	44.428952	-101.858069	0.00	0.00	CL 329; AUX 29; AR 161
35	453.36	SD	Haakon	Tributary to West Plum Creek	PER	S0531620HK002	CAR-449	Temporary	4.20	Construction Mats (DTL 184)	Lower Cheyenne	44.314107	-101.657592	0.01	0.00	AR 166; AR 167
36	453.77	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	NC	Construction Mats (DTL 184)	Lower Cheyenne	44.311075	-101.650459	0.01927	0.00	AR 166; AR 167
37	453.77	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	NC	Construction Mats (DTL 184)	Lower Cheyenne	44.310965	-101.650544	See above	0.00	AR 166; AR 167
38	453.77	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	NC	Construction Mats (DTL 184)	Lower Cheyenne	44.310682	-101.650765	See above	0.00	AR 166; AR 167
39	453.89	SD	Haakon	Pond	Man-Made Waterbody	S0531620HK003	CAR-449	Temporary	1.07	Construction Mats (DTL 184)	Lower Cheyenne	44.309908	-101.648588	See above	0.00	AR 167
40	486.24	SD	Haakon	Tributary to Bad River	EPH	S0810620HK001	CAR-462	Temporary	1.18	Flume with Rock Fill (DTL 185) or Bridge	Bad	44.076229	-101.102063	0.001	0.00	CL 364; AR 173

Revised Table I-2: Keystone XL Pipeline Project Waterbody Crossings by the Access Roads within USACE Omaha District – Montana, South Dakota, and Nebraska

	Milepost	State	County	Waterbody Name	Waterbody Type ^a	Waterbody ID	Access Road ID	Type of Access Road	Crossing Length (feet) ^{b,c}	Crossing Method ^d	Subbasin	Latitude	Longitude	Temporary Impacts (acres) ^e	Permanent Impacts (acres)	Map Page ^f
										with Construction Mats (186) ^g						
41	544.02	SD	Tripp	Little Dog Creek	INT	S106TR001	CAR-236	Temporary	21.59	Flume with Rock Fill (DTL 185) or Bridge with Construction Mats (186) ^g	Lower White	43.675418	-100.152315	0.02	0.00	CL 407; AR 180
42	834.73	NE	Seward	Unnamed Tributary to West Fork Big Blue River 01	EPH	S0602702SE002	CAR-395	Temporary	NC	Construction Mats (DTL 184)	West Fork Big Blue	40.705462	-97.100397	0.01	0.00	CL 625; AR 223
43	835.14	NE	Seward	Unnamed Tributary to West Fork Big Blue River 01	EPH	S0602702SE002	CAR-395	Temporary	NC	Construction Mats (DTL 184)	West Fork Big Blue	40.705445	-97.099134	See above	0.00	CL 625; AR 223
44	834.73	NE	Seward	Unnamed Tributary to West Fork Big Blue River 02	INT	S0602702SE001	CAR-395	Temporary	3.68	Flume with Rock Fill (DTL 185) or Railcar Bridge (DTL 18) ^g	West Fork Big Blue	40.705474	-97.100698	0.004	0.00	CL 625; AR 223

a: EPH – ephemeral; INT – intermittent; PER – perennial

b: Crossing distance is measured along the proposed access road centerline between the ordinary high water mark

c: “NC” Indicates the waterbody is not crossed by the access road centerline. In these instances, the feature would be used for temporary construction workspace.

d: Based on field inspection, if Keystone discovers an existing bridge or culvert at the roads crossing of the feature, Keystone will utilize this existing structure as the crossing method

e: Due to the orientation and shape of certain waterbody features, some are crossed multiple times by the access road. Each individual crossing is listed so that some features are listed multiple times. Due to the short distance between separate crossings of the same feature, it is expected that during construction these features will be treated as a single crossing. Impact acreage is provided for the entire feature and is not repeated for multiple crossings of the same feature. The note 'See Above' is used in these instances.

f: This column identifies the specific page(s) of the corresponding mapbook (Appendix J of the Federal Dredge and Fill Application) that depicts the wetland. The abbreviations are: CL – centerline, AR – access road, AUX – auxiliary site

g: The option of the two different crossing methods is for construction only. The permanent crossing method will be flume with rock fill.

Attachment D

RFI No. 4

Updated Federal Dredge and Fill Permit Application Text

TransCanada Keystone Pipeline, L.P. Keystone XL Pipeline

Federal Dredge and Fill Permit Application U.S. Army Corps of Engineers Omaha District

Project Number:
TAL-00050388-73

Submitted By:
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Document Control Number:
KXL1399-EXP-EN-PE-0095-A

Rev	Date (yyyy-mm-dd)	Issue	Prepared by	Checked by	Approved by	Project Manager	Client
A	2020-05-27	IFU	JZ	MA	JAS	SS	TCE
B	2020-06-26	IFU	JZ	MA	JAS	SS	TCE
C	2020-07-24	IFU	JZ	MA	JAS	SS	TCE

FORM 4345

Acronyms and Abbreviations

ABB	American burying beetle
bpd	barrels per day
BLM	U.S. Bureau of Land Management
BMP	best management practice
BA	Biological Assessment
BO	Biological Opinion
BOR	Bureau of Reclamation
CFR	Code of Federal Regulations
CMRP	Construction Mitigation and Reclamation Plan
CWA	Clean Water Act
DSEIS	Draft Supplemental Environmental Impact Statement
DOS	U.S. Department of State
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FR	Federal Register
HDD	horizontal direction drill
ITP	Incident Take Permit
Keystone	TransCanada Keystone Pipeline, LP
LB	Legislative Bill
MAR	Mainline Alternative Route
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NWP12	Nationwide Permit 12
NDEQ	Nebraska Department of Environmental Quality
NE PSC	Nebraska Public Service Commission
NOA	Notice of Availability
PA	programmatic agreement
PCN	pre-construction notification
PEM	palustrine emergent
PFO	palustrine forested
Project	Keystone XL Pipeline Project
PSS	palustrine scrub-shrub
PUC	Public Utilities Commission

ROW	right-of-way
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasure
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WCSB	Western Canadian Sedimentary Basin

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1.0 Introduction

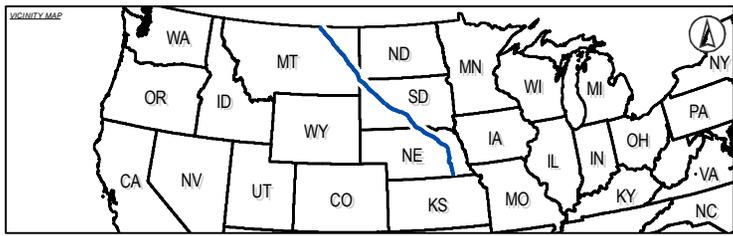
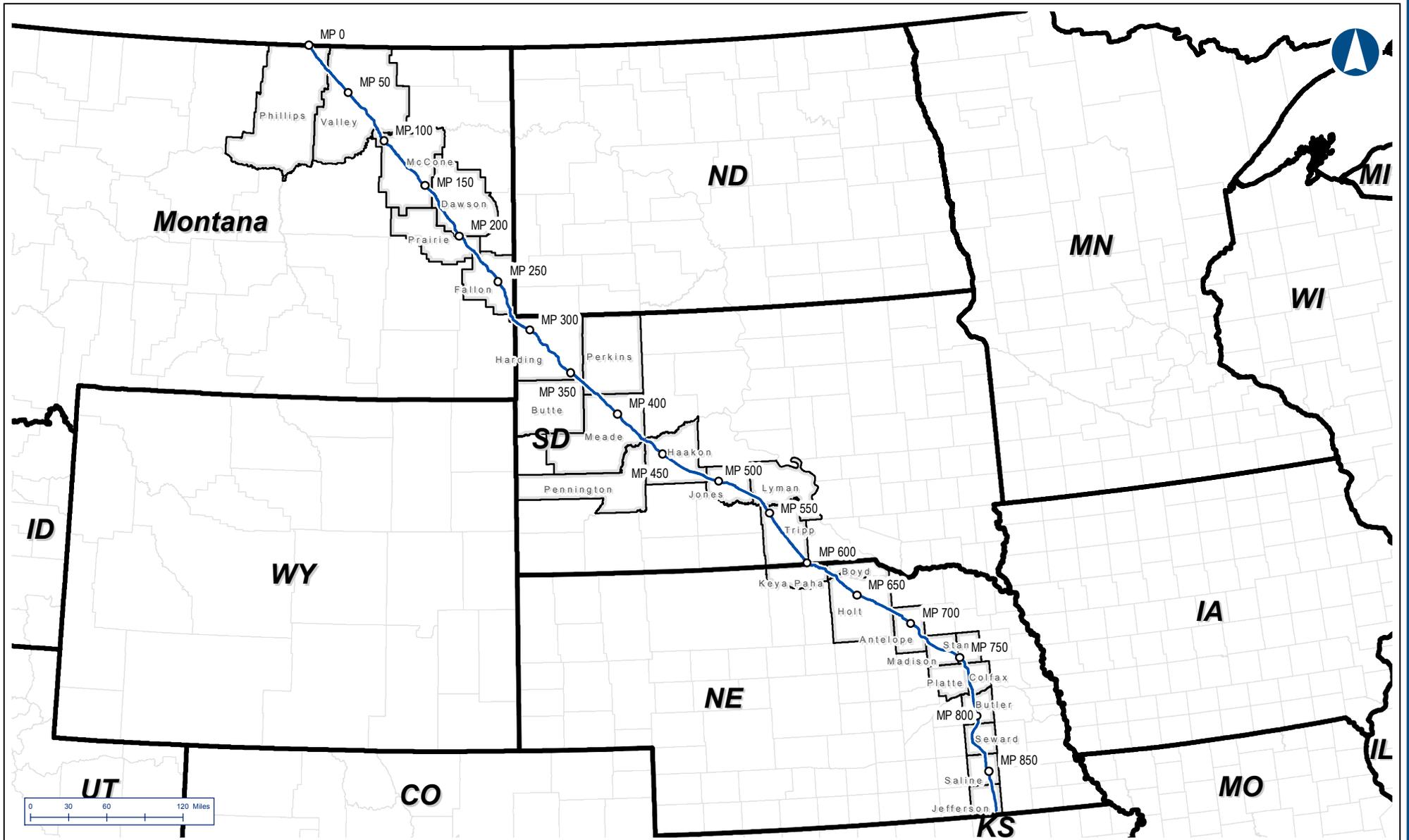
TransCanada Keystone Pipeline, L.P. (Keystone) proposes to construct, connect, operate, and maintain a pipeline system and ancillary facilities (e.g., access roads, pump stations and construction camps) that would transport Western Canadian Sedimentary Basin (WCSB) heavy crude oil from its existing facilities in Hardisty, Alberta, Canada, and Bakken crude oil from an on-ramp in Baker, Montana, to Steele City, Nebraska (referred to as the Keystone XL Project, or Project). The proposed pipeline would connect to the existing Keystone Cushing Extension pipeline, which extends from Steele City, Nebraska, to Cushing, Oklahoma. In total, the Project will consist of approximately 1,209 miles of new, 36-inch-diameter pipeline, with approximately 327 miles of pipeline in Canada and approximately 882 miles in the United States (U.S.). The Project will cross the international border between Saskatchewan, Canada, and the U.S. near Morgan, Montana, and will include pipeline generally within a 110-foot-wide temporary construction right-of-way (ROW) and a 50-foot-wide permanent ROW in Montana, South Dakota, and Nebraska. Figure 1-1 shows the Project route through Montana, South Dakota, and Nebraska.

In 2008, Keystone filed an initial Presidential Permit application with the Secretary of State requesting authorization to construct, operate and maintain the Project at the U.S.-Canada border in Phillips County, Montana. The U.S. Department of State (DOS) prepared a Final Environmental Impact Statement (EIS) in 2011 (2011 Keystone XL Final EIS) that evaluated the Project consistent with the National Environmental Policy Act (NEPA) of 1969 (as implemented by the regulations of the Council on Environmental Quality, found at 40 *Code of Federal Regulations* (CFR) 1500–1508). The initial Presidential Permit application was followed by Project route modification, and a new Presidential Permit application was submitted in 2012 and reviewed by the DOS. In 2014, the DOS released the January 2014 Final Supplemental Environmental Impact Statement (SEIS) for the Keystone XL Project (2014 Keystone XL Final SEIS).

In 2018, as a result of a ruling by the U.S. District Court for the District of Montana, the DOS initiated NEPA review of the proposed Mainline Alternative Route (MAR) for the Nebraska portion of the route. In December 2019, the DOS, with several cooperating federal agencies including the U.S. Army Corps of Engineers (USACE), issued the Supplemental Final Environmental Impact Statement (2019 Keystone XL Supplemental FSEIS), which evaluated the integration of the MAR into the Preferred Route for the Project, as well as addressing additional issues identified in the court's ruling.

On March 29, 2019, the President issued a Presidential Permit authorizing construction, connection, maintenance and operation of the Project at the U.S.-Canada border. See Appendix A for a summary of the DOS's actions and environmental review of the Project. Keystone initiated construction of the Project in April 2020 at the U.S./Canada border crossing with the installation of approximately 1.4 miles of pipe to the first U.S. mainline valve. Construction of the border crossing segment was completed in May 2020. The construction of this portion of the Project did not impact any waters of the U.S.

To comply with Section 404 of the Clean Water Act (CWA), Keystone requested the USACE conduct review of the proposed activities in Montana and South Dakota on May 25, 2017, and for Nebraska on May 30, 2017. The USACE authorized the horizontal directional drill (HDD) installation of the Yellowstone River crossing in Montana and the Cheyenne River crossing in South Dakota on September 8, 2017, and August 4, 2017, respectively. On June 22, 2017, the USACE determined the Project did not involve a regulated discharge of dredged or fill material under Section 404 of the CWA that required verification for the state of Nebraska.



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▭ Project Centerline Impact - Counties

KEYSTONE XL PROJECT		
- Figure 1-1 - Project Location Map		
COUNTRY: NA	DRAWN BY: JC	
STATE: MT / SD / NE	CHECKED BY: CW	
REV. NO.: 0	REVISION	DATE
	ISSUED FOR REVIEW	2020-05-15
DATE: 2020-05-15	PROJECTION: NAD83 UTM 13 14 N	

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DWG: 0801-06-018 SHEET: FIGURE 1

The USACE requested on June 14, 2019, that Keystone withdrawal the USACE verifications for the Project under Nationwide Permit 12 (NWP12) and subsequently the USACE suspended the verifications on August 2, 2019, due to the Project's 2013 issued Biological Opinion (BO) being withdrawn by the U.S. Fish and Wildlife Service (USFWS).

On February 3, 2020, Keystone submitted a new pre-construction notification (PCN) package for the Project requesting the USACE Omaha District review for verification and authorization under NWP12. The USACE accepted the PCNs and had initiated their review and issued requests for additional information to address data gaps. On April 15, 2020, the U.S. District Court in Montana ruled that the USACE violated the Endangered Species Act (ESA) when it failed to programmatically consult with the USFWS on potential impacts to species before reissuance of NWP12 in 2017. The district court vacated NWP12 with respect to all utilities and enjoined USACE from authorizing Keystone to engage in any activities under NWP12. On May 11, 2020, the district court modified its April 15 order to limit its scope but left in place vacatur and injunction with respect to the use of NWP12 for the construction of new oil and gas pipelines. The Department of Justice, TC Energy, and other parties have appealed the district court's decision to the U.S. Court of Appeals for the Ninth Circuit. On May 29, 2020, the Ninth Circuit denied motions for a stay of the district court's orders, pending resolution of the appeals. At this time, USACE is not able to grant Keystone CWA 404 authorization under NWP12. Therefore, Keystone is submitting this Federal Dredge and Fill Permit Application for a Standard (Individual) Permit to address impacts to waters of the U.S. that will result from the construction of the Project.

Keystone has adopted the USACE Regulatory Guidance Letter 16-01, dated October 31, 2016, on jurisdiction of waters of the U.S. and is not requesting a jurisdictional determination.

Keystone was granted permission, pursuant to 33 U.S.C. Section 408, for the proposed alteration, through the installation of pipeline, on USACE lands south of the Missouri River in McCone County, Montana on January 21, 2020. This USACE land is part of the federally authorized Fort Peck Civil Works project. Keystone is proposing an alteration to the USACE civil works project for the installation of the 36-inch diameter pipeline and ancillary facilities. The pipeline will be installed by HDD method under the Missouri River from private lands on the north side of the river to USACE land on the south side of the river. The pipeline will be installed by conventional methods south of this location on the USACE lands. A mainline isolation valve (260-VLLEY-04C), will be located on the federal property on the south side of the river. Keystone will maintain a 50-foot-wide permanent ROW and a permanent access road to the valve site. It should be noted that Keystone is not altering the upstream dam or spillway south of the Fort Peck Civil Works project, nor will the installation or operation of the pipeline impair the usefulness of the dam or spillway.

The Project activities within the states of South Dakota and Nebraska do not cross or impact any federal civil works project that require Section 408 permission from the USACE.

1.1 Purpose and Need

As articulated in the original EIS issued in 2011, and subsequent final and supplemental EISs, the primary purpose of the Project is to provide the infrastructure to transport up to 830,000 barrels per day (bpd) of crude oil from the WCSB in Canada and the Bakken Shale Formation in the U.S. to existing pipeline facilities near Steele City, Nebraska, for onward delivery to Cushing, Oklahoma and the U.S. Gulf Coast area.

The WCSB and the Bakken are both projected to have significant increases in production. In the WCSB, most of this increase is projected to come from the oil sands. Most of the long-term additional crude oil production in the WCSB is projected to come to the market as heavy crude oil, in the form of diluted bitumen. In the Bakken, the increased production is part of a broader development in the U.S. of increasing crude oil production from tight oil areas which produce a light crude oil. The exact mix and volumes of crude oil types that would be transported by the Project (as well as the final destination of those crude oils) would be determined by market forces but are fully analyzed in the three EISs completed for this Project (2011, 2014, 2019).

Keystone has firm, long-term contracts to transport approximately 680,000 bpd of WCSB crude oil on the Project to existing Gulf Coast area delivery points and 105,000 bpd of WCSB crude oil to Cushing, Oklahoma. Keystone would make available up to 100,000 bpd of capacity on the proposed Project for crude oil from the Bakken, subject to commercial demand.

In order to consider the validity of the need for the proposed Project since the 2014 Keystone XL Final SEIS, the DOS re-evaluated the current market conditions in Section 1.4 of 2019 Keystone XL Supplemental FSEIS. The DOS evaluated the state of the global crude oil market, western Canadian market and infrastructure to support western Canadian market demand. Overall, the updated market analysis, similar to the market analysis sections in the 2011 Keystone XL Final EIS and 2014 Keystone XL Final SEIS, concluded that there is continued strong demand for transport of WCSB by pipeline, including by the Project, under current and projected market conditions. This market analysis considers the most recent information from the U.S. Energy Information Administration, the International Energy Agency, and the Canadian Association of Petroleum Producers.

1.2 Project Overview

The following is a summary of the Project facilities that focuses on the potential impact that the construction of each facility will have on waters of the U.S. A more detailed description of each facility can be found in Section 2.1 of the 2014 Keystone XL Final SEIS and Section 2.4 of the 2019 Keystone XL Supplemental FEIS.

1.2.1 Pipeline Facilities

Construction of the pipeline facilities will require trees and vegetation to be cleared from the ROW. Grading of the work area will establish a stable and safer work surface for pipe installation. Once grading is complete, a trench will be excavated to a depth sufficient to provide approximately 4 feet of soil cover over the buried pipeline in wetland and upland areas and a minimum of 5 feet of cover for waterbody crossings. Where wetland conditions permit topsoil stripping during excavation, soil conservation will be conducted through salvaging topsoil from the reduced 85-foot wide construction corridor and temporarily storing the topsoil within the ROW limits. After the welded pipeline is installed in the trench, the subsoil will be backfilled into the trench and the topsoil will be replaced on top of the subsoil. Standard industry boring techniques will be employed to cross under significant features such as specific wetlands or waterbodies, highways, and railroad crossings.

Construction across wetlands will be similar to typical conventional upland cross-country construction, with modifications to reduce the potential for effects to wetland hydrology and soil structure. The wetland crossing methods used will depend largely on the stability of the soils at the crossing location at the time of construction. The 110-foot pipeline construction corridor width will be reduced to a width of 85 feet for wetlands in Montana and Nebraska, and 75 feet for wetlands in South Dakota, unless conditions require a wider construction corridor. In instances where the wetland is supersaturated or inundated, the corridor ROW may be increased to ensure safe construction conditions. For typical wetland crossings, the width of the permanent ROW will be 50 feet in all three states. Wetland construction methodology is discussed further in Section 4.1 of this Federal Dredge and Fill Permit Application. See Appendix B, the Project's Construction Mitigation and Reclamation Plan (CMRP), for typical drawings for the proposed crossing methods.

For construction across waterbodies, Keystone will adopt the standard open-cut (wet or dry) crossing method or use the HDD crossing method depending on the regulatory requirements and the site specific environmental and engineering characteristics of each waterbody. Waterbody construction methodology is discussed further in Section 4.1 of this Federal Dredge and Fill Permit Application.

1.2.2 Auxiliary Facilities

1.2.2.1 Pump Stations

A total of 19 pump stations will be constructed adjacent to the pipeline ROW on sites that will vary from 7 to 15 acres in size. The number of pump stations in each state is as follows:

- Montana – Six pump stations (PS-09, PS-10, PS-11, PS-12, PS-13, PS-14).
- South Dakota – Seven pump stations (PS-15, PS-16, PS-17, PS-18, PS-19, PS-20, PS-21).
- Nebraska – Six pump stations (PS-22, PS-23, PS-23B, PS-24, PS-25, PS-26).

Pump stations will require electrical power that will be supplied by regional power utilities suppliers. Power lines will be constructed and operated by electrical power utilities and all relevant permits will be obtained by these utilities through their applicable approval processes. **There will be no temporary or permanent fill in waters of the U.S. for construction of pump stations.**

1.2.2.2 Valves

Pipeline valves will be located within pump station facilities and at intervals along the pipeline ROW within fenced enclosures. Valves generally will be located near existing roads to allow easy access. **There will be no temporary or permanent fill in waters of the U.S. for construction of valves.**

1.2.2.3 Permanent Access Roads

Permanent access roads will be required for pump stations and certain valve locations. Keystone currently intends to use existing roads for the permanent access roads to the extent practicable. Impacts to wetlands or waterbodies located adjacent to or crossed (either by existing bridging or culverts) by the existing roads will be avoided as practicable during construction. **The construction of permanent access roads will result in temporary fill to waters of the U.S. and the construction of four of these access roads will result in permanent fill to waters of the U.S. as discussed in Sections 3.1 and 4.1.**

1.2.3 Temporary Facilities

1.2.3.1 Contractor Yards

Each pipeline construction segment (spread) will have at least one contractor yard, generally 30 acres in area. Contractor yards will be used as muster points, for equipment and personnel mobilization, equipment storage and maintenance, training, and other pipeline construction support activities. **There will be no temporary or permanent fill in waters of the U.S. for contractor yards.**

1.2.3.2 Pipe Storage Yards

Pipe storage yards will be required to stage pipe along the pipeline route to reduce haul times and facilitate efficient transport to the ROW. Pipe storage yards will be approximately 30 acres in area. **There will be no temporary or permanent fill in waters of the U.S. for pipe storage yards.**

1.2.3.3 Railroad Sidings

Several railroad sidings will be used to facilitate the unloading of pipe from railcars. **There will be no temporary or permanent fill in waters of the U.S. for railroad sidings.**

1.2.3.4 Contractor Camps

Contractor Camps may be established to minimize the effects of the pipeline work force on communities with limited housing resources. Each spread will have approximately 1,000 members in the total workforce, including contractors, inspection staff, and construction management staff. **There will be no temporary or permanent fill in waters of the U.S. for contractor camps.**

1.2.3.5 Temporary Access Roads

Temporary access roads will be necessary to provide ingress and egress for vehicles and equipment at regular intervals along the pipeline route. **The construction of temporary access roads will result in temporary impacts to waters of the U.S. as discussed in Sections 3.1 and 4.1.**

1.2.3.6 Water Appropriation Intake Devices

Keystone intends to appropriate water from waterbodies throughout the pipeline route to accommodate certain activities during construction, such as dust suppression, concrete mixing, HDD, and hydrostatic testing. Water will be appropriated in accordance with applicable state water use laws and permits.

At some locations or waterbodies, Keystone may need to temporarily disturb the bank of the waterbody to allow access to the water for the placement of the water intake device. The temporary disturbance could include vegetation clearing or the grading of steep slopes. Following the temporary water withdrawal, Keystone will restore the banks to pre-construction conditions. Keystone may also be required to excavate a small depression (less than 10 cubic yards) in the streambed to allow placement of the water intake device (typically a screened box attached to the water intake hose). The intake device will be suspended in the water column above the streambed to minimize the accrual of sediments and to prevent the device from rising above the waterline and subsequently drawing in air. Excavated sediments will be spread in an upland area adjacent to the waterbody or hauled offsite to an upland approved disposal location. Following the temporary use of the intake device, Keystone will remove the box from the streambed and sedimentation will occur naturally into the depressional area.

1.3 Avoidance and Minimization

Keystone is committed to protecting waterbodies, wetlands, and their associated resources. The pipeline route construction procedures and compliance program are designed to minimize environmental impacts during construction and restoration.

The pipeline route has been refined several times to reduce waterbody and wetland impacts through:

- Avoiding waterbody and wetland crossings where practicable;
- Minimizing the number of times that a single waterbody is crossed;
- Crossing waterbodies perpendicularly where practicable; and
- Reducing the width of the ROW to 85 feet in wetlands in Montana and Nebraska and 75 feet in South Dakota, where practicable.

During consultation with federal and state agencies and local stakeholders, additional reroutes were incorporated to avoid or minimize impacts to significant resources or identified concerns (including forested wetlands and certain waterbodies). In addition, timing windows were established in the Project schedule to protect biological resources, such as spawning fish and threatened/endangered species. Additional mitigation measures are described in the Project's CMRP (Attachment B), and include:

- Erosion and sediment controls implemented during and after construction;
- Environmental training of all Project workers and supervisors;
- Best management practices (BMPs) incorporated into the Project design and construction;
- Wetland and waterbody construction procedures designed to minimize impacts during construction and reclamation of the crossings;
- Spill prevention and clean-up procedures;
- Hazardous materials handling guidelines; and
- Clean-up, seeding, and reclamation details to ensure effective stabilization of the ROW and Project disturbances.

The Project’s CMRP provides typical construction methods (including drawings) for wetland and waterbody crossings, as well as erosion and sediment control measures that will be installed during construction and stabilization/revegetation of the Project. Temporary equipment or materials installed to provide access (e.g., timber mats, timber rip-rap, and rock and flume crossing materials) will be removed from wetlands and waterbodies at the completion of construction. Disturbances associated with temporary equipment access methods will be restored and stabilized after the bridging equipment and access materials are removed. Wetlands and waterbodies will be restored to pre-construction conditions.

Keystone will use several different construction techniques to avoid and/or minimize impacts where practicable. Keystone will minimize impacts by reducing the construction ROW width in wetlands to 85 feet in Montana and Nebraska and 75 feet in South Dakota. Keystone will also utilize trenchless HDDs and conventional boring methods to avoid impacts to some specific waterbodies and wetlands. No discharge of dredge or fill material into waters of the U.S. is anticipated at HDD or bored crossings.

In the event of inadvertent releases of drilling mud at the surface of the ground as a result of the trenchless crossing technique, Keystone will implement the measures outlined in the attached HDD Frac-Out Contingency Plan (Attachment C). Attachment D contains site specific HDD drawings for the proposed HDD crossings of perennial waterbodies listed in Table 1-1.

Table 1-1: Listing of HDD Crossings of Major Perennial Waterbodies

Milepost	State	County	Waterbody Name	Waterbody ID
25.28	Montana	Philips	Frenchman River	S106PH013
83.45	Montana	Valley	Milk River	S14VA008
89.68	Montana	Valley and McCone	Missouri River ^a	S7AMC001
198.21	Montana	Dawson	Yellowstone River ^a	S23DA001
295.09	South Dakota	Harding	Little Missouri River	S312HA001
430.17	South Dakota	Meade	Cheyenne River	exp-WB-13552
433.82	South Dakota	Haakon	Bridger Creek	S8AHK003
486.24	South Dakota	Haakon	Bad River	S8AHK008
541.59	South Dakota	Tripp	White River	S7ALY001
617.10	Nebraska	Keya Paha	Keya Paha River	S0819618KP001
626.70	Nebraska	Holt	Niobrara River	exp-WB-0235
717.23	Nebraska	Antelope	Elkhorn River	S0427703AT001
782.07	Nebraska	Colfax and Butler	Platte River	S0913702BT002
808.75	Nebraska	Seward	Big Blue River	S0509702SE001
Notes:				
a: Navigable water under Section 10 of the Rivers and Harbors Act				

1.4 Construction Schedule

Keystone initiated construction of the Project in April 2020 at the U.S./Canada border crossing with the installation of approximately 1.4 miles of pipe to the first U.S. mainline valve. Construction of the border crossing was completed in May 2020. The construction of this portion of the Project did not impact any waters of the U.S. Keystone will commence construction of the remaining Project facilities upon receipt of all necessary authorizations and permits. Keystone anticipates that the Project will be placed into service approximately 2-3 years after receiving such authorizations. As currently planned, the Project will be constructed using 12 spreads of approximately 43 to 94 miles long. Final spread configurations and the final construction schedule may result in the use of more or fewer spreads than those indicated.

1.5 Adjoining Property Owners

The Project traverses the property of numerous property owners. A complete list of property owners adjoining the Project footprint at waters of the U.S. crossings is provided in Appendix E.

1.6 Additional Federal, State, and Local Certificates and Approvals

In addition to this Federal Dredge and Fill Permit Application for Section 10/404 authorization from the USACE, Keystone has obtained or is still seeking a number of additional federal, state, and local authorizations, certifications, and approvals for the Project. A complete list of permits and authorizations for the Project are included in Appendix F.

2.0 Alternative Analysis

In compliance with NEPA, the DOS performed a robust alternative analysis pursuant to 40 CFR 1502.14. The analysis included the evaluation of three categories of alternatives, including the No Action Alternative, major pipeline route alternatives, and other alternatives considered but eliminated from detailed analysis. Alternatives were eliminated on the basis of the relative potential environmental, logistical, economic, safety, and engineering costs and benefits of each aspect. Due to complexity of the regulatory environment during the permitting of this Project, the DOS completed three NEPA documents, with each document evaluating new route alternatives as part of the process of identifying and evaluating the Proposed Action. A major contributing factor in evaluation and selection of the proposed route within each state, was each state's siting process and authorization. The following is brief summary of the alternative analysis conducted by the DOS. For a detailed description of the alternatives considered in the development of the current Project route refer to Section 3.14 of the 2011 Keystone XL Final EIS, Section 2.2 of 2014 Keystone Final SEIS, and Chapter 2.0 of the 2019 Keystone XL Supplemental FEIS.

The 2011 Keystone XL Final EIS evaluated the original Preferred Route and its alternatives. For this document, the proposed project included two segments, the Steele City Segment, and the Gulf Coast Segment, for a project route that extended from the Canada/U.S. border near Morgan, Montana to Nederland, Texas. The original project that was evaluated by the 2011 Keystone XL Final EIS was modified by Keystone by creating two separate projects, the Steele City segment became the basis of scope the of the current Project and Gulf Coast segment was constructed during 2012 and 2013 by TransCanada as the Gulf Coast Pipeline Project. The alternatives analysis for the Steele City segment is the basis for the current route through Montana and South Dakota. An extensive analysis of alternative modes of transporting the oil was also conducted in the 2011 Keystone XL Final EIS, including rail and truck transportation, as well as other existing pipeline systems.

The Preferred Route evaluated in the 2014 Keystone XL Final SEIS included a route in Montana and South Dakota that was largely unchanged from the route analyzed in the 2011 Keystone XL Final EIS. In Nebraska, route alternatives were evaluated and incorporated into the Preferred Route that avoided the Sand Hills Region, as identified by the Nebraska Department of Environmental Quality (NDEQ). Additionally, the Keystone XL route terminated at Steele City, Nebraska.

After the statute authorizing NDEQ review of the route was challenged in court, Keystone sought approval of a pipeline route in Nebraska through the Nebraska Public Service Commission (NE PSC). The 2019 Keystone XL Supplemental FEIS documents the analysis conducted to evaluate three routes through Nebraska, which concluded with the NE PSC selecting the MAR. The MAR is approximately 162 miles long and traverses Antelope, Madison, Stanton, Platte, Colfax, Butler, Seward, Saline and Jefferson counties. In developing the range of reasonable alternatives for the 2019 Keystone Supplemental FEIS, the DOS considered the NE PSC's review and approval of the MAR. The following criteria were used in its development:

- Site new pipeline and supporting facilities to minimize impacts to environmentally sensitive areas (e.g., surface waters, wetlands, protected species and their habitat, and heritage resources);
- Site new pipeline to maximize the use of existing ROW, access roadways and pipeline infrastructure to the greatest extent possible to minimize impacts to landowners and land uses;
- Minimize the route length and the construction of permanent aboveground facilities;
- Avoid wellhead protection areas; and

- Cross the Niobrara River at a location not designated as scenic or recreational under the National Wild and Scenic River Act of 1968.

In conjunction with each EIS, an ESA review and Section 106 of the National Historic Preservation Act (NHPA) review were conducted. The ESA review resulted in completion of a Biological Assessment (BA) in November 2019 and issuance of the BO by the USFWS in December 2019. In 2013, a Programmatic Agreement (PA) was adopted to ensure the Project's and the permitting agencies' compliance with Section 106 of the NHPA during and after the NEPA analysis was completed. A copy of the BO and PA are found in Appendix K and L, respectively.

3.0 Wetland Resources

The Project traverses several wetland types in Montana, South Dakota, and Nebraska, including herbaceous wetland meadows, depressions (potholes), marshes, scrub-shrub wetlands, forested wetlands, and riparian wetlands associated with rivers and streams. Wetland systems within the Project area are defined in Table 4-1 and are classified as palustrine based on vegetation and/or surface water cover. These types of wetlands are characterized by a dominance of trees, shrubs, persistent emergent herbaceous vegetation, or open water. Palustrine wetland types occur in various locations in the landscape, including along streams or rivers, adjacent to open water ponds or lakes, on slopes, or within depressions. Subsystems of the jurisdictional palustrine wetland types within the Project area include palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Datasheets for all the jurisdictional wetlands located within the Project footprint are in Appendix G. For all wetland delineation datasheets dated before 2017, a review was conducted by WESTECH Environmental to confirm that the field conditions described for the original delineated wetlands still reflected the current conditions of the wetlands to ensure compliance with USACE Regulatory Guidance Letter No. 05-02. WESTECH Environmental compared historical aerial photographs from the year of the original delineation to Project-specific high-resolution aerial imagery from 2018, as well existing wetland delineation data for the Project, and field notes from other surveys proximal to the delineated features. The results of the analysis concluded that the conditions of the wetlands documented in the original field delineation surveys are representative of the current field conditions. Appendix N contains a table of the wetlands that were evaluated and the finding of the analysis.

Table 3-1: Wetland Types in the Project Area

Wetland Type	Wetland Code	Description
Palustrine emergent wetland	PEM	Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except those irregularly exposed. In areas with relatively stable climatic conditions, emergent wetlands maintain the same appearance year after year. In other areas, such as the prairies of the central U.S., climatic fluctuations cause them to revert to an open water phase in some years. Emergent wetlands are known by many names, including marsh, wet meadow, fen, prairie pothole, and slough.
Palustrine scrub-shrub wetland	PSS	Scrub-shrub wetlands include areas dominated by woody vegetation less than 6 meters tall. Vegetation forms found in this wetland type include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. Scrub-shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable communities. Scrub-shrub wetlands are often associated with riparian areas within the Project area, but occur in non-riparian areas as well.
Palustrine forested wetland	PFO	Forested wetlands are characterized by woody vegetation that is 6 meters tall or taller. Forested wetlands are most common in the eastern U.S. and in those sections of the West where moisture is relatively abundant, particularly along rivers and in the mountains. Forested wetlands normally possess an overstory of trees, an understory

Table 3-1: Wetland Types in the Project Area

Wetland Type	Wetland Code	Description
		of young trees or shrubs, and an herbaceous layer. Forested wetlands are most often associated with riparian areas within the Project area.

3.1 Wetland Impacts

Construction of the pipeline will result in temporary impacts to wetlands from vegetation clearing, grading, excavation, and filling. Construction-related impacts will occur within the 110-foot construction ROW as a result of proposed pipeline installation activities. The 110-foot construction corridor width will be reduced to 85 feet for wetlands in Montana and Nebraska, and 75 feet for wetlands in South Dakota, unless conditions require a wider construction corridor.

Within wetlands, Keystone will maintain a 50-foot wide permanent ROW, except for in PFO wetlands where only a 30 foot wide corridor will be maintained within the 50-foot wide permanent easement.

Pipeline construction will cross wetlands with one of the following crossing methods:

- Standard Wetland Crossing Method (DTL 9);
- Push/Pull Wetland Crossing Method (DTL 10);
- Typical HDD Crossing Method (DTL 15); or
- Typical Uncased Bore Crossing Method (DTL 21).

A description of the construction methodology and a typical construction drawing for of each of these crossing methods can found in Section 6 of the Project’s CMRP (Appendix B). The use of the HDD crossing method will result in the avoidance of impacts to some wetlands.

The construction of the Project will result in a total of 32.70 acres of temporary impacts to PEM wetlands and 0.12 acres of PFO wetlands across the approximately 882 miles of pipeline and approximately 17,668 acres of disturbance in Montana, South Dakota, and Nebraska. The construction of the Project will result in the permanent loss of 0.13 acres of PEM wetlands (less than 1% of the PEM wetland impacts) for installation of three access roads (CAR-128, CAR-163, and VAR-46G) and the permanent functional conversion of 0.09 acres of PFO wetlands from PFO to PEM wetlands. Table 4-2 provides a summary of the wetland impacts by state as result of the construction of the Project. See Appendix H for a complete list of all wetland crossings by the Project and the proposed crossing method and subsequent impact total for each wetland. Mapbooks for each state that contain figures providing the location of wetlands crossed by the Project are provided in Appendix I.

The construction of pump stations, valves, contractor yards, pipe storage yards, railroad sidings, and contractor camps will not result in any temporary or permanent impacts to wetlands. Two jurisdictional PEM wetlands have been delineated within the boundary of Contractor Yard 09 Site 4B in South Dakota. The two wetlands are exp-WL-0219 (0.03 acres) and exp-WL-018 (0.36 acres), both features were identified via desktop analysis. Keystone will configure the use of this contractor yard to avoid any impact to these wetlands through either fencing or reconfiguring the boundary of the site to avoid the wetland features.

Table 3-2: Wetland Impacts as Result of the Construction of the Project

Project Component	PEM Wetlands		PFO Wetlands	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
Montana				
Pipeline ROW	1.65	0.00	0.00	0.00
Temporary Access Road	0.03	0.00	0.00	0.00
Permanent Access Road	0.06	0.06	0.00	0.00
Total for Montana	1.74	0.06	0.00	0.00

Table 3-2: Wetland Impacts as Result of the Construction of the Project

Project Component	PEM Wetlands		PFO Wetlands	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
South Dakota				
Pipeline ROW	2.95	0.00	0.00	0.00
Temporary Access Road	1.13	0.00	0.00	0.00
Permanent Access Road	0.06	0.06	0.00	0.00
Total for South Dakota	4.14	0.06	0.00	0.00
Nebraska				
Pipeline ROW	26.64	0.00	0.21	0.00
Temporary Access Road	0.18	0.00	0.00	0.00
Permanent Access Road	0.00	0.01	0.00	0.00
Total for Nebraska	26.82	0.01	0.21	0.00
Project Total	32.70	0.13	0.21¹	0.00
Notes: ¹ The temporary disturbance of the 0.21 acres of PFO wetlands will result in the permanent conversion of 0.09 acres of PFO wetlands from PFO to PEM Key: PEM – palustrine emergent PFO – palustrine forested				

Of the 0.21 acres of PFO wetlands that will be disturbed during construction, 0.12 acres of the PFO wetlands will be allowed to restore to pre-construction condition. The construction of the Project will result in the permanent cover class conversion of the remaining 0.09 acres of PFO wetlands from PFO to PEM due to maintaining a 30-foot corridor centered on the pipeline centerline in herbaceous cover for inspection and aerial patrol during operations.

Keystone will restore the 0.12 acres of PFO wetlands to pre-construction conditions through the planting of tree and shrub species based on the dominant woody species observed in the PFO wetlands during wetland delineation field surveys. Keystone anticipates the planting of 1 to 3-inch saplings on 10 to 15-foot centers within the restored workspace. The below table identifies the tree and shrub species that were observed in each of these PFO wetlands during the field surveys.

Table 3-3: Dominant Tree and Shrub Species in PFO Wetlands in Nebraska

Wetland Name	Milepost	Dominant Woody Species Observed within the Wetland
W306HT003	679.91	<i>Salix amygdaloides</i>
W0502702MA002	744.34	<i>Fraxinus pennsylvanica</i> <i>Salix amygdaloides</i>
W0502703PL004	759.36	<i>Salix amygdaloides</i>
W0511702SA002	835.93	<i>Acer saccharinum</i> <i>Ulmus americana</i>

4.0 Surface Waters

The Project will cross various surface water types in Montana, South Dakota, and Nebraska. Surface waters crossed by the Project include streams, rivers, ponds, and man-made features. Streams and rivers were

classified by flow rate, ephemeral, intermittent, or perennial. The Project's crossings of the Missouri River (milepost 88.7) and the Yellowstone River (milepost 197.9) in Montana are regulated under Section 10 of the Rivers and Harbors Act. Figure 4-1 through 4-3 depicts the 8-digit hydrologic units crossed by the Project centerline for Montana, South Dakota, and Nebraska.

4.1 Surface Water Impacts

There are 526 crossings of waters of the U.S. by the workspace of the pipeline ROW and access roads, of which 104 are perennial streams, 185 are intermittent streams, 220 are ephemeral streams, and 17 are man-made waterbodies (i.e., canals or ponds). Table 5-1 provides a summary of the waterbodies crossed by state. The construction of three access roads (CAR-004A, CAR-128, and CAR-163) will result in 0.18 acres of permanent impacts to waterbodies comprised by 0.02 acres of ephemeral waterbodies, 0.14 acres of intermittent waterbodies, and 0.01 acres of perennial waterbodies. All other Project impacts to waterbodies will be temporary in nature. See Appendix J for a complete list of all waterbody crossings by the Project and the proposed crossing method and subsequent impact total for each waterbody. Mapbooks for each state that contain figures providing the location of waterbodies crossed by the Project are in Appendix I.

Table 4-1: Waterbodies Crossings by ROW and Access Road Workspace

Project Component	Waterbody Type			
	Ephemeral Stream	Intermittent Stream	Perennial Stream	Man-made Waterbody
Montana				
Pipeline ROW ^{1,2}	119	47	17	0
Temporary Access Road ²	2	5	2	6
Permanent Access Road ²	3	0	2	0
Total Number of Crossings for Montana	124	52	21	6
South Dakota				
Pipeline ROW	71	64	22	0
Temporary Access Road	3	5	6	7
Permanent Access Road	0	1	0	0
Total Number of Crossings for South Dakota	74	70	28	7
Nebraska				
Pipeline ROW	19	62	55	4
Temporary Access Road	3	1	0	0
Permanent Access Road	0	0	0	0
Total Number of Crossings for Nebraska	22	63	55	4
Project Total	220	185	104	17
Notes:				
¹ The number of crossings of the waterbody includes the crossing of waterbodies by HDD. The use of HDD/Bore crossing method will not result in impacts to the waterbody				
² A waterbody crossing was recorded each time the ROW or access road workspace crossed the waterbody				

Construction of the pipeline will result in temporary impacts to waterbodies from vegetation clearing, grading, excavation, and filling. To install pipelines under waterbodies, Keystone will adopt the standard open-cut (wet or dry) crossing method or use the HDD crossing method. The following are the waterbody crossing methods that will be used:

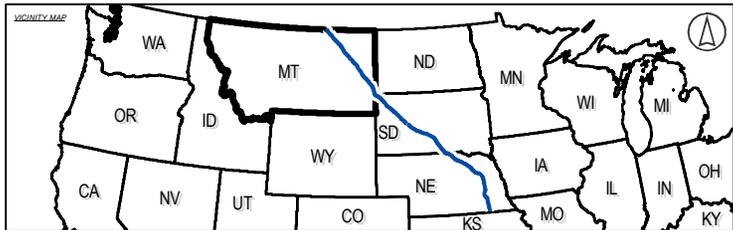
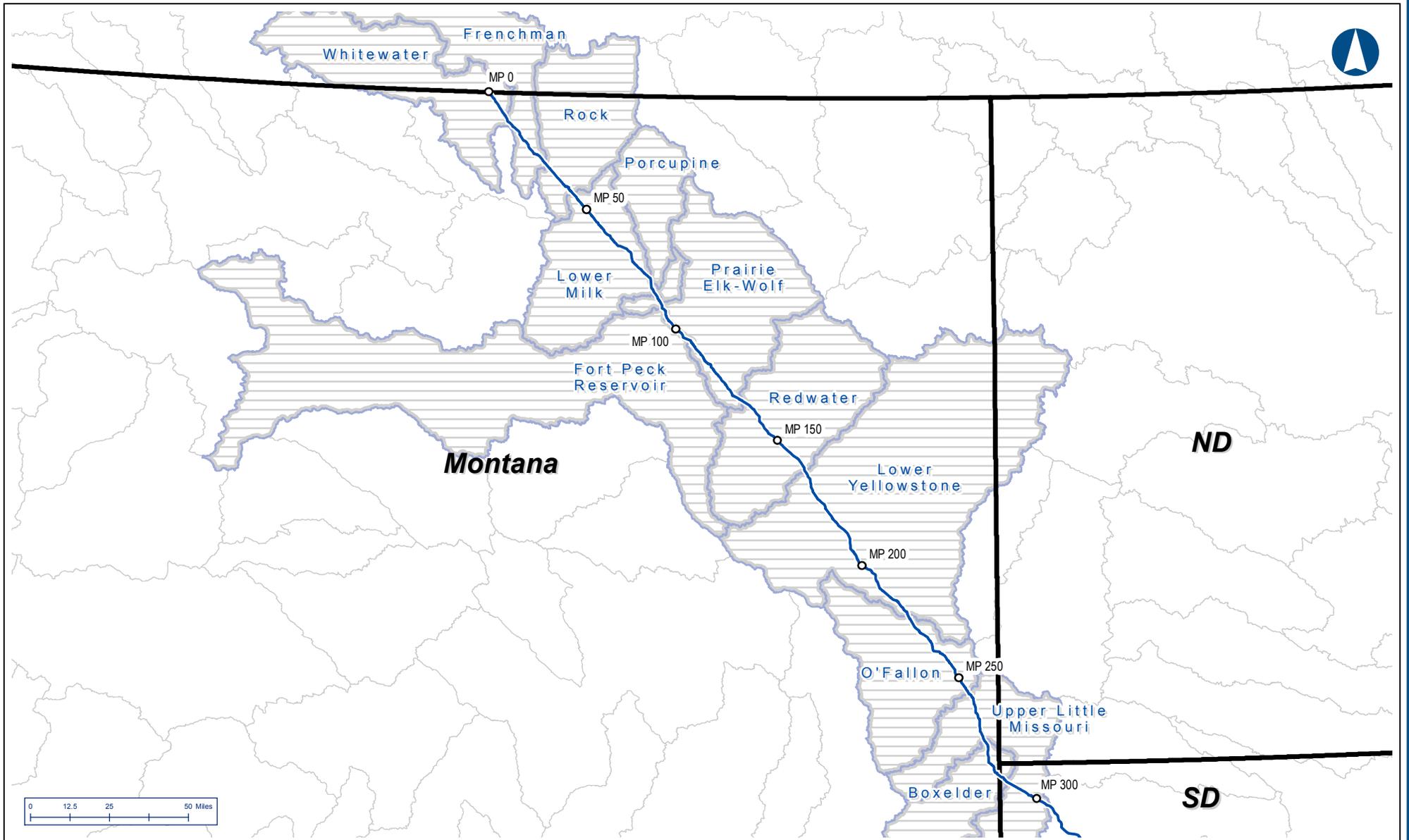
- Typical open cut in non-flowing waterbody (DTL 11);
- Typical open cut in flowing waterbody (DTL 12);
- Typical Dry Flume Crossing Method (DTL 13);
- Typical Dam and Pump Crossing Method (DTL 14);
- Typical HDD (DTL 15) or Bore Crossing Methods (DTL 158 or DTL 21); or
- Conveyance Crossing Method (DTL 161).

Use of trenchless crossing methods including HDD or boring will not involve any permanent or temporary dredge or fill impacts to waters of the U.S. The conventional pipeline crossing technique for each location will be determined based on the presence of water at the time of construction. During open-cut crossing installation, material excavated from the trench line at waterbody crossings less than 30 feet wide will be stored on the banks of the waterbodies. For waterbodies greater than 30 feet in width (width is based on ordinary high water mark), excavated trench materials may be temporarily side cast in-stream while the trench is being excavated and the pipeline carried into place and installed in the trench. Immediately following installation of the pipeline at waterbody crossings, the trench will be backfilled, and original waterbody contours will be restored to pre-construction condition.

The open cut, dry crossing methods involve two different approaches dependent upon waterbody specifications and volume of flow at the time of crossing. The dam and flume dry crossing method involve diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody. The dam and pump dry method is like the dam and flume dry method except that pumps and hoses would be used instead of flume pipes to move water around the construction work area. Once backfilling is completed, the waterbody banks are restored and stabilized as detailed in Appendix B and the dam materials and flume pipes or pump hoses are removed. No permanent fill within waters of the U.S. will be required for the installation of the pipeline.

The construction of temporary and permanent access roads will result in some temporary impacts to waterbodies, see Appendix I for impact totals for each access road. The construction of three permanent access roads (CAR-004A, CAR-128, and CAR-163) will result in 0.18 acres of permanent impact to waterbodies.

The construction of pump stations, valves, contractor yards, pipe storage yards, railroad sidings, and contractor camps will not result in any temporary or permanent impacts to waters of the U.S. Two jurisdictional open water features (exp-WB-0477 and exp-WB-0478) have been delineated with the boundary of Contractor Yard 09 Site 4B in South Dakota and one ephemeral stream (S0821620SE001) was delineated with the boundary of Mud Disposal Site MDS-191 in Nebraska. Keystone will configure the use of this contractor yard and the mud disposal site to avoid any impacts to these waterbodies through either fencing or reconfiguring the boundaries of the site to avoid these waterbodies. Therefore, the construction of the Contractor Yard 09 Site 4B and Mud Disposal Site MDS-191 will not result in any impacts to waters of the U.S.



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▭ Project Impact - Subbasin

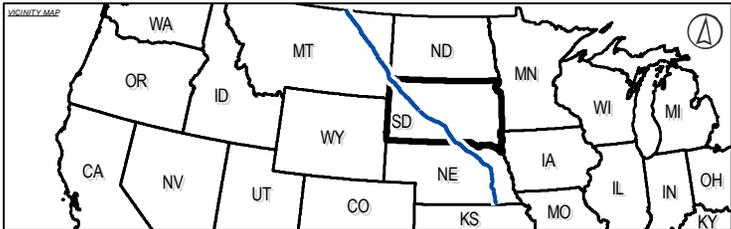
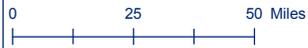
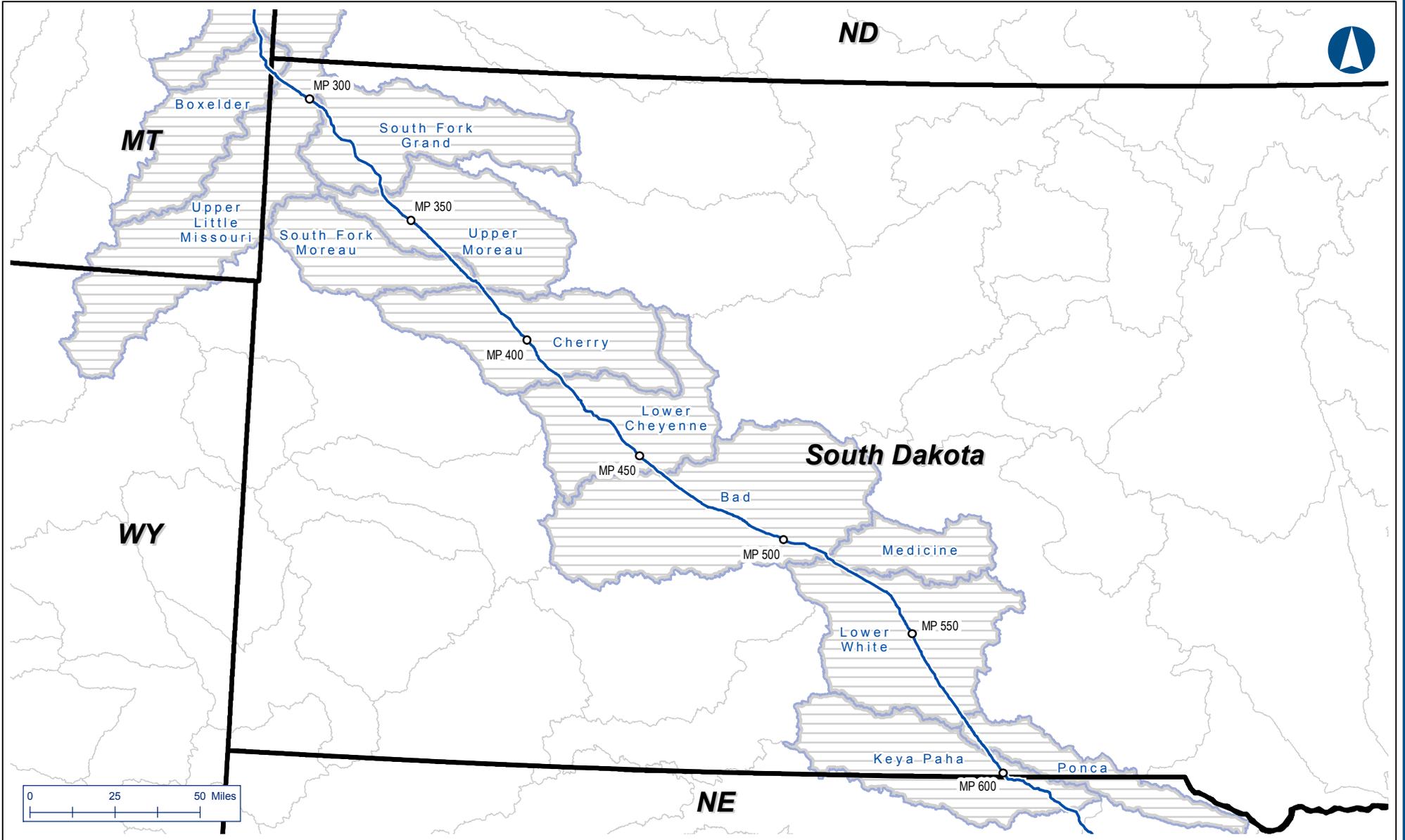
Data source: <http://nhd.usgs.gov>

KEYSTONE XL PROJECT		
- Figure 4-1 -		
MT 8-Digit Hydrologic Unit Boundary Map		
COUNTY: N/A	DRAWN BY: JC	
STATE: MONTANA	CHECKED BY: CW	
REV. NO.: 0	REVISION	DATE
	ISSUED FOR REVIEW	2020-05-15
DATE: 2020-05-15	PROJECTION: NAD83 UTM13N	

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DWG: 0801-06-018 SHEET: FIGURE 4-1



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▨ Project Impact - Subbasin

Data source: <http://nhd.usgs.gov>

KEYSTONE XL PROJECT
- Figure 4-2 -
SD 8-Digit Hydrologic Unit Boundary Map

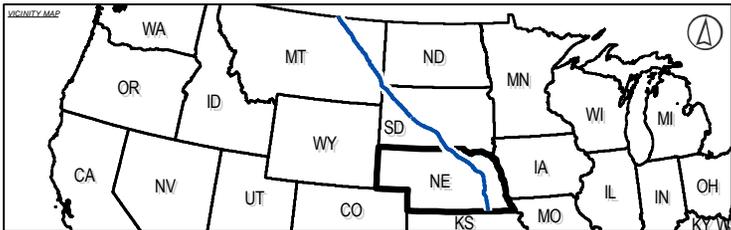
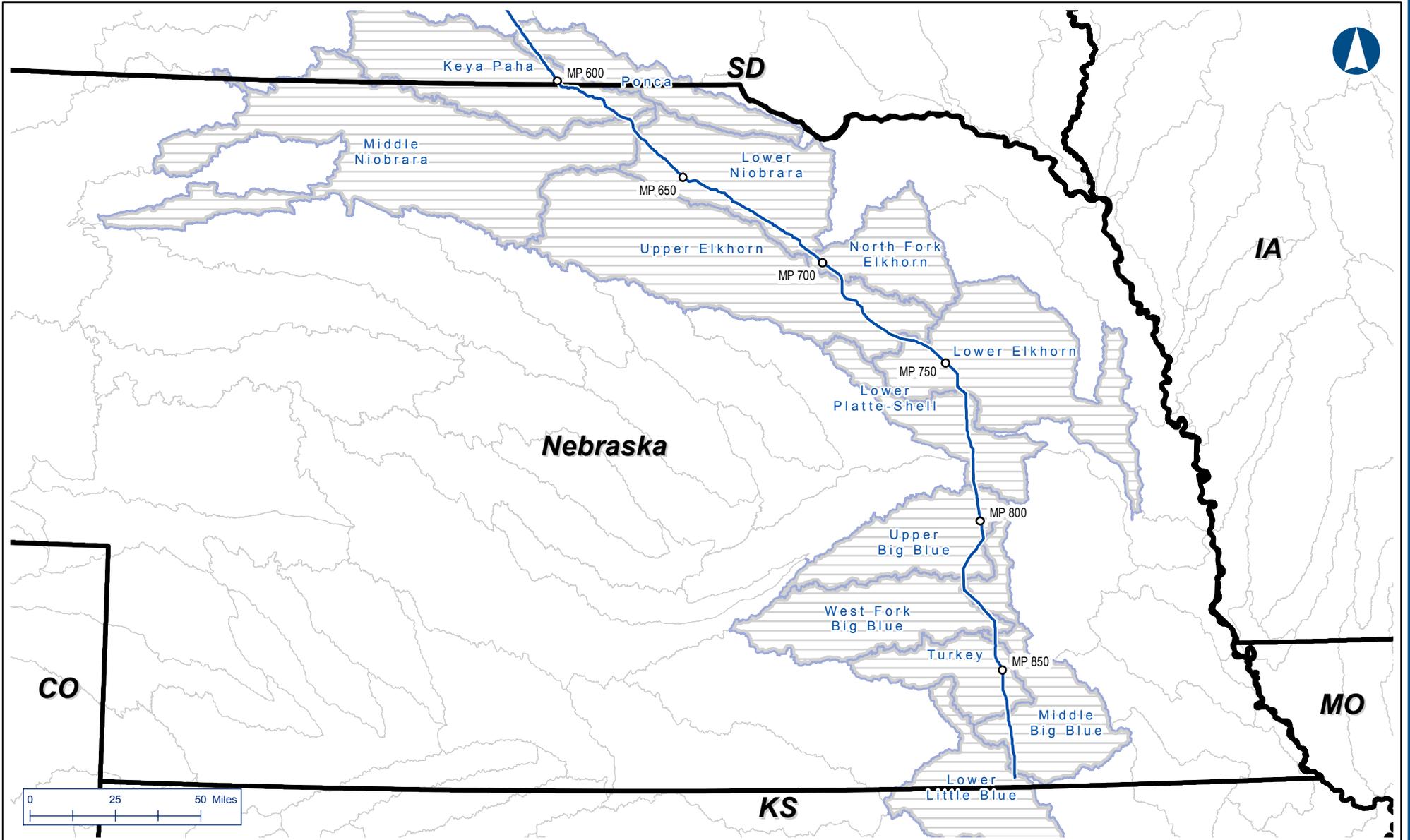
COUNTY:	N/A	DRAWN BY:	JC
STATE:	SOUTH DAKOTA	CHECKED BY:	CW
REV. NO.:	0	REVISION	ISSUED FOR REVIEW
		DATE	2020-05-15

DATE: 2020-05-15 PROJECTION: NAD83 UTM14N

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DWG: 0801-06-018 SHEET: FIGURE 4-2



Legend

- Keystone XL Milepost
- Keystone XL Centerline (2020-02-21)
- ▭ State Boundary
- ▨ Project Impact - Subbasin

Data source: <http://nhd.usgs.gov>

KEystone XL PROJECT
- Figure 4-3 -
NE 8-Digit Hydrologic Unit Boundary Map

COUNTY:	N/A	DRAWN BY:	JC
STATE:	NEBRASKA	CHECKED BY:	CW
REV. NO.:	0	REVISION	DATE
0	ISSUED FOR REVIEW		2020-05-15

DATE: 2020-05-15 PROJECTION: NAD83 UTM14N

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DWG: 0801-06-018 SHEET: FIGURE 4.3

5.0 Federally Listed Species

The information provided below applies to the entire Project including all three states and is not specific to individual states. Some federally listed species may not be applicable to certain states. This section provides the summary of the consultation letter and BO issued by USFWS on December 23, 2019, that applies to the entire Project area in Montana, South Dakota, and Nebraska.

Within the jurisdiction of the USACE Omaha District, Keystone and the federal agencies considered the Project effects on ten different species afforded protection pursuant to the ESA. The November 26, 2019, amended BA prepared by the Bureau of Land Management (BLM) and DOS in coordination with other federal agencies, including the USACE, determined the Project effects on these species. In a consultation letter dated December 23, 2019, the USFWS concurred with the federal agencies determination of “*may effect, not likely to adversely affect*” for eight species including the endangered black-footed ferret (*Mustela nigripes*), interior least tern (*Sterna antillarum*), whooping crane (*Grus americana*), pallid sturgeon (*Scaphyrhynchus albus*), and Topeka shiner (*Notropis topeka*); and the threatened piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), and western prairie fringed orchid (*Platanthera praeclara*). Additionally, the federal agencies determined that the Project may affect the threatened northern long-eared bat (*Myotis septentrionalis*) but relied on the USFWS’ Programmatic BO in Final 4(d) Rule for the northern long-eared bat and Activities Exempted from Take Prohibitions to fulfill the Section 7 consultation requirement. Additionally, the federal agencies made a determination of “*may effect, likely to adversely affect*” for Project effects on the federally endangered American burying beetle (ABB) (*Nicrophorus americanus*). A description of the assessment of the Project effects on the ABB is presented in the BA and in the USFWS’ December 23, 2019, Biological Opinion on the Effects of the Proposed Keystone XL Pipeline to the Federally Endangered American Burying Beetle. The BO discusses the possible Project effects to ABB within the USACE’s federal area of control and responsibility.

The ESA consultation requirements have already been completed between the BLM (in coordination with the USACE) and the USFWS for the Project, including all areas within waters of the U.S and the USACE’s area of control and responsibility in the USFWS’s December 23, 2019, Keystone XL consultation letter and BO. See Appendix K for a copy of the consultation letter and BO. Additionally, Keystone has requested an Incidental Take Permit from the USFWS for the ABB on private lands outside of the USACE’s scope of analysis.

6.0 Cultural Resources

A PA was developed by the DOS, the Advisory Council on Historic Preservation, the State Historic Preservation Officers (SHPOs), and other cooperating parties, including USACE, to ensure Project and agency compliance with Section 106 of the NHPA during and after the NEPA analysis was completed. See Appendix L of this Federal Dredge and Fill Permit Application for a copy of the PA.

Keystone has made significant attempts to avoid impacts to historic properties. In instances where historic properties were identified along the route, Keystone explored multiple options for avoiding or minimizing impacts through detailed planning and mapping efforts. Route and Project footprint modifications have avoided many of these sites. If impacts to a historic property cannot be avoided, in accordance with the PA, the DOS, along with cooperating agencies (including the USACE) and consulting Indian tribes, will coordinate with Keystone to develop a treatment plan.

The following is a discussion of the status and finding of cultural resources for each state crossed by the Project. For all portions of the Project footprint that have not been surveyed, the PA establishes an agreed-

upon process for addressing unsurvey areas which is also outlined in the required coordination plans prepared for each state.

6.1 Montana

Within the jurisdiction of the USACE Omaha District in Montana, cultural resource surveys have been performed along 285.58 miles of the current Project ROW, 77.34 miles of access roads, and 899.48 acres of auxiliary facility sites (e.g., pump stations). Less than one percent of the Project area within Montana still requires cultural resource investigation.

Four historic properties within the current Project footprint in Montana are man-made jurisdictional waterbodies (Table 6-1). These include one historic reservoir and three segments of historic irrigation canals.

The Project will use Frenchman Reservoir, an eligible historic resource (24PH3613), as a water source for the Project. The Project will withdraw water from a point of diversion at the south end of the reservoir on the east end of the dam. At this location, a suction hose will be used to extract water from the diversion point and the water will be piped through two temporary waterlines. No ground disturbance will occur within the site boundary; therefore, the Project will have no adverse effect.

The two segments of the Vandalia South Canal (24VL1194) are part of the larger Milk River Project irrigation system and are eligible for listing on the National Register of Historic Places. A treatment plan was prepared and approved by the DOS and the Montana SHPO (Witt et al. 2012). Both segments of the canal will be bored to avoid all Project impacts and will follow the directives outlined in the 2013 Bureau of Reclamation (BOR) required crossing criteria for reclamation facilities that has been approved for the Project (BOR 2013). The ROW will be fenced to protect the resource and construction will be monitored by an archaeologist. The Project will have no adverse effect on the canal segments.

The segment of 24DW0289 identified as a jurisdictional waterbody is a lateral portion of the main Buffalo Rapids canal system. Although the main canal system is an eligible historic resource, the lateral is a non-contributing portion, therefore the Project will have no adverse effect on this resource.

Table 6-1: Site Locations Associated with Jurisdictional Waterbodies in Montana

Milepost	Site Type	Site Number	Eligibility Determination	Project Effect	Management Recommendation	Report Reference
24.81	Historic Reservoir and Dam– Frenchman Reservoir	24PH3613	Eligible	No Adverse Effect	No Further Work	Ethnoscience 2020
84.99	Canal	24VL1194	Eligible	No Adverse Effect	Fence and Monitor	Berg et al. 2008 and Witt et al. 2012
85.53	Canal	24VL1194	Eligible	No Adverse Effect	Fence and Monitor	Berg et al. 2008 and Witt et al. 2012
197.34	Canal (Lateral 4.7)	24DW0289	Eligible, Non-Contributing	No Adverse Effect	No Further Work	Crossland et al. 2010

6.2 South Dakota

Within the jurisdiction of the USACE Omaha District in South Dakota, cultural resource surveys have been performed along 315.59 miles of the current Project ROW, 70.20 miles of access roads, and 1,151.69 acres of auxiliary facility sites (e.g., pump stations). No historic or cultural properties were identified within the current Project footprint associated with any waters of the U.S. within the state of South Dakota.

Less than one percent of the Project area within South Dakota still requires cultural resource investigation. While these areas have yet to be surveyed by Keystone, primarily due to lack of landowner permissions, cultural investigations based on previous surveys and a literature review have been completed.

6.3 Nebraska

Within the jurisdiction of the USACE Omaha District in Nebraska, cultural resource surveys have been performed along 244.58 miles of the current Project ROW, 13.63 miles of access roads, and 682.10 acres of auxiliary facility sites (e.g., pump stations). No historic or cultural properties were identified within the current Project footprint associated with any waters of the U.S. within the state of Nebraska.

Approximately 526 acres of land within Nebraska still require cultural resource investigation. While these areas have yet to be surveyed by Keystone, primarily due to lack of landowner permissions, cultural investigations based on previous surveys and a literature review have been completed.

7.0 Section 404(B)(1) Compliance

Keystone presents the following Section 404(B)(1) compliance evaluation due to expected impacts to water of the U.S.

7.1 Finding of Practicable Alternatives

The DOS conducted a robust alternatives analysis as part of the Project's NEPA review pursuant to 40 CFR 1502.14. Section 2.0 of this Federal Dredge and Fill Permit Application provides a summary of the alternative analysis and the complete analysis can be found in Section 3.14 of the 2011 Keystone XL Final EIS, Section 2.2 of 2014 Keystone Final SEIS, and Chapter 2.0 of the 2019 Keystone Supplemental FEIS. The results of alternatives analysis conducted concluded that there are no practicable alternatives to the proposed Project that would meet the site selection criteria necessary to meet the purpose and need of the Project.

7.2 Restrictions on Discharge

The Project will result in only 0.13 acres of permanent fill into PEM wetlands and 0.18 acres of permanent fill into waterbodies due to the construction of four permanent access roads to access valve sites and a pump station. The construction of the pipeline ROW, temporary roads, pump stations, temporary storage and contractor yards will not result in the permanent fill in waters of the U.S. Keystone will not discharge any temporary fill material that would:

- Cause or contribute, after consideration of disposal site dilution and dispersion, to violations of any applicable state water quality standards;
- Violate any applicable toxic effluent standard or prohibition under Section 307 of the CWA;
- Jeopardize the continued existence of species listed as endangered or threatened under the ESA, as amended, or results in the likelihood of the destruction or adverse modification of a habitat that is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the ESA, as amended; or
- Violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

Keystone will follow the Project's CMRP (Appendix B), Spill Prevention, Control, and Countermeasure (SPCC) Plan, and in the USFWS's December 23, 2019, Keystone XL consultation letter and BO (Appendix K) to prevent impacts to waters of the U.S. due to stormwater runoff or inadvertent releases. Keystone will also secure Section 401 Water Quality Certification and all other applicable state permits related to water withdrawal or water discharge permits, as applicable, prior to the start of construction within waters of U.S. See Appendix F for a list of environmental permits and authorizations required in each state and the status of the permit or authorization.

The construction and operation of the Project will not jeopardize the continued existence of any federal listed species under the ESA. The ESA consultation requirements for the Project have already been

completed between the BLM (in coordination with the USACE) and the USFWS for all areas within waters of the U.S and the USACE's area of control and responsibility in the USFWS's December 23, 2019, Keystone XL consultation letter and BO. See Appendix K for a copy of the consultation letter and BO.

The construction and operation of the Project will not impact any marine sanctuaries designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

7.3 Findings of Significant Degradation

Keystone will take steps necessary to ensure no effects contributing to significant degradation would occur, including:

- Significantly adverse effects of the discharge of pollutants on human health or welfare, including, but not limited to, effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites;
- Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes;
- Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability (Note: Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of a wetland to assimilate nutrients, purify water, or reduce wave energy.); or
- Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economical values.

During construction, Keystone will follow the Project's CMRP (Appendix B), SPCC Plan, the USFWS's December 23, 2019, Keystone XL consultation letter and BO (Appendix K) and will comply with applicable state discharge permits to minimize, to the extent practical, migration of sediment from work areas into waters of the U.S. and to prevent contaminants associated with construction materials from entering waters of the U.S.

7.4 Findings of Appropriate and Practicable Minimization

As detailed in Section 2, "Alternatives Analysis," Section 4.1, "Wetland Impacts," and Section 5.1, "Surface Waters Impacts," of this Federal Dredge and Fill Permit Application, Keystone has evaluated impacts to wetlands and waterbodies, as well as other environmental impacts, throughout the route selection process. Project design incorporated routing selection and construction techniques to avoid and minimize impacts to wetlands, to the maximum extent practical. Major and minor route alternatives along the proposed route were evaluated to minimize impacts to wetlands and other sensitive environmental resources. Where practical, Keystone has reduced workspace (e.g., reduced construction ROW width) within waters of the U.S. to further minimize impacts to wetlands and waterbodies. Keystone has also added HDD and typical bore crossing to eliminate all impacts to PSS wetlands and to greatly reduce impacts to PFO and PEM wetlands. Across the 882 miles of pipeline and facility construction including a total of approximately 17,668 acres of impact, only 0.13 acres of permanent loss of PEM wetlands and 0.18 acres of waterbodies will be required for the Project. Additional measures that Keystone will implement to minimize impacts to water of the U.S. can be found in Section 1.3 of this Federal Dredge and Fill Permit Application.

The construction and operation of the Project will not jeopardize the continued existence of species afforded protection pursuant to the ESA. Section 7 consultation under the ESA has been completed for the Project and USFWS published the BO for the Project on December 23, 2019. See Section 5.0 of this Federal Dredge and Fill Permit Application for description of the Project's potential impacts to federally listed species and Appendix K for a copy of the BO. Additionally, Keystone is seeking an Incidental Take Permit for the ABB on private lands outside of the USACE's federal control and responsibility pursuant to Section 10 of the ESA.

7.5 Factual Determination

7.5.1 Physical Substrate Determinations

The Project will traverse a wide variety of substrates. A detailed description and analysis of the soils within the Project footprint can be found in Sections 3.2 and 4.2 of the 2014 Keystone XL Final SEIS and Sections 3.3. and 4.3 of the 2019 Keystone XL Supplemental FEIS. Fill material in wetlands during installation of the pipeline will be native material and will generally be restricted to spoil removed from the pipeline trench and, if unsaturated, segregated topsoil. The presence/absence of saturated soils within a wetland feature will depend on the field conditions present during the time of construction. Based on field condition of the wetland as determined by the Environmental Inspector, any portion of the topsoil up to 12 inches that is stackable will be segregated. Topsoil segregation will not occur if the soil is flooded or inundated and the topsoil and subsoil will not stack. Therefore, Keystone will strip and store the topsoil down to the point of saturation, depending on topsoil depth and site-specific water table conditions. The maximum depth that topsoil will be segregated is 12 inches, even in a scenario where more than 12 inches is present. Environmental Inspectors will provide guidance to the construction contractor when and how much topsoil should be segregated within a wetland based on the conditions observed in the field. This determination process for topsoil segregation for wetland construction will be applied to all wetlands features identified in Appendix J that are assigned with a Detail 9 crossing method and will be documented in the Environmental Inspectors reporting documentation. Once installation is complete, the trench spoil will be placed back into the trench. Excess material will be deposited in nearby uplands. Contours will be restored to match pre-construction contours. The construction of the Project will result in 0.13 acres of permanent fill to PEM wetlands due to the construction of permanent access roads to access mainline valve sites and a pump station.

Keystone will follow the Project CMRP (Appendix B) and Construction/Reclamation Plan and Documentation (Appendix R of the 2014 Keystone XL Final SEIS) to minimize soil layer mixing and compaction within wetlands. Keystone does not anticipate a significant impact to the composition of the substrates within waters of the U.S. that are traversed by the Project.

7.5.2 Water Circulation, Fluctuation, and Salinity Determinations

The Project has the potential to impact water circulation and fluctuation of wetlands and waterbodies within the construction footprint. However, these impacts will be temporary in nature and limited to construction of the Project. Keystone will follow the Project's CMRP (Appendix B) during construction. The measures outlined in the CMRP are designed to minimize impacts to wetlands and waterbodies.

7.5.3 Suspended Particulate/Turbidity Determinations

Construction of the Project has the potential to temporarily increase the suspended particulates in wetlands and waterbodies traversed by the Project, as well as in adjacent wetlands and waterbodies; however, these impacts will be temporary in nature. Temporary increases in turbidity due to construction activities will be minimized, to the maximum extent practical, by following the Project's CMRP (Appendix B). Once construction is finished and restoration is complete, impacts due to suspended particulates/turbidity within wetlands and waterbodies traversed by the Project and wetlands and waterbodies adjacent to the Project will be insignificant.

7.5.4 Contaminant Determinations

The Project is not anticipated to cross or impact any potentially contaminated sites. In the event that substances that could potentially be considered waste and/or contaminated soils, as defined in applicable federal, state, and local regulations and guidelines are encountered during construction of the Project, Keystone will implement the measures in the Project's Unanticipated Contamination Discovery Plan (Appendix L) to prevent the spread of contamination.

7.5.5 Aquatic Ecosystem and Organism Determinations

Direct impacts to the aquatic ecosystems and organisms will occur during construction of the Project. Impacts resulting from construction within wetlands and waterbodies will be localized, and construction activities will be largely temporary. Construction of the Project will result in 0.13 acres of permanent fill to PEM wetlands due to the construction of two permanent access roads to mainline valve sites. Indirect impacts could result from erosion and sedimentation, as well as impacts due to increased activity associated with construction. These impacts will be temporary and of only a very short duration. To minimize these impacts, Keystone will follow the Project's CMRP (Appendix B) and SPCC Plan.

7.5.6 Proposed Disposal Site Determinations

No dredging activities that will require dredge material disposal are proposed for the construction of the Project; therefore, no proposed disposal sites have been identified.

7.5.7 Determination of Cumulative Effects on the Aquatic Ecosystem

A summary of the cumulative effects analysis for wetland resources and surface waters is presented in Section 8.0 of this Federal Dredge and Fill Permit Application. A more detailed analysis is presented in Section 4.15 of the 2014 Keystone XL Project Final SEIS and Section 7.0 of the 2019 Keystone XL Project Supplemental FEIS.

7.5.8 Determination of Secondary Effects on the Aquatic Ecosystem

Secondary effects will include impacts as a result of stormwater runoff, wind erosion, and impacts to wildlife due to increased activity from construction of the Project. During construction, Keystone will implement BMPs measures outlined in the Project's CMRP (Appendix B) and SPCC Plan to minimize impacts to adjacent aquatic resources as a result of stormwater runoff and wind erosion. Impacts to wildlife are addressed in the Sections 3.6 through 3.8 of the 2014 Keystone XL Project Final SEIS and Section 3.7 of the 2019 Keystone XL Supplemental FEIS as well as USFWS's December 23, 2019 consultation letter to the BLM (Appendix M) summarizing the conservation measures for listed species.

8.0 Cumulative Impacts

Cumulative impacts are the result of the incremental impacts of an action that, when added to the impacts of other past, present, and reasonably foreseeable future actions, would affect the same resources, regardless of what agency or person undertakes those actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7). Compliance with NEPA requires an analysis of these cumulative impacts (40 CFR 1508.25(a)(2) and 40 CFR 1508.25(c)(3)).

As a component of the NEPA review of the Project, the DOS evaluated cumulative impacts of a reasonably foreseeable action as one that has a realistic probability of occurring. The DOS focused the analysis on numerous existing, under construction, and planned major capital public and private projects, including oil and gas well fields, major product pipelines, water distribution lines, energy development projects (including wind farms), electric transmission lines project, mining projects, and transportation projects (including highways and rail lines). Key factors in controlling the extent and duration of cumulative effects are mitigation measures designed to reduce or offset effects and/or restore resources impacted by these projects to at or near pre-construction conditions. A more detailed analysis is presented in Section 4.15 of the 2014 Keystone XL Final SEIS and Section 7.0 of the 2019 Keystone XL Supplemental FEIS. The follow is a summary of the cumulative impacts for wetlands and waterbodies.

8.1 Wetland Resources

The construction of the Project will result in some temporary and very limited permanent impacts to wetlands as described in Section 3.1 of this Federal Dredge and Fill Permit Application. The potential for the

contribution of the Project's wetland resources impacts to cumulative impacts presume that the CMRP (Appendix B) is successful and near pre-construction conditions are restored and maintained within the anticipated timeframes.

In respect to wetland resources, the primary impact concern with respect to potential cumulative effects is the conversion of forested wetlands to emergent wetlands and the general degradation of wetland functions and values for all wetland types (e.g., wildlife habitat, water quality, erosion control, etc.). These impacts represent the primary area for cumulative impacts to occur with other past, present, and reasonably foreseeable future projects. As described above, the Project will mitigate for wetland losses per local, state, and federal requirements, as well as the CMRP (Appendix B). However, it is noted that there is a greater potential for cumulative impacts to forested wetlands, because forested wetlands are a limited resource in the Project area.

Historical activities and past projects are linked to wetland losses. Approximately 53 percent of the wetlands in the conterminous United States were lost between the 1780s and the 1980s (USACE 2012). Since the mid-1970s the rate of loss has decreased dramatically, primarily through the implementation and enforcement of wetland protection measures, public outreach/education, and restoration programs (EPA 2012). Currently, it is estimated that only 40 to 50 percent of the original Prairie Pothole wetlands remain undrained today, and only about 10 percent of the original Rainwater Basin wetlands remain. Farming and placement of drainage tiles have removed many of these features from today's landscape. In Montana (particularly in north-central and eastern Montana), South Dakota (notably in the prairie pothole region), and Nebraska, wetlands conversion to agricultural use (assumed to include livestock grazing) accounts for most historic wetland losses (U.S. Geological Survey 1996); other development activities and urbanization follow in significance.

Even with the proposed mitigation measures that will be used to avoid and minimize wetland impacts (see Sections 1.3 and 3.1 of this Federal Dredge and Fill Permit Application), the wetland impacts resulting from the construction of the Project have the potential to contribute to cumulative wetland impacts, particularly in southeastern Nebraska and east/southeastern Montana regions that are considered candidate areas for cumulative impacts associated with past projects, including this Project.

Current projects such as water delivery systems and highway maintenance and repair in Montana, South Dakota, and Nebraska would be required to avoid, minimize, and mitigate for wetland impacts according to local, state, and federal regulations. Enforcement of these regulations would likely limit the contribution of those projects to cumulative impacts.

Future projects that could potentially contribute to cumulative impacts to wetland resources such as electrical transmission lines, wind power projects, and oil and gas mining activities may also contribute to cumulative impacts where projects could overlap geographically with the Project in east/southeastern Montana and southeastern Nebraska. However, similar to those described above, future projects would be required to implement avoidance and mitigation measures designed to minimize potential impacts to wetland resources, which would likely limit the contribution of those projects to cumulative impacts.

Overall, with respect to the Project in combination with the past, present, and foreseeable future projects, long-term and permanent changes to wetland resources within the pipeline ROW have the potential to contribute to cumulative wetland impacts. Development projects would be required to comply with Section 404 of the CWA to avoid or mitigate impacts to wetlands. However, non-federally protected isolated wetlands may experience a cumulative loss if these resources are not avoided.

8.2 Surface Waters

The construction of the Project will result in temporary and very limited permanent impacts to surface waters as described in Section 4.1 of this Federal Dredge and Fill Permit Application. The potential for the contribution of the Project's surface water impacts to cumulative impacts presume that the CMRP (Appendix B) is successful and near pre-construction conditions are restored and maintained within the anticipated timeframes.

In summary, with respect to surface water resources, permanent impacts are not expected. In the short term, bank and channel impacts from construction that would not regain full stability or equilibrium in the construction period would be expected to do so in 1 to 3 years post-construction. The introduction and transportation of invasive aquatic and plant species is the primary long-term impact concern and there is the potential for cumulative impacts to occur with other past, present, and reasonably foreseeable future projects. Past projects would concurrently affect invasive species to the extent that there is a high density of activity in a geographic area having a similar impact. Southern and eastern Nebraska and the east/southeastern region of Montana are candidate areas for cumulative impacts associated with concurrent projects, including the Project. Although existing projects are not noted to have had long-term impacts to surface water with respect to invasive species, mitigation and restoration measures are available to address these concerns within the context of all of these project activities; thus the overall significance to cumulative impacts is low.

Other current projects such as water delivery systems and highway maintenance and repair are also not expected to result in long-term impacts with respect to invasive species. Therefore, current projects would not contribute to cumulative impacts to surface water resources.

Future projects such as electrical transmission lines, wind power projects, and oil and gas development and mining activities may also contribute to cumulative impacts where projects could overlap geographically with the Project in east/southeastern Montana and southeastern Nebraska. However, similar to those described above, mitigation and restoration measures are available to address these concerns.

Overall, with respect to the Project in combination with the past, present, and foreseeable future projects, permanent changes to surface water resources within the pipeline ROW are considered negligible assuming effective mitigation and restoration efforts with the Project and other projects throughout the Project route.