Attachment P

Clarifications and Responses to Supplemental Information Requests

Contents

Clarification for Section 3.7(3)

DEQ Request:

3) Construction crew size, skill and wage levels

Include estimate wage levels

Keystone Response:

Estimated daily wage levels are included in the table below:

Job Title	Min. Daily Wage	Max. Daily Wage
Construction Labor		
Supervision	$650	$1,200
Operators	$330	$440
Welder helpers and welders	$390	$750
Laborers	$300	$350
Construction Management		
Construction management supervision	$670	$880
Construction inspectors	$530	$~~970~~670
Surveyors	$600	$970
Field office administration	$470	$580

Clarification for Section 3.7(9)(c)

DEQ Request:

c) Poor or seasonally restricted areas
This item is not addressed in the Cross Reference Index. Where is it located?

Keystone Response:

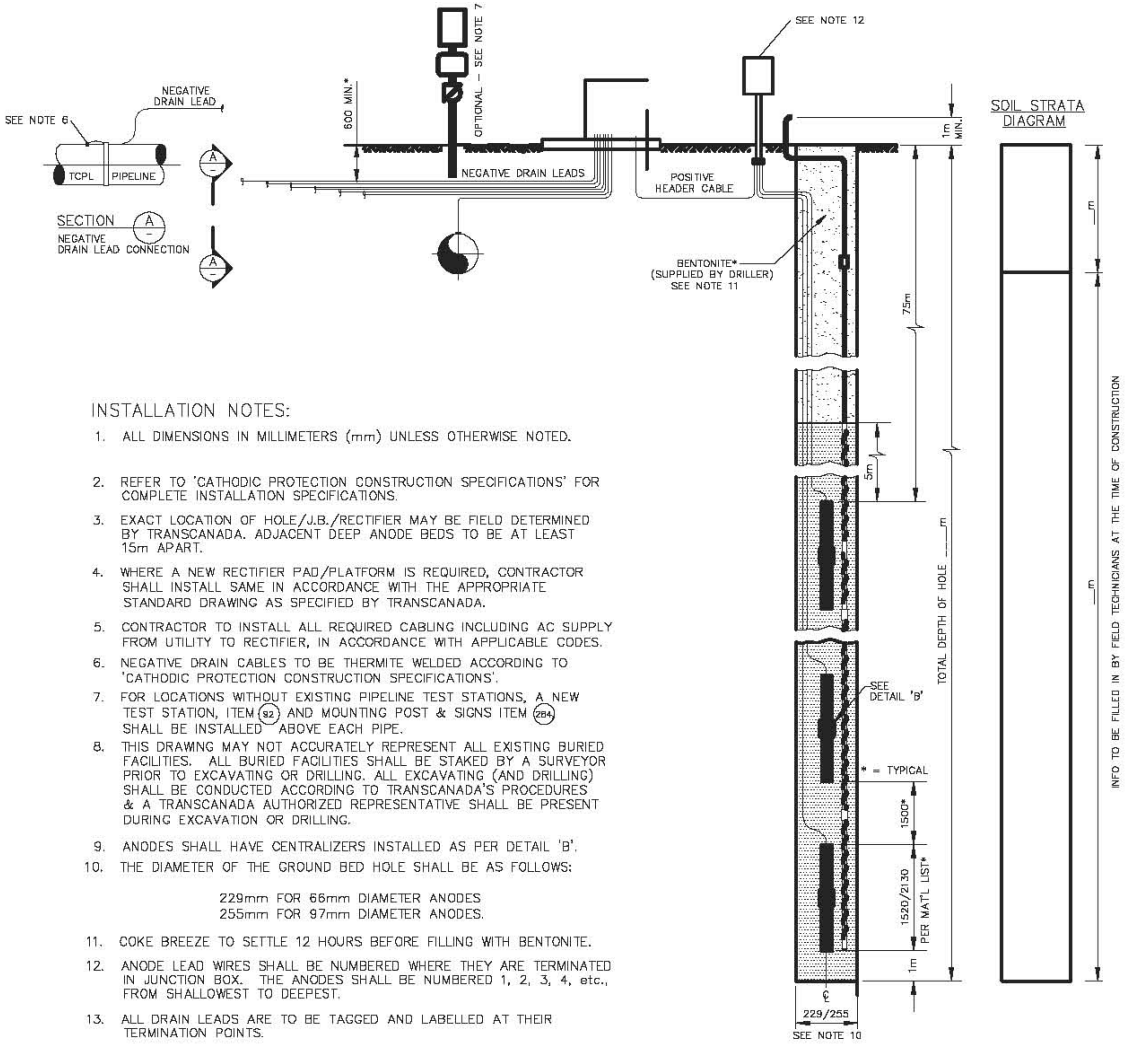
Although much of the route in Montana is remote and access can be poor particularly in winter, Keystone will be able to effectively respond in the event of a pipeline emergency. To prevent and quickly identify emergencies, the pipeline will be continuously monitored, regardless of weather conditions. As discussed in Section 1.3.2, 1.5.1.2, and 1.5.6. Keystone will monitor the pipeline from a remote operations center using its SCADA system. Information from sensors along the route will be relayed to the control center at 5 second intervals. Keystone will also conduct routine aerial surveys (discussed in Sections 1.3.2 and 1.5.6) 26 times per year, not to exceed a 3 week interval. Local Keystone contractors also will conduct routine visual inspections of the ROW from road crossings. To address poor access in the event of an emergency, as part of its emergency preparedness planning Keystone will pre-position emergency contractors and equipment, accounting for potential seasonal access constraints. In the event that there is an emergency along the ROW, remotely operated valves and pump stations will be shutdown from the operations center, thereby isolating the affected segment and limiting spill volume. Finally, emergency responders will access the spill site using whatever means necessary (e.g., trucks, ATVs, snowmobiles, helicopters). The ERP will identify potential access constraints and identify transportation equipment required to ensure a prompt response.

Response to SIR-1.5

DEQ Request:

SIR-1.5, page 1-14, Cathodic Protection. Please provide a diagram of rectifiers and anode ground beds

Keystone Response:



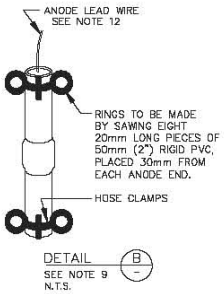
INSTALLATION NOTES:

1. ALL DIMENSIONS IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.
2. REFER TO 'CATHODIC PROTECTION CONSTRUCTION SPECIFICATIONS' FOR COMPLETE INSTALLATION SPECIFICATIONS.
3. EXACT LOCATION OF HOLE/J.B./RECTIFIER MAY BE FIELD DETERMINED BY TRANSCANADA. ADJACENT DEEP ANODE BEDS TO BE AT LEAST 15m APART.
4. WHERE A NEW RECTIFIER PAD/PLATFORM IS REQUIRED, CONTRACTOR SHALL INSTALL SAME IN ACCORDANCE WITH THE APPROPRIATE STANDARD DRAWING AS SPECIFIED BY TRANSCANADA.
5. CONTRACTOR TO INSTALL ALL REQUIRED CABLING INCLUDING AC SUPPLY FROM UTILITY TO RECTIFIER, IN ACCORDANCE WITH APPLICABLE CODES.
6. NEGATIVE DRAIN CABLES TO BE THERMITE WELDED ACCORDING TO 'CATHODIC PROTECTION CONSTRUCTION SPECIFICATIONS'.
7. FOR LOCATIONS WITHOUT EXISTING PIPELINE TEST STATIONS, A NEW TEST STATION, ITEM (92) AND MOUNTING POST & SIGNS ITEM (264) SHALL BE INSTALLED ABOVE EACH PIPE.
8. THIS DRAWING MAY NOT ACCURATELY REPRESENT ALL EXISTING BURIED FACILITIES. ALL BURIED FACILITIES SHALL BE STAKED BY A SURVEYOR PRIOR TO EXCAVATING OR DRILLING. ALL EXCAVATING (AND DRILLING) SHALL BE CONDUCTED ACCORDING TO TRANSCANADA'S PROCEDURES & A TRANSCANADA AUTHORIZED REPRESENTATIVE SHALL BE PRESENT DURING EXCAVATION OR DRILLING.
9. ANODES SHALL HAVE CENTRALIZERS INSTALLED AS PER DETAIL 'B'.
10. THE DIAMETER OF THE GROUND BED HOLE SHALL BE AS FOLLOWS:

    229mm FOR 66mm DIAMETER ANODES
    255mm FOR 97mm DIAMETER ANODES.

11. COKE BREEZE TO SETTLE 12 HOURS BEFORE FILLING WITH BENTONITE.
12. ANODE LEAD WIRES SHALL BE NUMBERED WHERE THEY ARE TERMINATED IN JUNCTION BOX. THE ANODES SHALL BE NUMBERED 1, 2, 3, 4, etc., FROM SHALLOWEST TO DEEPEST.
13. ALL DRAIN LEADS ARE TO BE TAGGED AND LABELLED AT THEIR TERMINATION POINTS.
14. DEPTH TO SOIL STRATA TRANSITION POINTS SHALL BE DOCUMENTED ON PLAN IN THE SOIL STRATA DIAGRAM.

INSTALLATION DETAIL
N.T.S.



TYPICAL CATHODIC PROTECTION GROUND BED DEEP VERTICAL (R___+___)

Response to SIR-1.19

DEQ Request:

SIR-1.19, Page 4-47, paragraph 2. Identify or give examples of the types of mitigating and remedial measures that would meet state standards to protect aquatic species in the event of a release.

Keystone Response:

Keystone will employ multiple safeguards to prevent and minimize impacts from a potential pipeline release. Broadly, these safeguards encompass routing (e.g., minimize stream crossings; avoidance of sensitive waterbodies, when feasible), material selection (e.g., steel grade, pipeline coating), engineering design (e.g., valve locations), pre-operational testing (e.g., hydrostatic testing, non-destructive testing of welds), continuous operational monitoring (e.g., SCADA, aerial surveillance, leak detection systems, in-line inspection tools), and emergency preparedness (e.g., Emergency Response Plan, pre-positioned personnel and equipment, on-going integrity management planning). Consequently, the chance of a spill occurring is low. Keystone has conservatively estimated (i.e., over-estimated risk) that the chance of a pipeline incident is no more than one spill in 8,400 years for any given mile of pipe. If a spill did occur, the volume is likely to be relatively small (i.e., 3 barrels or less) and would likely be contained within the pipeline trench. The simultaneous probability of a spill occurring, its location being in immediate proximity to surface water, and being of sufficient volume capable of escaping the trench and reaching a flowing stream is very low.

In the unlikely event of a pipeline release did reach surface waters (e.g., flowing streams, wetlands), Keystone would initiate its Emergency Response Plan, immediately notify the appropriate federal and state agencies, and Keystone teams would be immediately deployed to contain and cleanup the spill. The ERP contains detailed information on response times, personnel, training, and equipment that would be deployed in an emergency. Montana-specific details will be developed when the route is finalized, but prior to initiating pipeline operation.

If a spill affected surface waters, the appropriate remedial measures will be implemented to meet federal and state standards designed to ensure protection of human health and environmental quality. Remedial actions may include continued deployment of booms on surface waters, washing of rocky shorelines, controlled burns, excavation and removal of contaminated soils along shorelines and other affected areas, and allowing the contaminated soil to recover through natural environmental fate processes (e.g., evaporation, biodegradation). Decisions concerning site-specific remedial methods and extent of the cleanup will account for state-mandated remedial cleanup levels, potential effects to sensitive receptors, volume and extent of the contamination, potential violation of water quality standards, and the magnitude of adverse impacts caused by remedial activities. Corrective remedial actions will be dictated by federal regulations and enforced by the USEPA and PHMSA and the appropriate state agencies.

Response to SIR-1.28

DEQ Request:

1) Alternative siting study and baseline study as specified

SIR-1.28: Provide a description of the "two distinct phases" of the route selection process (4.1.2) that "had significant impacts on suitable routing alternatives." Provide more detailed information for the following:

a) How co-location with the Foothills Pipeline in Canada (4.1.2.2) reduces environmental impact, reduces landowner impacts and reduces congestion in relation to population;

b) Detailed information on construction limitations at Fort Peck Reservoir (4.1.2.2);

c) A map showing the four route alternatives considered for the Steele City Segment (4.1.2.3) and

d) For the route options eliminated for the Steele City Segment, more detailed qualitative and quantitative information on the increased environmental impact, increased landowner impacts, and increased congestion for these route options.

2/23/2009 - Information is provided for items a, b, and d above. Item c is still missing.

Keystone Response:

Initial routing of the Keystone XL pipeline was performed in the office through use of maps and GIS. This desktop analysis represents the first phase of the route selection process used by Keystone. After initial routes were identified, personnel performed a preliminary survey from public roads. This second phase resulted in further refinement of the initial selected route alternatives.

- Abutting Keystone XL Project with the Foothills Pipeline ROW in Canada would allow at least a portion of the construction disturbance associated with the Project to overlap with areas temporarily or permanently disturbed during Foothills Pipeline construction. This would reduce the area of construction on new, previously undisturbed lands (greenfields construction), and correspondingly reduce new impacts to soils, vegetation, and wildlife in the area. Incremental disturbance would be noticed by landowners along the Foothills Pipeline ROW; however, new landowners impacted by construction of an additional pipeline would be limited. The need for new permanent access roads would also be minimized, limiting available roadways thus minimizing access and congestion on surrounding lands.
- Construction limitations at Fort Peck Reservoir are primarily related to avoiding permitting or scheduling constraints on surrounding lands. Permits to cross the Fort Peck Indian Reservation, following the Northern Border ROW would cause significant delays in the desired timeline, and surface disturbance is not allowed in the Charles M. Russell National Wildlife Refuge to the southwest of the proposed crossing on Alternative B.
- In Montana, the Western Alternative is essentially the same as Alternative B. The Western Alternative roughly follows Alternative B to Tripp County South Dakota, diverging there and travelling in a southeastern direction through Nebraska, Kansas, and northern Oklahoma to meet the northern terminus of Phase 1 of the Keystone XL Project at Cushing, Oklahoma.
- See the table on the following page for miles of new and existing pipe required for each alternative of the Steele City segment. Construction of a new pipeline will disturb approximately 14 acres per mile of pipe. Each 100 miles of pipeline construction translates into approximately 1,400 additional acres of disturbance and associated environmental and landowner impacts. Connection to existing pipelines (i.e., the Keystone Cushing Extension) will cause limited or no new disturbance.

Route Option	Route and the Corresponding Alternative	Mileage (new pipe construction)	Mileage (connection to Keystone Cushing Extension)
Western	Western Alternative – direct line to Cushing, Oklahoma	1,110	0
Segment A	Eastern route through Montana, North Dakota, South Dakota, and Nebraska, to connect to the Keystone Cushing Extension at Steele City	920	298
Segment A1A	Eastern route through Montana, North Dakota, South Dakota, and Nebraska, to connect to the Keystone Cushing Extension at Steele City, avoiding BIA lands.	951	298
Segment B	Eastern route through Montana, South Dakota, and Nebraska, to connect to the Keystone Cushing Extension at Steele City.	850	298

X:\0Projects\10623_007_Trow_KXL_Phase_II\Figures\MFSA\2009\SIR\PROJECT_LOCS\FIG_SIR_1_28_PROJ_LOC_W_ALTS_20080916.mxd

Saskatchewan
Manitoba
Ontari
Montana
North Dakota
Minnesota
South Dakota
Wyoming
Iowa
Nebraska
Colorado
Kansas
New Mexico
Texas
Oklahoma

Legend

- Option A
- Option A1A
- Option B (Preferred)
- Western Alternative
- Cushing Extension (Permitted Under Keystone)

Land Ownership (Affected States)

- Bureau of Indian Affairs/Tribal
- National Park Service
- DOD-USACE
- US Bureau of Land Management
- US Bureau of Reclamation
- US Forest Service
- US Fish and Wildlife Service
- State Land

TransCanada
Keystone XL Project

Figure SIR-1.28

Alternative Routes
Steele City Segment

0 25 50 100 Miles
0 25 50 100 Kilometers
1:4,500,000

N

Response to SIR-1.35

DEQ Request:

7) Identify and discuss mitigation to reduce or eliminate significant impacts along each alternative including:

Identify mitigation measures to reduce or eliminate significant impacts. SIR-1.35: Describe how the measure 'landscape feathering' (page 4-128) would be implemented for the proposed pipeline.

Keystone Response:

Landscape "feathering" is a technique that is particularly effective for linear projects in areas with relatively dense vegetation. There are only a few places on the Keystone XL Project where it would be useful, but it should be kept in the "toolbox" for potential use. The concept is to avoid sharp, linear visual breaks such as may occur when clearing a pipeline corridor through a mature forest, for example. Rather than cutting and clearing all trees and shrubs in the easement and leaving everything else, the margin between the cleared area and the dense vegetation would be treated more selectively. For example, some larger trees beyond the easement would be removed while smaller trees and shrubs would be retained. Also, some areas outside the easement would be harvested to simulate a more natural pattern of open and vegetated areas. If necessary, young trees or shrubs might be planted to reduce the contrast between the mature forest and the cleared easement. A landscape architect, visual analyst or horticulturist should participate in the process to implement the feathering technique.

Clarification for Section 17.20.818

DEQ Request:

> Internal and external costs and benefits, including benefits to consumers, applicant, and Montana.
>
> No external (social) costs were given. No benefits were discussed in section noted. Some fiscal benefits are discussed on page 4-159 and 4-160. DEQ requests an estimated annual breakout of revenues and internal costs. Social benefits and costs should also be estimated and quantified where needed.

Keystone Response:

The Land Acquisition Compensation Philosophy will be based on the market value of tracts of land being crossed by the proposed pipeline. Approximate land values in all states will be estimated using respective market values based on recent real property sales and a land valuations prepared by third party expert. These land value assessments will be used as a reference point in determining the compensation that will be offered to landowners. In addition, specific property appraisals may be required on particular properties.

Keystone will implement Best Management Practices (BMPs) during construction to avoid the potential for the spread or introduction of weeds, including conducting weed control activities where necessary.

After construction of the pipeline is complete, the temporary easement will revert to the landowner and the landowner may conduct standard agricultural practices on both the permanent and temporary easement. Landowners are encouraged to contact Keystone regarding any abnormal crop productivity, erosion or weed infestation concerns. Upon receipt of an inquiry, Keystone will investigate these concerns and establish an appropriate plan, in conjunction with the landowner, to adequately re-establish the lands agricultural productivity.

On lands that Keystone will retain control over the surface use (i.e., valve sites, metering stations, pump stations, facility access roads, etc.), Keystone shall provide for weed control to avoid the potential for the spread of weeds onto adjacent lands. Once again, landowners are encouraged to contact Keystone regarding any abnormal crop productivity, erosion or weed infestation concerns.

Construction and post construction damage settlements will be negotiated with landowners and/or tenant on an individual basis. Damages to be compensated could include damages to property resulting from the pipeline construction and installation activities, livestock claims, loss of trees or shrubbery and rehabilitation of lands, and three years of crop losses and pasture loss or replacement (graduated percentages) Additional types of losses including weed issues may be identified during the land acquisition phase of the project and will be discussed with each landowner on a case by case basis. Please see section 4.3.12.7 for further information about compensation for damages to land use and property.

An estimated $2.0 million/year could be spent within Montana for maintenance labor (an estimated 5 permanent employees), direct services (e.g., pipeline ROW maintenance), high voltage equipment inspections and maintenance, pipeline integrity monitoring, and parts purchased within the state.

Further, a discussion of capital and yearly operational costs associated with the Project within Montana are included in the Confidential Chapter 2 included in this supplemental filing. Discussions on how costs are recovered for a crude oil pipeline are included in the Response to SIR-1.27 in this Attachment. Estimated wages to be earned during construction are listed in the Clarification for Section 3.7(3) in this Attachment.

Keystone does not anticipate that residential land values will be negatively affected by the presence of the buried pipeline. A study published by the Interstate Natural Gas Association of America (INGAA 2001) in residential, commercial, and rural areas in four locations (Katy, TX, Medford, OR, Newtown, CT, and Las

Colinas, Irving, TX) indicated no significant differences in price for residential properties located along the natural gas or products pipelines. Since no difference in price was measured for either type of pipeline, the study concluded that the product carried by the pipeline has no impact on the sales price in the areas researched. The authors concluded the results and conclusions developed in the study are likely to be transferable to other market situations across the US involving natural gas pipelines.

No studies on the effects of pipelines on agricultural property values that apply to Montana have been located to date.

References:

INGAA Foundation. 2001. Natural Gas Pipeline Impact Study: Natural Gas Pipeline Impact on Land Values. 236pp. Downloaded: http://www.ingaa.org/cms/31/7306/43/678/207.aspx

Clarification for Section 3.0(2)(c)

DEQ Request:

c) Selection of alternative locations

Section 3.5 of Circular MFSA-2 states that the applicant shall select at least 3 reasonable alternative locations for the proposed facility. Yet information presented in Table 4-87 (page 4-175) indicates that impacts to the Project schedule cannot be mitigated when crossing Tribal lands on Routes A and A1A, that it is likely the BLM would preclude or heavily condition the pipeline routing through the Bitter Creek ACEC/WSA, and that project schedule requirements could not be mitigated if crossing the Bitter Creek ACEC/WSA. In light of this information, how can Routes A and A1A be evaluated by the agencies as reasonable locations for the proposed facility? Provide documentation from BLM indicating whether or not the agency would or would not allow the Bitter Creek ACEC/WSA to be crossed and the reasons for allowing or not allowing the crossing.

Keystone Response:

Routes A and A1A are considered constructible. However, Routes A and A1A would cross areas that are considered environmentally sensitive, would require substantial additional mitigation or have extensive statutory and/or procedural requirements associated with obtaining a ROW easement.

Routes A and A1A cross tribal lands and although these routes can feasibly be constructed, the extensive procedural requirements associated with obtaining a ROW easement would affect project schedule and substantially increase Project costs.

Routes A and A1A cross the Bitter Creek ACEC/WSA. The BLM has stated that the ACEC and WSA are designated as a "no surface disturbance or impairment" area. The BLM has indicated surface disturbance would be allowed within the existing Northern Border ROW within the ACEC (approximately 3.4 miles). Please see page 9a in Attachment F of the February 11, 2009 supplemental filing, for documentation of correspondence with BLM on the Bitter Creek ACEC/WSA. Crossing the ACEC/WSA within the existing Northern Border ROW would require different construction techniques, introduce potential pipeline offset safety issues, require substantial additional mitigation, and would be a point of contention with local conservation and environmental groups. These issues would not preclude construction through the ACEC/WSA, but would increase the associated costs and duration of permitting and construction.

In addition, Route A1A crosses the Diversion Ditch Number One which flows into the Medicine Lake National Wildlife Refuge (NWR). The ditch would be crossed by HDD, therefore no surface impacts within the USFWS managed lands would occur. Congressional notification would be required for an easement. This would increase the time required for the permitting process.

Although Routes A and A1A are feasible to construct, the additional potential issues associated with construction include: Project delay, cost, environmental concerns, and public concerns. Table 4-87 in the MFSA text has also been updated to emphasize the constructability of these routes.

Clarification for Section 3.1 (1)(k)

DEQ Request:

2a) Conform to criteria listed above in 3.1(1)

Missing 3.1(1)(a) and (g).

2/23/09 – DEQ Incomplete - Information is missing for Sections 3.1(1)(a) and 3.1(1)(k).

Keystone Response:

Pipeline routing on public lands for all three routes analyzed for the Project would be consistent with existing land use plans. Further discussion follows.

BLM

Each Route includes lands under BLM jurisdiction, including lands overseen by the Malta and Miles City Field Offices. In addition, all Routes include access roads in Montana located on lands under BLM jurisdiction, in the Malta and Miles City field offices. These field offices manage public lands under their jurisdiction according to the following resource management plans (RMPs): the Big Dry (1995) RMP for eastern Montana and the Judith Valley Phillips RMP (1992) for counties in northern Montana. New RMPs are currently being developed by the BLM for lands within the project area; however, they will not be available prior to commencement of the Project. The BLM lands in the Project area are predominantly composed of grasslands utilized by farmers for their livestock, with lease agreements in place according to the RMPs. Construction and operation of the Project is consistent with the stipulations listed by the BLM RMPs and with current land uses. While some federally managed lands in southern Fallon County are currently operating under more stringent pipeline restrictions, these restrictions do not apply to the Project area. Types of utilities that would be consistent with land uses under the RMPs include power lines, pipelines, significant canals, ditches and conduits, railroads, electric communication and microwave sites, communication lines, and highways. The Project will conform with the RMPs subject to: 1) site-specific RMP stipulations such as seasonal closures, 2) site-specific stipulations for crossing special management areas, and 3) other general stipulations needed to reduce or eliminate impacts to resources.

BLM has indicated that crossing the Bitter Creek ACEC/WSA within the existing Northern Border right-of-way would be allowed, despite the "no surface disturbance or impairment" designation for the ACEC. See Attachment F, page 9a for this correspondence. Crossing the ACEC within the existing Northern Border ROW would require specific construction techniques, introduce potential safety issues with offsets, require additional mitigation, and would likely be a point of contention with local conservation and environmental groups. These issues would not preclude construction through the ACEC, but would increase the associated costs and duration of permitting and construction.

USFWS

Route A1A crosses the Medicine Lake National Wildlife Refuge (NWR). The crossing is of the diversion canal that supplies, and is located within, Medicine Lake NWR; however, the crossing of this area would utilize the HDD technique to avoid surface impacts. The surface disturbance for HDD is limited to entrance and exit drill pits. These pits would not be located within the NWR. Therefore, there would be no surface disturbance and the pipeline would comply with existing land management. An easement would still be required for the HDD of the NWR, which would require Congressional appeal. This process would require additional time, which could impact the preferred Project schedule.

Route B crosses a USFWS wetland easement in Phillips County between approximate mileposts 4.19 and 5.01 equaling 0.82 miles of disturbance (USFWS 2008a). A wetland easement is described by the USFWS as "a legal agreement signed with the United States of America, through the U.S. Fish and Wildlife Service (Service)" that pays landowners to permanently protect wetlands. Wetlands covered by an easement cannot be drained, filled, leveled, or burned. Impacts associated with the Project would be temporary and would not violate any of these conditions.

DFWP and DNRC

DFWP and DNRC lands are not crossed by the Project.

BIA

No regulatory restrictions exist that would disallow the Project from crossing tribal lands. The USEPA has jurisdiction over air quality permitting on these lands; however, no impacts to air quality are anticipated. Route A crosses 89.6 miles of tribal lands, Route A1A crosses 1 mile of tribal lands, and Route B crosses no tribal lands. Although the Project is considered to be constructible on these lands from a regulatory standpoint, due to the extensive statutory procedural requirements associated with the granting of ROW on tribal lands the selection of routes A and A1A would increase project costs and potentially jeopardize the project preferred schedule.

USACE - Fort Peck Dam/Fort Peck Lake

In a conversation with Darren McMurray on 10/10/07, it was confirmed that the DOD lands below Fort Peck Dam are managed and owned by the Corps of Engineers. The purpose for owning these parcels is for a spillway buffer in the event of emergency, large volume releases. Mr. McMurray stated there was no known reason why USACE wouldn't allow a ROW through the area, and also stated that it is not uncommon to do so. Additionally, Mr. McMurray stated that he was not aware of any environmental groups showing an interest in the area.

Correspondence with Mr. Bud Kuhn and Mr. Robert E. Wright with the USACE realty offices confirmed that the Project would require congressional notification (but not congressional approval) as outlined in PL 104-66, Sec 1211. For a full account of these correspondences see the following contact summaries in Attachment F, pages 94f and 94g.

The Fort Peck Master Plan classifies the project lands according to the purpose for which they were acquired. These classifications are Project Operations, Recreation – Intensive Use, Environmentally Sensitive Areas, Multiple Resource Management: Recreation – Low Density, and Multiple Resource Management: Wildlife Management General.

Multiple Resource Management: Wildlife Management General lands are designated for wildlife management. Primary jurisdiction falls on the USFWS. Licenses, permits, and easements are not for manmade intrusions, such as pipelines, roads and transmission lines, are typically not allowed. Exceptions are made when deemed necessary for the public interest, which includes transmission pipelines.

State of Montana

Keystone was informed that Route B may cross some parcels south of Fort Peck dam that are under consideration for purchase by the State of Montana for a state park. These lands currently are privately held, and no restrictions to pipeline construction or operation apply. Throughout the NEPA/MEPA process, Keystone will continue to update the status of land ownership or management the Project crosses, and will comply with any applicable restrictions to construction or operation on public lands that apply.

Clarification for Section 3.5 (1)

DEQ Request:

1) Alternative locations - Select at least three

   It is not clear whether any information required for the overview survey was considered when identifying alternative locations for the pipeline. The application states that 'much of the formal process laid out in Circular MFSA-2, Sections 3.4 and 3.5 for the overview survey was rendered moot.' Information pertaining to Circular MFSA-2 Section 3.1 (1)(a), (k); 2(a), (b); Section 3.4(1), 7(a); 8, 9(b), (c) and (d) are missing. Therefore, DEQ concludes that the three alternatives were not selected based on the information required. Gather the missing information and re-evaluate the selection of alternatives.

Keystone Response:

Alternative routes were developed by an interdisciplinary study team consisting of environmental, engineering, and construction specialists who considered key criteria as described in the clarification for 3.6(7)(c).

These criteria groupings align with the MFSA circular requirements for the preferred location criteria listed in 3.1(1) &(2), as well as the environmental information in 3.2(1)(e) and 3.4. Using GIS desktop analysis of data and imagery the three route alternatives were developed. These routes were further refined based on field reconnaissance data. The table below compares these alternatives, specifically addressing the MFSA circular information required.

The following information was utilized in the analysis of the three alternative routes selected.

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			**Location**	**Notes**
	Route B	**Route A**	**Route A1A**		
Section 3.1 (1)(a),(b), (e) through (g), (i) through (k)					
a) Greatest potential for local acceptance	Commissioners have received positive feedback from local communities along the pipeline corridors for all three routes.			Chapter 5 Attachment F	All routes have received positive feedback from county commissioners.
b) Utilize or parallel existing utility or transportation corridor	B is co-located with the Northern Border pipeline in 4 areas totaling 20.8 miles	A is co-located with the Northern Border pipeline for its full length (180.7 miles)	A1A is co-located with the Northern Border pipeline for 51.9 miles		If the route is within 300' of another pipeline it is considered co-located for this analysis.

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			**Location**	**Notes**
	Route B	**Route A**	**Route A1A**		
e) In logged areas rather than undisturbed forest	0.4 mile of forest crossed	<0.1 mile of forest crossed	<0.1 mile of forest crossed	Chapter 4, Section 4.3.3. Table 4-8	There are no known logged areas crossed by the alternate pipeline routes. Less than a half mile of forest is crossed by any route.
f) In geologically stable area with non-erosive soils in flat or gently rolling terrain	4.0 miles where slopes exceed 15 percent on Cretaceous shale bedrock	2.5 miles where slopes exceed 15 percent on Cretaceous shale bedrock.	2.0 miles where slopes exceed 15 percent on Cretaceous shale bedrock.	Chapter 4, Section 4.3.6, Table 4-47 Attachment A, Mapbook 5	All routes cross some area where slopes exceed 15 percent on Cretaceous shale bedrock.
g) In roaded areas where existing roads can be used for access	111.5 miles of access roads. All but 1 are existing roads.	81.5 miles of access roads. All are existing.	65.4 miles of access roads. All are existing.	Chapter 4 Section 4.3.11 Table 4-67 and Attachment N Attachment A, Mapbook 1	Existing (established) roads will be used for ROW access to the maximum extent practicable. Existing roads may or may not need to be improved.
i) Where facility will create the least visual impact	Class 2-14.3% Class 3-14.8% Class 4-70.9%	Class 2-19.3% Class 3-5.6% Class 4-75.2%	Class 2-14.6% Class 3-6.5% Class 4-78.9%	Chapter 4, Section 4.3.10 Tables 4-56,4-57, 4-58 Attachment A, Figure 4	All routes have the majority of the alignment in Class 4 areas.
j) A safe distance from residences or areas of human concentration	11 residences with 500 feet	57 residences with 500 feet	43 residences with 500 feet	Chapter 4 Section 4.3.2 Table 4-5	There are no residences with 500 feet of the property boundary of a pump station
k) In accordance with public land plans	B crosses, BLM, USFWS wetland easement, USACE, and State of Montana Lands	A crosses BLM, BIA, and State of Montana Lands	A1A crosses BLM, USFWS, BIA, and State of Montana Lands.	See Clarification for Section 3.1 (1)(k) in this document.	Routing on public lands for the alternatives would be consistent with existing land use plans.
Section 3.1 (2)(a)&(b)					
a) conform to criteria listed in (1)(a,b,e,f,g,l,j,k)					See above 3.1 (1)

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			Location	Notes
	Route B	Route A	Route A1A		
b) Cross lands which can be returned to their original condition through re-contouring, conservation of topsoil and reclamation	B has 7 pump stations above ground	A has 4 pump stations above ground	A1A has 5 pump stations above ground	Chapter 1, Section 1.4.1.8 Attachment C Attachment A, Mapbook 1	Except for above ground facilities, the ROW will be restored to original condition where practicable.
Section 3.4(1)					
a) Items from 3.2 (1)(d)	-	-	-	Attachment A, Figure 2	Although Route B traverses areas with greater slopes it has the least amount for impacts State, Wildlife, and Park lands.
i. National Wilderness Areas	0	0	0	Attachment A, Figure 2	Medicine Lake NWR would be crossed by Alternative Route A1A.
ii. National Primitive Areas	0	0	0	Attachment A, Figure 2	
iii. National Wildlife refuges and ranges	0	0	0.1	Attachment A, Figure 2	
iv. State wildlife management areas and wildlife habitat protection areas.	0	0	0	Attachment A, Figure 2	
v. National parks and monuments	0	0	0	Attachment A, Figure 2	
vi. State parks	0	0	0	Attachment A, Figure 2	
vii. National recreation areas	0	0	0	Attachment A, Figure 2	All routes cross minimal amounts of terrain with slopes greater than 30%.
viii. Wild and Scenic rivers	0	0	0	Attachment A, Figure 2	
ix. Roadless areas	0	0	0	Attachment A, Figure 2	
x. slopes greater than 30%	0.6	0.2	0.2	Attachment A, Figure 2	
xi. specially managed buffers around national wilderness and national primitive areas	0	0	0		
b) State and federal waterfowl production areas	0	0	0	Attachment A, Figure 3	There are no state or federal waterfowl production areas crossed any of the routes.

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			**Location**	**Notes**
	Route B	**Route A**	**Route A1A**		
c) National natural landmarks, areas of critical environmental concern, special interests areas, research botanical areas, outstanding natural areas	See below	See below	See below	Attachment A, Figure 2	Route B does not traverse any of these areas as opposed to Routes A and A1A. Route B is the shortest of the 3 Routes therefore, decreasing the likelihood of running into areas such as this.
National Natural Landmarks	0	0	0		Bitter Creek ACEC is the only area affected by Routes A and A1A. Route B does not cross any of these designated areas.
ACEC	0	4.1	4.1		
Special Interest Areas	0	0	0		
Research botanical areas	0	0	0		
Outstanding natural areas	0	0	0		
d) Critical habitat	0	0	0	Attachment A, Figure 3	There is no critical habitat crossed by any of the routes.
e) Habitats of listed threatened and endangered species occupied seasonally	0.4	0.0	0.0	Attachment A, Figure 3	Although Route B impacts the most T&E habitat compared to Route A and A1A it will overall have the least amount of impact due to being significantly shorter.
f) National historic landmarks, National register districts	0	0	0	Attachment A, Sensitive Mapbook 1	There are no impacts to historic landmarks, national register districts, historic districts or designated SHPO's by any of the proposed routes.
g) National historic districts and sites nominated to or designated by SHPO	0	0	0	Attachment A, Sensitive Mapbook 1	
h) Municipal watersheds	0	0	0	Attachment A, Mapbook 3	
i) Streams and rivers listed in Montana Department of Fish, Wildlife, and Parks (FWP) rivers database as being Class 1 or 2 streams or rivers	2 (number of crossings)	0	0	Attachment A, Figure 3	Route B crosses both the Missouri River and Yellowstone River; however, both rivers will be horizontally directionally drilled. No impacts are anticipated.
j) Streams listed by DEQ pursuant to 75-5-702 MCA that are not attaining beneficial uses of water	11	4	5	Attachment A, Mapbook 3	These numbers represent streams crossed not mileage.

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			Location	Notes
	Route B	Route A	Route A1A		
k) Highly erodible soils and areas with severe reclamation constraints	4.0	1.4	1.3	Attachment A, Figure 5	Route B traverses the largest portion of highly erodible soils in comparison to Routes A and A1A. However, Route B is the shortest of all three routes and will have the least amount of impact to the environment.
l) Incompatible with published visual management plans	See Below			Attachment A, Figure 4	Although Route B has the largest amount of land that is incompatible with published visual management plans the overall impact of the Routes A and A1A is more significant since both are longer routes as compared to Route B.
VRM Class II	40.2	34.8	30.0		
VRM Class III	41.8	10.0	13.3		
VRM Class IV	200.2	135.8	161.9		
m) Winter distribution of elk, deer, moose	See Below			Attachment A, Figure 3	All routes cross land used by deer and pronghorn species during the winter. The impact on winter distribution is dependent on the time of year construction will take place.
White-Tail deer	49.8	14.5	32.0		Habitat data was unavailable for the Fort Peck Indian Reservation.
Mule Deer	138.4	41.7	44.6		
Pronghorn	81.2	26.5	26.5		
Elk	0	0	0		
moose	0	0	0		
mountain goat	0	0	0		
bighorn sheep	0	0	0		
n) Major elk summer security areas	0	0	0	Attachment A, Figure 3	There are no major elk summer security areas crossed by any of the three alternative routes. Therefore, it will not be visible on the map.
o) Seasonally occupied mountain sheep and mountain goat habitats	0	0	0	Attachment A, Figure 3,	There is no mountain goat or mountain sheep habitat crossed by the alternative routes.

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			Location	Notes
	Route B	Route A	Route A1A		
p) Sage and sharp-tailed grouse leks and winter habitats	0	0	0	Attachment A, Figure 3 and Sensitive Mapbook 1	According to MFWP, no designated grouse winter habitat is crossed by any Route.
Sage Grouse Brooding Habitat and General Distribution	117.5	41.4	41.4		Route B does not affect any sharptail lek areas as compared to Route A or A1A.
Sage Grouse General Distribution	89.6	87.8	57.4		
Sage Grouse Lek Area	0	15.4	15.4		
Sharptail Grouse General Distribution	230.5	177.1	205.2		
SharpTail Grouse Lek Area	0	9.3	1.2		
q) High Waterfowl densities (prime waterfowl habitat)	0	0	0	Attachment A, Figure 3	This portion will only be listed as Prime Waterfowl habitat. However, none of these areas are crossed by the three alternative routes.
r) Undeveloped land or water areas with natural features of unusual scientific.	0	0	0	NA	There were none identified along any of the three alternative routes.
s) Geologic units of formations with a high probability of including paleontological resources	282.3	180.7	205.3	Chapter 4, Section 4.3.8 (Tables 4.2-34-36) Attachment A, Mapbook 4	All geologic formations have high probability.
t) Sites that have religious or heritage significance to Native Americans	To be determined	To be determined	To be determined	Chapter 4, Section 4.3.9 Attachment A - Confidential Mapbook 1, and Confidential Mapbook M	Traditional cultural properties will be developed through the Department of State (as lead federal agency) government-to-government consultation with the tribes. Also see Section 4.3.9.2, paragraph 2, and Table 4.4-2.
u) Standing water bodies	0	0	0.20	Attachment A, Mapbook 3 Attachment J - Hydrologic Features	Both Route B and A do not impact any Standing waterbodies

Comparison of Missing Environmental Information for Alternative Pipeline Routes					
	Mileage Crossed By Routes			**Location**	**Notes**
	Route B	**Route A**	**Route A1A**		
v) Surface supplies of potable water	0	0	0	Chapter 4, Section 4.3.5	No areas of potable water are affected by the alternative routes.
w) Active faults near substations, switchyards, or terminus points	0	0	0	Chapter 4, Section 4.3.6	There are no active faults located near proposed substations, switchyards, or terminus points.
Section 3.4 (7)					
a) Relationship between land uses and economic/social activities	NA	NA	NA	Chapter 4, Section 4.3.12	Compensation for damages to Land Use and Property have been addressed on page 4-158.
Section 3.4 (8)					
Nature and magnitude of public concerns	NA	NA	NA	Chapter 5, Section 5.3	Text has been added to Section 5.3.1 to clarify.
Section 3.4 (9)					
b) Existing landscape inventory maps	See VRM Classes from 3.4(1)(l)	See VRM Classes from 3.4(1)(l)	See VRM Classes from 3.4(1)(l)	Attachment A, Figure 4, Visual Resource Management Areas	See Attachment F for communications documenting the lack of BLM landscape inventory classification maps.
c) Overlay of land areas categorized for visual quality	See VRM Classes from 3.4(1)(l)	See VRM Classes from 3.4(1)(l)	See VRM Classes from 3.4(1)(l)	Attachment A, Figure 4	See Attachment A - Figure 4 to view the overlay of these areas.
d) Overlay of land areas categorized for visual compatibility	See VRM Classes from 3.4(1)(l)	See VRM Classes from 3.4(1)(l)	See VRM Classes from 3.4(1)(l)	Attachment A, Figure 4	

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Clarification for Section 3.6(5)

DEQ Request:

5) Information to determine compliance with water quality permits.

Permit applications are missing for crossing of state waters.

Keystone Response:

318/401 Permit Information is included on the attached CD.

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Clarification for Section 3.6(7)(c)

DEQ Request:

c) Localized location adjustments.

There was no discussion of localized location adjustments. However, there are numerous deviations from a straight alignment on the alternatives. For each deviation, describe the reasons for the deviation.

Keystone Response:

Major Pipeline Routing Strategy

Introduction

In assessing a route for the construction of a major pipeline, a number of criteria are examined to ensure a cost-effective installation and the proper protection of environmental resources. Among these are:

- Total length;
- Total cost;
- Identification of environmentally sensitive areas;
- Land use;
- Location of densely populated areas;
- Land ownership;
- Terrain and geology;
- Location of large waterbodies;
- Major road and railroad crossings; and
- Location of other pipelines or utilities.

The following discussion further elaborates on these routing criteria.

Total Length and Cost

Total pipeline length and cost are generally the first criteria considered in pipeline planning. Typically, the minimum length of a pipeline is equated to the lowest cost. Minimizing the length of a pipeline route is a major goal during the planning process but may not always be the most cost effective option.

While there are "rules of thumb" when performing high-level estimates, each proposed pipeline route is reviewed closely considering the aforementioned criteria. Additional pipeline length to avoid environmentally sensitive areas, densely populated areas, and to cross large waterbodies at optimum locations typically results in a lower overall cost than through permitting and mitigation options maintaining a "shortest distance" philosophy.

Environmentally Sensitive Areas/Land Use

Environmental and land use constraints are evaluated utilizing a "fatal flaw" approach methodology. A determination is made as to what, if any, environmental, land-use/planning, or physiographic findings represent impediments to pipeline construction or operation. Consideration is given to avoiding the area, if practical. If avoidance is impractical, the steps to mitigate or minimize impact to the area are evaluated and incorporated into the routing process. Such areas would likely include:

- Wetland Resource Areas;
- Waterbodies and associated riparian habitat/floodplain;
- Land Use and Public Lands, including park land and wildlife management areas;
- Federal Special Status Species (Threatened, Endangered, and Species of Concern);
- State Special Status Species;
- Waterbody classifications;
- Wellhead protection areas and aquifers;
- Listed Contaminated Sites;
- Cultural Resources/Native American Lands;
- Paleontological sites
- High Consequence Areas (HCA) as designated by the Office of Pipeline Safety;
- National Parks, National Monuments, State Parks with developed recreation facilities;
- Indian Reservations, Tribal Lands; and
- Other publicly owned lands including, but not limited to: Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), State Lands, National Park Service (NPS), U.S. Army Corps of Engineers (USACE), U.S. Department of Defense (USDOD), Natural Resources Conservation Service (NRCS), Department of Natural Resources (DNR).

Populated Areas/Landownership

Landowner relations are critical to the successful construction of a pipeline. Landowners have numerous concerns when a pipeline is crossing their property. To the extent practical, consideration is given to:

- Following existing property lines;
- Following existing utility corridors where possible;
- Minimizing cuts of windbreaks;
- Conserving topsoil; and
- Maintaining drainage in cultivated fields.

Every effort is made to maintain a minimum clearance of 500 feet to the extent practical, but never less than 100 feet at these locations:

- Residences and farmsteads;
- Rural schools and recreational areas;
- Towns and suburban developments;
- Municipal sewage ponds;

- Industrial facilities (e.g., rail yards, warehouses), except when in industrial corridors;
- Rural cemeteries; and
- Wellheads and irrigation pivot points.

When trying to minimize or alleviate landowner concerns, efforts to hold to these criteria will affect the routing of the pipeline.

Other Pipelines/Utilities

In areas where pipelines or utilities exist, the industry practice is to co-locate to the extent practical existing utility corridors. Existing pipeline rights-of-way and electrical transmission line rights-of-way are generally evaluated first. The rationale behind this is to maximize the use of land that has previously been disturbed. This practice is not always feasible due to development and growth that may have occurred adjacent to the existing rights-of-way.

If the proposed pipeline crosses a foreign utility, then a contractual agreement must be reached between the parties. In many cases, the owner or operator of the existing utility will specify the configuration if the crossing.

Terrain/Geology/Roads/Railroads/Waterbodies

Encountering other natural or man-made features influence pipeline routing strategy. Best practices for pipeline engineering and construction have been established based on experience and history. Such features include:

- Major waterbody crossings;
- Rough terrain;
- Road crossings;
- Railroad crossings;
- Federal and private levees;
- Stream crossings; and
- Subsurface (geological) conditions.

Major waterbodies and streams, if they cannot be avoided, must be crossed by either open-cut technology or horizontal directional drill (HDD) technology. Either method must be carefully engineered and take into consideration length of the crossing, depth of the water, height of the banks, and subsurface conditions. These conditions will dictate the most desirable crossing site and can affect the route on either side.

Terrain and geological considerations also affect pipeline routing. Steep terrain and areas prone to wash out are typically avoided in pipeline construction. The pipeline operating company looks beyond the installation and considers long-term maintenance of the right-of-way. Favorable terrain lends itself to more reasonable pipeline route maintenance. Subsurface conditions that affect routing can include rock and unstable soils, which are generally avoided.

Crossing man-made obstructions, such as roads, railroads, and levees typically fall under the jurisdiction of an agency. The responsible agency will generally grant a permit to cross the feature. The generally accepted practice for crossing features such as this is to align the pipeline as near perpendicular as practical. Many times this alignment is favored by the jurisdictional agency and is specified in the permit. Generally, this perpendicular alignment is the least intrusive and is the most

desired construction scenario. Terrain and geologic conditions can also impact the most desirable crossing location and alignment.

Summary

Total length is usually the first criterion considered in pipeline routing. Shorter, more direct routes generally equate to less environmental impact and lower cost. However, pipeline routes are adjusted to preserve or minimize the impact on environmental and cultural resources. If an area cannot be avoided, the route is adjusted to minimize disturbance of the area.

Mild, stable terrain is more conducive to long-term maintenance of the pipeline. Restoration efforts can be better maintained than if the terrain is step or unstable. This, along with suitable subsurface conditions, help ensure the integrity of the pipeline. Every effort has been maintained by Keystone to:

- Minimize impact to the environment;
- Minimize inconvenience to the landowners, to the extent practical;
- Meet the needs of jurisdictional agencies that permit crossings; and
- Meet the needs of pipeline and shippers with the most efficient route.

Table 1 shows reasons for slight changes in line direction, developed based on the above criteria.

Table 1 State of Montana; Keystone XL Routing Summary; Proposed Route

Milepost	Route Deviation Reasoning
Route A	
0 - 25	After crossing the Canada-United States border at Morgan, Montana. The pipeline runs generally SE across moderately rough terrain, making small deviations for drainage features as needed. Keystone has made minor refinements to the route, separating from Northern Border ROW when necessary, due to land ownership (Tribal), land features and cultural resources.
25 - 34	Turns ESE and crosses Frenchman Creek around MP 25, thereafter making minor deviations for terrain and drainage features.
34 - 41	Turns SE after avoiding rough terrain and crosses Willow Creek near MP 39.
41 - 52	After climbing on to a plateau, the route heads eastward to follow the ridgeline through a narrow break in the drainage features near MP 47. It then continues east until MP 52. (Option A1A separates from Option at MP 51, Option A).
52 - 84	The route deviates to the ESE at MP 52 and crosses West Fork Porcupine Creek at MP 57.5 to enter the Ft. Peck Indian Reservation. Continuing ESE, the route crosses Middle Fork Porcupine Creek near MP 64 and East Fork Little Porcupine Creek near MP 84, making minor deviations along the way for moderate terrain and drainage features.
84 - 93	The route continues ESE, and crosses Cottonwood Creek at MP 86 and MP 89.
93 - 111	Continuing ESE, the route enters Roosevelt County near MP 93.5 and now crosses generally more agricultural land until the Hwy 13 crossing near MP 111
111 - 123	The route continues ESE to skirt between two large drainage features associated with the Poplar River to the north and Long Creek to the south.

Table 1 State of Montana; Keystone XL Routing Summary; Proposed Route

Milepost	Route Deviation Reasoning
123 - 126	The proposed route crosses Long Creek at MP 123, and turns slightly to the east to cross the Poplar River near MP 125.
126 - 142	Continues generally ESE through some agricultural lands, making small deviations for minor drainage features.
142 -147	Turns further towards the SE, and crosses Big Muddy Creek at MP 147 to exit the boundary of the Ft. Peck Indian Reservation.
147 -167	Turns to the SE and crosses Hwy 16 near MP 157, making small deviations for minor drainage features and county road crossings. There are significant areas of agricultural land in this section
167 -172	The route turns to crosses Shotgun Creek perpendicularly at MP 168 and continues SE to MP 172 where the route is just over 1 mile from Bainville.
172 -181	The route crosses US 2 perpendicularly near MP 173 and then continues SE to Williams County, North Dakota at MP 180.7. The route traverses partly agricultural land, and then partly drainage features in this section.
Route A1A	
52 -58	Deviates ENE from Option A (Northern Border) to avoid Fort Peck Indian Reservation (due to BIA permit time constraints)
58 -72	Continues east on north side of reservation, with minor deviations for drainage features and dwellings near MP 1007, MP 63 - 66 and MP 70 - 71
72 -87	Deviates ENE to avoid deep/steep drainage features associated with Hell Creek; avoid dwellings MP 75 - 78
87 -96	Continues east on north side of Hell Creek drainage features until Hell Creek crossing at 94
96 -101	Turns ENE to cross West Fork Poplar River near MP 1045 and Police Creek near MP 1048 while avoiding as many associated drainage features as practical; avoid dwellings MP 96 – 97
101 -111	Travels eastward until MP 1054, where it turns SE for 2 miles before turning eastward again. This avoids drainage features and provides a better crossing area for Hwy 13 and the Poplar River near MP 111.
111 -124	Continues eastward with minor deviations for terrain and drainage features
124 -143	Moves to the south, closer to Ft. Peck Indian Reservation, to avoid drainage features, then follows the boundary of the reservation relatively closely (< 1mi)
143 -146	Turns NE to avoid significant drainage features associated with the Crazy Horse Creek crossing at MP 145
146 -157	Continues generally eastward, with deviations for drainage associated with Big Muddy Creek before crossing a BNSF railroad and Hwy 16 near MP 156
157 -158	Turns to the SSW after clearing the eastern boundary of the Ft. Peck Indian Reservation
158 -164	Continues SSW
164 -169	Turns to the SW to line up for a narrow corridor between the Ft. Peck Reserve and Medicine Lake National Wildlife Refuge. The route crosses Hwy 16 near MP 165 and a BNSF railroad near MP 167
169 -178	Turns to the south to pass through the corridor between the reserve and the wildlife refuge.

Table 1 State of Montana; Keystone XL Routing Summary; Proposed Route

Milepost	Route Deviation Reasoning
178 -190	Turns to the SE after passing through aforementioned corridor. Route from MP 157 - MP 190 was restricted due to Water Stewardship Reroute.
190 -202	Turns eastward for more favorable terrain (less drainage areas), to avoid populated areas and agricultural lands.
202 -205.5	Turns southeast to provide a decent route through some rough terrain/drainage features and start return to the Northern Border Pipeline (XL Option A Route). The route crosses in to North Dakota near MP 205.5
Route B	
0 – 25	Parallel Northern Border Pipeline where possible
9.5 – 12	Land features: rough terrain, hills, deep washes and ravines. Cross perpendicular to ravines, follow contour of land and stay in the wide/flat areas to minimize disturbance.
16 – 17	Land features; rough terrain, cross at narrow point.
19 – 23	Avoid Turtle Mountain Allotted Lands (Tribal)
25	Move away from N.B.; cross Frenchman Creek near dam
39 – 40	Land features; large wash area with stream, cross perpendicular to minimize disturbance.
55 – 60	Land features; cultural resources
58 – 62	Land features; narrow point of wash and avoid cultivated ground
66 – 68	Land features; cross stream at narrow point and perpendicular
76	Land features; square up for road crossing
79 – 90	Realignment for HDD's at Milk and Missouri Rivers, avoid the town of Nashua, and cross Hwy 2 and BNSF RR.
94 – 105	Land features; cultural resources; avoid HWY 24 & major transmission line; avoid prehistoric dig site near MP 102
112 – 113	Land features; cultural/paleontological sites
125 – 129	Land features; East Fork Prairie Elk Creek
145 – 150	Land features; avoid town of Circle, MT; crossing of HWY 13, HWY 200, HWY 200S, and BNSF Railroad
154 – 161	Adjacent to HWY 200S
161 – 197	Realignment to south to bypass Glendive, MT and cross Yellowstone River in the most constructible location
197 – 208	Land features; Irrigation pivots, cultivated ground
213 – 221	Land features; multiple deep ravines
227 – 231	Land features; homestead, wash, streams, treed area
233 – 237	Land features; Pennel Creek, roads, town, PS-14, grain elevators
243 – 249	Land features; route west of Baker, MT, Sandstone Creek, Red Butte Creek, houses, Hwy 12, Burlington Northern/Santa Fe Railroad
250 – 282	Realignment south to bypass terrain and large concentration of wellheads

Clarification for Section 3.7(10)(c)

DEQ Request:

c) Tabulation of classes of scenic quality

2/23/09 – Submit tabulation of scenic quality classes via mile-posting for pipeline alternatives

Keystone Response:

Visual resource classes crossed by the Keystone XL pipeline on each route, by milepost, are listed in the following tables.

Table 1 Visual Resource Classes on Route A

Route A Mileposts		Visual Management Class
Start	End	
0.0	12.0	IV
12.0	25.6	II
25.6	30.7	IV
30.7	47.1	II
47.1	58.9	IV
58.9	61.0	III
61.0	100.1	IV
100.1	102.1	III
102.1	109.7	IV
109.7	111.8	III
111.8	155.6	IV
155.6	157.8	III
157.8	168.7	IV
168.7	170.7	II
170.7	171.2	IV
171.2	174.1	II
174.1	175.7	III
175.7	180.7	IV

Table 2 Visual Resource Classes on Route A1A

Route A1A Mileposts		Visual Management Class
Start	End	
0.0	12.0	IV
12.0	25.6	II
25.6	30.7	IV
30.7	47.1	II
47.0	59.9	IV
59.9	61.9	III
61.9	108.6	IV
108.6	110.6	III
110.6	155.5	IV
155.5	157.5	III
157.5	162.4	IV
162.5	166.9	III
166.9	178.9	IV
178.9	181.7	III
181.8	205.5	IV

Table 3 Visual Resource Classes on Route B		
Route B Mileposts		Visual Management Class
Start	End	
0.0	12.1	IV
12.1	25.8	II
25.8	35.2	IV
35.2	43.5	II
43.5	68.3	IV
68.3	71.2	III
71.2	79.0	IV
79.0	81.0	III
81.0	84.2	II
84.2	87.1	IV
87.1	91.5	II
91.5	93.1	IV
93.1	103.4	III
103.4	108.1	IV
108.1	110.1	III
110.1	125.6	IV
125.6	129.1	II
129.1	145.2	IV
145.2	162.2	III
162.2	192.3	IV
192.3	197.2	II
197.2	203.4	IV
203.4	206.7	III
206.7	207.0	IV
207.0	207.0	III
207.0	243.8	IV
243.8	245.9	II
245.9	247.5	IV
247.5	249.9	III
249.9	264.2	IV
264.2	266.2	III
266.2	282.7	IV

First Clarification to Section 3.7(10)(g)

DEQ Request:

Photographs from observation points

2/23/09 DEQ incomplete. 2/11/09 Keystone indicates in process.

Keystone Response:

A list of photographs taken at observation points along all three pipeline routes is included in Table 1. These photographs, with notations, are arranged by route and mile post on the following pages.

Table 1

Photos	Approximate Mile Post	Degree	Visual Resource Class
Route A			
MT-24 Crossing	60.0	110	III
MT-24 Crossing	60.0	285	III
MT-23 Crossing	110.6	90	III
MT-23 Crossing	110.6	275	III
MT-16 Crossing	156.6	110	III
MT-16 Crossing	156.6	300	III
U.S. 2 Crossing	172.7	160	II
U.S. 2 Crossing	172.7	180	II
U.S. 2 Crossing	172.7	340	II
U.S. 2 Crossing	172.7	360	II
Route A1A			
MT-24 Crossing	60.6	90	III
MT-24 Crossing	60.6	270	III
MT-13 Crossing	109.2	90	III
MT-13 Crossing	109.2	270	III
MT-16 Crossing	156.1	90	III
MT-16 Crossing	156.1	270	III
MT-16 Crossing	163.9	60	III
MT-16 Crossing	163.9	240	III
Medicine Lake NWR Ditch #1 Crossing	168.9	180	IV
Medicine Lake NWR Ditch #1 Crossing	168.9	360	IV
MT-16 Crossing	179.9	137	III
MT-16 Crossing	179.9	315	III

Table 1

Photos	Approximate Mile Post	Degree	Visual Resource Class
Route B			
MT-24 Crossing	69.7	135	III
MT-24 Crossing	69.7	315	III
U.S. 2 BNSF/AMTRAK Crossing	82.4	175	II
U.S. 2 BNSF/AMTRAK Crossing	82.4	355	II
MT-117 Crossing	83.8	150	IV
Milk River	83.7	325	II
MT-117 Crossing	83.8	330	IV
Missouri River	88.9	125	II
Missouri River	88.9	130	II
MT-24 Crossing	99.3	40	III
Weldon Rd. (CR 252)	127.5	45	II
Weldon Rd. (CR 252)	130.0	56	IV
MT-13 Crossing	145.9	308	III
MT-13 Crossing	145.9	315	III
MT-200 Crossing	146.9	137	III
MT-200 Crossing	146.9	315	III
MT-200S Crossing	147.8	9	III
MT-200S Crossing	147.8	135	III
MT-200S Crossing	147.8	170	III
MT-200S Crossing	147.8	205	III
MT-200S Crossing	155.6	307	III
I-94 Crossing	193.1	155	II
I-94 Crossing	193.1	320	II
Old Hwy U.S. 10 Crossing	194.0	155	II
Old Hwy U.S. 10 Crossing	194.0	335	II
Bad Road (241) Crossing	195.2	155	II
Bad Road (241) Crossing	195.2	335	II
Yellowstone River	196.0	155	II
Yellowstone River	196.0	335	II
U.S. 12 Crossing	244.5	173	II

Table 1

Photos	Approximate Mile Post	Degree	Visual Resource Class
U.S. 12 Crossing	244.5	180	II
U.S. 12 Crossing	244.5	360	II
MT-7 Crossing	248.4	122	III
MT-7 Crossing	248.4	302	III
Webster Rd. (247) Crossing	269.0	160	IV
Webster Rd. (247) Crossing	269.0	341	IV

Clarification for Section 3.7(12)(b)(xix)

DEQ Request:

(xix) high waterfowl population densities

Keystone Response:

No state or federally managed waterfowl production areas are crossed by any of the three alternative routes. Route B crosses one U.S. Fish and Wildlife Service (USFWS) Wetland Easement in Phillips County and Route A1A crosses a diversion canal that supplies, and is included within, Medicine Lake National Wildlife Refuge (NWR). Additionally, information requests directed toward the Montana Fish, Wildlife and Parks (MFWP) regarding prime waterfowl habitat or waterfowl concentration areas have not identified any locations along the three alternative routes (MFWP 2008; USFWS 2009).

References

Montana Fish, Wildlife and Parks (MFWP). 2008. Email correspondence between A. Messer and H. Wentland (MFWP) and P. Lorenz (AECOM) on 10/16/08.

US Fish and Wildlife Service. (USFWS) 2009. Medicine Lake National Wildlife Refuge Complex Website. http://www.fws.gov/medicinelake/Index.htm. Accessed 03/05/09.

Clarification for Section 3.7(12)(f)

DEQ Request:

f) Documentation that agencies with management responsibility for any affected biological resources have been consulted concerning impacts and mitigation and a description and evaluation of the mitigation measures suggested by these agencies.

2/23/09 – DEQ Incomplete. The description of the mitigating measures suggested by management agencies does not clearly identify the measures suggested by those agencies. 2/11/09 - Identify the mitigating measures suggested by the agencies. Refer to the definition of mitigation on page 4 of the Circular MFSA-2.

Keystone Response:

Keystone is engaged in ongoing consultations with federal and state wildlife and natural heritage agencies to identify threatened and endangered species and their habitats potentially occurring within the project area. In coordination with these agencies, Keystone is developing threatened and endangered species mitigation measures, including the need for species specific surveys. If surveys are required, Keystone will contract with qualified biologists to conduct surveys of sensitive species and their associated habitats. Biologists will document locations of sensitive species found during surveys and report any findings to the appropriate agency representatives. Keystone will work with the relevant regulatory authorities to determine any avoidance, minimization, or mitigation measures required. Chapter 4 of the Environmental Report details the results of these consultations and determinations. To date, both federal and state agencies have recommended that species specific surveys for be conducted for the following species within suitable habitat:

- Interior least tern and piping plover;
- Raptors (including the burrowing owl) and other migratory birds;
- Mountain plover;
- Black-footed ferret;
- Swift fox;
- Greater sage grouse and sharp-tailed grouse;
- River otter;
- American burying beetle;
- Massasauga;
- Small white-lady's slipper and western prairie fringed orchid; and
- Arkansas River shiner (if river is not HDD).

In addition to suggested surveys, potential mitigation measures suggested during meetings or conversations with wildlife agencies are summarized in the following table. Documentation associated with these discussions is included in **Attachment F**.

Suggested Mitigation Methods

Issue	Recommended Mitigation	Agency	Communication
Impacts to swift fox	Conducting more intensive surveys for swift fox dens in Phillips and Valley counties only.	MFWP and BLM	Meeting: Glasgow, 2/3/09
	Recommend using a 1/2 mile buffer zone around occupied dens during spring and summer months.	MFWP	Email from Windy Davis on 9/2/08
Impacts to Townsend's big-eared bat	Conduct acoustic surveys for the bat species in badland areas south of the Missouri River in McCone County.	BLM	Meeting: Glasgow, 2/3/09
Impacts to spotted bat	Conduct acoustic surveys for all bat species occurring within the Project area.	BLM	Meeting: Glasgow, 2/3/09
Impacts to long-legged myotis	Conduct acoustic surveys for all bat species occurring within the Project area.	BLM	Meeting: Glasgow, 2/3/09
Impacts to greater sage grouse and sharp-tailed grouse	Conduct aerial surveys within the Project area, especially in McCone County.	MFWP and BLM	Meeting: Glasgow, 2/3/09
	Recommend burying transmission lines associated with the Project.	MFWP	Meeting: Glasgow, 7/29/08
	Conduct pre-development surveys along the proposed corridor between mid-March and mid-May.	MFWP	Email from Windy Davis on 5/28/08
Impacts to Swainson's hawk and ferruginous hawk	Pre-clearing and relocating ferruginous hawk nests prior to disturbance.	MFWP and BLM	Meeting: Glasgow, 2/3/09
Reptiles and amphibians	Some type of mitigation to protect snake hibernacula prevent snakes from becoming trapped in open trenches. Also, someone to handle hibernating snakes that become overturned during construction.	MFWP	Meeting: Glasgow, 2/3/09
Impacts to grassland birds	Recommend surveying for grassland birds in July.	BLM	Meeting: Glasgow, 7/29/08

Suggested Mitigation Methods

Issue	Recommended Mitigation	Agency	Communication
Impacts to birds in the Bitter Creek WSA	Recommend scheduling construction outside of the breeding season.	BLM	Meeting: Glasgow, 7/29/08
Wildlife impacts/ exclusion dates	Recommend the following timing exclusions: big game winter range 12/1-3/31, sharptail grouse (within 2 miles of a lek): 3/1-6/15, sage grouse (within 4 miles of a lek): 3/1-6/15, raptor nests (within 1/2 mile of nest): 3/1-8/1.	MFWP	Email from Windy Davis on 8/14/08
Impacts to sensitive fish species	Avoid spring and summer (March-August) construction during high flow and spawning periods.	MFWP	Meeting: Glasgow, 2/3/08 and email from Windy Davis on 9/2/08
Impacts to whooping crane	If a whooping crane is spotted all construction must stop until the individual has left (a 1 mile buffer will apply) and the USFWS must be notified. Recommend burying transmission lines when in the vicinity of known migration routes or suitable habitat.	USFWS	Meeting: Billings, 5/8/08
Impacts to raptors	Timing stipulation of 1/2 mile buffer around nests from 3/1-8/1 for nests active in the last two years.	BLM	Email from Kent Undlin on 9/11/08

Clarification for Section 3.7(15)(b)

DEQ Request:

b) Description of each site or area, how area is used, and use level estimates

Keystone Response:

Table 1 provides information on the recreation use and sites located within 2 miles of the proposed Keystone XL Pipeline Routes. Based on conversations with managers of recreational sites and publically-owned lands, recreational land use estimates for Keystone XL Routes A, A1A, and B cannot be determined due to the variability of these outdoor activities (see Attachment F). Inclement weather and seasonal changes have a large impact on usage of areas for certain activities. For example, hunting in Block Management areas during designated seasons where hunting pressure can be more concentrated is variable year to year. The Montana Fish Wildlife and Parks decides which areas will be used on a yearly basis from land owner approval and population estimates of the targeted game species on the desired property. Units selected for the Block Management Program will not be approved until late each year when these lands have been determined; therefore, usage estimates for each block vary over time. All other recreational activities take place when weather conditions are desirable and not specifically in a concentrated location.

Table 1 Possible Recreational Uses on Public Lands Within 2 Miles of the ROW in Montana

Activity	Pipeline Route	Location	Usual Period of Occurrence
School Trust Fishing Access Site	B	North bank of the Missouri River, T27N, R41E, Sec. 36	Spring/Summer
Hunting	A, A1A, and B	Block Management areas designated by the Montana Fish Wildlife and Parks.	Fall/Winter
Fishing	A, A1A, and B	Publicly accessible portions of slow and fast moving areas of streams. These areas potentially hold desired fish species.	Spring/Summer
Trapping	A, A1A, and B	Public or private lands that have potential habitat for desired species.	Fall/Winter
Hiking	A, A1A, and B	Mostly occurs off-trail on public lands.	Year Around

Table 1 Possible Recreational Uses on Public Lands Within 2 Miles of the ROW in Montana

Activity	Pipeline Route	Location	Usual Period of Occurrence
Camping	A, A1A, and B	On public and private lands where RV's, camping trailers or tents can be placed. Especially during hunting seasons.	Summer/Fall
ATV and Off-Road driving	A, A1A, and B	On public and private lands where dirt vehicular and off-road trails are.	Year Around
GeoCaching	A, A1A, and B	On public lands where authorized.	Summer/Fall

Clarification for Section 3.8(1)(c)(i)(B)(iii)

DEQ Request:

iii) description of aquatic habitat, fish populations, special use areas (spawning areas, etc…), and angler use for the following stream reaches:

The detailed description of aquatic habitat, fish populations, and spawning sites is missing for (A), (C), and (D).

Keystone Response:

Tables 1 and **2** on the following pages summarize information in MDEQ's MFISH database. **Table 1** summarizes aquatic habitat and special-use sites identified within 5 miles of perennial streams crossed by the Project, and **Table 2** shows the distribution of fish species within 5 miles of perennial waterbody crossings.

Table 1 Description of Aquatic Habitat and Special Use Sites Within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Stream	River Mile at Crossing	Fishery Resource Value	Aquatic Habitat	Angler Use (State Rank)	Special Use Sites
Alternative A					
Big Muddy Creek	25.52	Substantial (3)	Non-trout	593	N/A
Frenchman Creek	3.47	Substantial (3)	Non-trout	N/A	N/A
Poplar River	39.23	Limited (5)	Non-trout	582	N/A
Rock Creek	39.97	Substantial (3)	Non-trout	N/A	N/A
Shotgun Creek	13.58	Limited (5)	Undesignated	N/A	N/A
Willow Creek	14.20	Moderate (4)	Non-trout	N/A	N/A
Alternative A1A					
Big Muddy Creek	48.80	Moderate (4)	Non-trout	593	N/A
Big Muddy Creek	81.04	Moderate (4)	Non-trout	593	N/A
East Shotgun Creek	4.14	Limited (5)	Undesignated	N/A	N/A
Frenchman Creek	3.47	Substantial (3)	Non-trout	N/A	N/A
Lake Creek	1.55	Limited (5)	Undesignated	N/A	N/A
Middle Fork Porcupine Creek	14.50	Limited (5)	Undesignated	N/A	N/A
Poplar River	82.65	High-Value (2)	Non-trout	582	N/A
Rock Creek	39.97	Substantial (3)	Non-trout	N/A	N/A
West Fork Poplar River	29.35	High-Value (2)	Non-trout	1177	N/A
West Fork Poplar River	29.10	High-Value (2)	Non-trout	1177	N/A
West Fork Poplar River	29.20	High-Value (2)	Non-trout	1177	N/A

Table 1 Description of Aquatic Habitat and Special Use Sites Within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Stream	River Mile at Crossing	Fishery Resource Value	Aquatic Habitat	Angler Use (State Rank)	Special Use Sites
Willow Creek	14.20	Moderate (4)	Non-trout	N/A	N/A
Alternative B					
Boxelder Creek	19.90	High-Value (2)	Non-trout	651	N/A
Cabin Creek	13.85	High-Value (2) / Moderate (4)	Non-trout	N/A	N/A
Cabin Creek	13.05	High-Value (2)	Non-trout	N/A	N/A
Dunham Coulee	7.55	N/A	Undesignated	N/A	N/A
Frenchman Creek	3.24	Substantial (3)	Non-trout	N/A	N/A
Little Beaver Creek	37.13	Limited (5)	Undesignated	N/A	N/A
Milk River	27.65	Outstanding (1)	Non-trout	158	N/A
Missouri River	1758.78	Outstanding (1)	Warm/Cool Water Fish	7	**Snagging**: it is illegal to snag for fish other than paddlefish on the Missouri River downstream from Fort Benton. Open all year. Catch-and-release for cutthroat trout. **Paddlefish snagging:** open Tuesdays, Wednesdays, Fridays, and Saturdays May 15 through June 30 from 6 AM to 9 PM daily, unless closed to harvest earlier by FWP. An unused yellow paddlefish tag is required to fish for paddlefish. The tag must be properly placed on the first paddlefish caught and landed. See Eastern District Standard Regulations for additional important paddlefish information. Catch-and-release snagging for paddlefish is not permitted.
Redwater River	108.55	High-Value (2)	Non-trout	1119	N/A

Table 1 Description of Aquatic Habitat and Special Use Sites Within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Stream	River Mile at Crossing	Fishery Resource Value	Aquatic Habitat	Angler Use (State Rank)	Special Use Sites
Rock Creek	25.97	Substantial (3)	Non-trout	N/A	N/A
Sandstone Creek	55.99	Limited (5)	Non-trout	1028	N/A
Willow Creek	3.18	Moderate (4)	Non-trout	N/A	N/A
Yellowstone River	116.25	Outstanding (1)	Non-trout	48	Catch-and-release snagging for paddlefish is allowed only at the Intake FAS (see Intake FAS exceptions). Catch-and-release for paddlefish is not permitted on any other section of the Yellowstone River or on the Missouri River below Fort Peck Dam. **Paddlefish Snagging:** Open May 15 through June 30 from 6 AM to 9 PM MST, on Tuesdays, Wednesdays, Fridays and Saturdays only, unless closed to harvest earlier by FWP. An unused yellow paddlefish tag is required to fish for paddlefish. The tag must be properly placed on the first paddlefish caught and landed. See Eastern District Standard Regulations for additional important information. **Snagging:** It is illegal to snag for fish, other than paddlefish, downstream from the mouth of the Bighorn River on the Yellowstone River, or downstream from Fort Peck Dam on the Missouri River.

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																											
	Alternative A						Alternative A1A												Alternative B									
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Bigmouth Buffalo		X								X													X					
Black Bullhead	X			X		X	X	X					X	X				X	X	X	X			X	X	X		X
Black Crappie																												
Blue Sucker	X																											
Brassy Minnow													X		X	X	X			X	X				X			
Brook Stickleback	X	X					X	X		X			X		X	X	X						X		X			
Brown Trout																												
Burbot	X												X															
Channel Catfish	X		X										X						X	X	X				X			

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																											
	Alternative A						Alternative A1A												Alternative B									
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Chinook Salmon																												
Cisco																												
Common Carp	X	X		X		X	X	X		X			X	X	X	X	X	X	X	X	X		X		X	X		X
Creek Chub																			X	X	X							
Emerald Shiner													X		X	X	X			X	X				X			
Fathead Minnow	X	X	X	X		X	X	X		X		X	X	X	X	X	X	X	X	X	X		X		X	X	X	X
Flathead Chub				X		X							X	X	X	X	X	X	X	X	X				X	X		X
Freshwater Drum																												
Golden Shiner																			X									
Goldeye	X	X								X					X	X	X		X	X	X		X		X			
Green Sunfish																			X	X	X				X			

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																										
	Alternative A						Alternative A1A												Alternative B								
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Iowa Darter		X		X		X				X			X	X	X	X	X	X					X		X	X		X
Lake Chub		X		X		X	X	X		X			X	X	X	X	X	X	X	X	X		X		X	X		X
Lake Trout																												
Lake Whitefish																												
Largemouth Bass																												
Longnose Dace		X		X		X	X	X		X			X	X	X	X	X	X	X	X	X		X		X	X	X	X
Longnose Sucker						X												X		X	X							X
Minnow																												

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																											
	Alternative A						Alternative A1A												Alternative B									
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Mountain Sucker																												
Mountain Whitefish																												
Northern Pike	X	X	X	X			X	X		X			X	X	X	X	X		X	X	X		X		X	X		
Northern Redbelly Dace	X		X				X	X					X												X			
Paddlefish																												
Pallid Sturgeon																												
Pearl Dace	X		X				X	X					X															
Plains Killifish																				X	X							

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																										
	Alternative A						Alternative A1A												Alternative B								
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Plains Minnow		X	X	X		X				X			X	X				X	X	X	X		X			X		X
Pumpkinseed																												
Rainbow Smelt																												
Rainbow Trout																												
Redbelly x Finescale Dace																									X			
River Carpsucker	X	X	X							X			X						X	X	X		X		X			
Sand Shiner																			X	X	X							

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																										
	Alternative A						Alternative A1A												Alternative B								
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Sauger	X																		X								
Sauger X Walleye Hybrid																											
Shorthead Redhorse	X	X	X	X						X			X	X	X	X	X		X	X	X		X		X	X		
Shortnose Gar																											
Sicklefin Chub																											
Shovelnose Sturgeon																											
Smallmouth Bass		X		X						X			X	X	X	X	X						X			X		
Smallmouth Buffalo																											
Spottail Shiner																											
Stonecat		X								X			X		X	X	X						X		X			

Table 2. Fish Distribution within 5 miles of Perennial Streams Crossed by the Keystone XL Project Alternatives According to the Montana Fish Wildlife and Parks MFISH Database

Species	Route																											
	Alternative A						Alternative A1A												Alternative B									
	Big Muddy Creek	Frenchman Creek	Poplar River	Rock Creek	Shotgun Creek[a]	Willow Creek	Big Muddy Creek	Big Muddy Creek	East Shotgun Creek	Frenchman Creek	Lake Creek[a]	Middle Fork Porcupine Creek	Poplar River	Rock Creek	West Fork Poplar River	West Fork Poplar River	West Fork Poplar River	Willow Creek	Boxelder Creek	Cabin Creek	Cabin Creek	Dunham Coulee[a]	Frenchman Creek	Little Beaver Creek	Redwater River	Rock Creek	Sandstone Creek	Willow Creek
Sturgeon																												
Sturgeon Chub																												
Walleye	X	X	X	X						X			X	X	X	X	X			X	X		X		X	X		
Western Silvery Minnow						X							X					X										X
Western Silvery/Plains Minnow		X		X		X				X			X	X	X	X	X	X	X	X	X		X		X	X		X
White Crappie																												
White Sucker	X	X	X	X		X	X			X			X	X	X	X	X	X	X	X	X		X		X	X		X
Yellow Perch		X		X			X			X			X	X									X			X		

[a] No fish distribution data available from MFISH for stream crossing..

Clarification for Section 17.20.1509(8)

DEQ Request:

8) Applies to Pipelines - engineering description of the facility, including conduit size and thickness, tensile strength, test and operating pressure, methods of joining sections of conduit, trenching depth, amount of ground cover over the pipeline, the location, size and overall plan for new or modified pumping and compressor stations, cathodic protection systems, other safety measures. Facility design provided for normal and maximum transmitting or pumping capacity and pressure of compressor stations and pump stations.

   2/23/09 – DEQ Incomplete. Provide the tensile strength for the pipeline and the size and overall plan for the pump stations. What is the normal operating pressure for the pipeline.

Keystone Response:

Additional information to supplement the discussion in Chapter 1, Sections 1.3.2 and 1.3.3 follows:

Two grades of pipe are under consideration for use on the Keystone XL Project; API 5LPSL 2 Grade X70M and API 5LPSL 2 Grade X80M. Grade X70M pipe is the current design basis; however, depending on various factors such as steel supply and market conditions, Grade X80M pipe may be used. As discussed in the Response to SIR-1.14 in Attachment P, Keystone will evaluate and finalize pipe grade selection based on proposals received from pre-qualified steel mills.

Tensile strength requirements for API 5LPSL 2 pipe are defined by API (2007), pipe specifications for the Project are included in the following table.

Pipe Grade	Yield Strength Minimum (psi)	Yield Strength Maximum (psi)	Ultimate Tensile Strength Minimum (psi)	Ultimate Tensile Strength Maximum (psi)
X70M	70,300	92,100	82,700	110,200
X80M	80,500	102,300	90,600	119,700

As discussed in text, pump stations will typically be approximately 5 acres in size, although some locations may be larger based on site-specific issues. Figure 1-3 in text is a diagram of a typical pump station with pig launcher and receiver; Figure SIR-1 17.20.1509 (8)

The maximum operating pressure (MOP) for the pipeline is discussed in Section 1.3.3.1 of the text. Generally, the system is designed for a MOP of 1,440 except for location-specific, low elevation segments downstream of pump stations where the MOP will be 1,600 psig. Approximate lengths of pipe downstream of pump stations within Montana where the MOP would be 1,600 are indicated in Table 1-3.

Reference:

API. 2007. Specification for Line Pipe ANSI/SPI Specifications 5L Forty-fourth edition. October 1 2007/ISO 3138:2007 (Modified). Petroleum and Natural Gas Industries – Steel Pipe for Pipeline Transportation Systems.

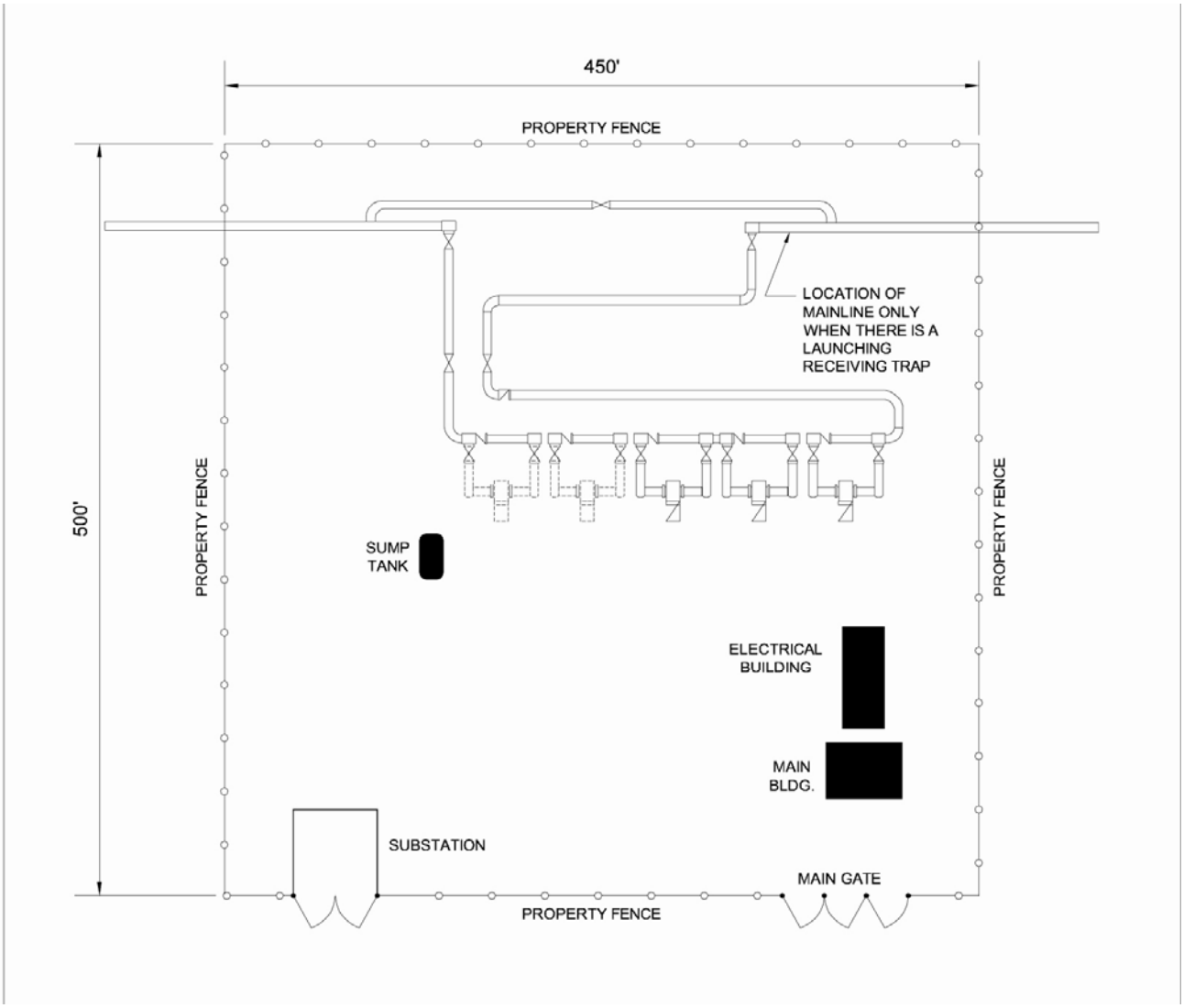


Figure 17.20.1509 (8) Plot Plan for Pump Station with Pig Launcher and Receiver

Clarification for Section 17.20.1509(11)

DEQ Request:

1) Communication facilities

Describe the microwave antennas and provide a diagram showing the size of the antennas.

Keystone Response:

Refer to the Reduced Index Table – April 2009 and to the following diagram.

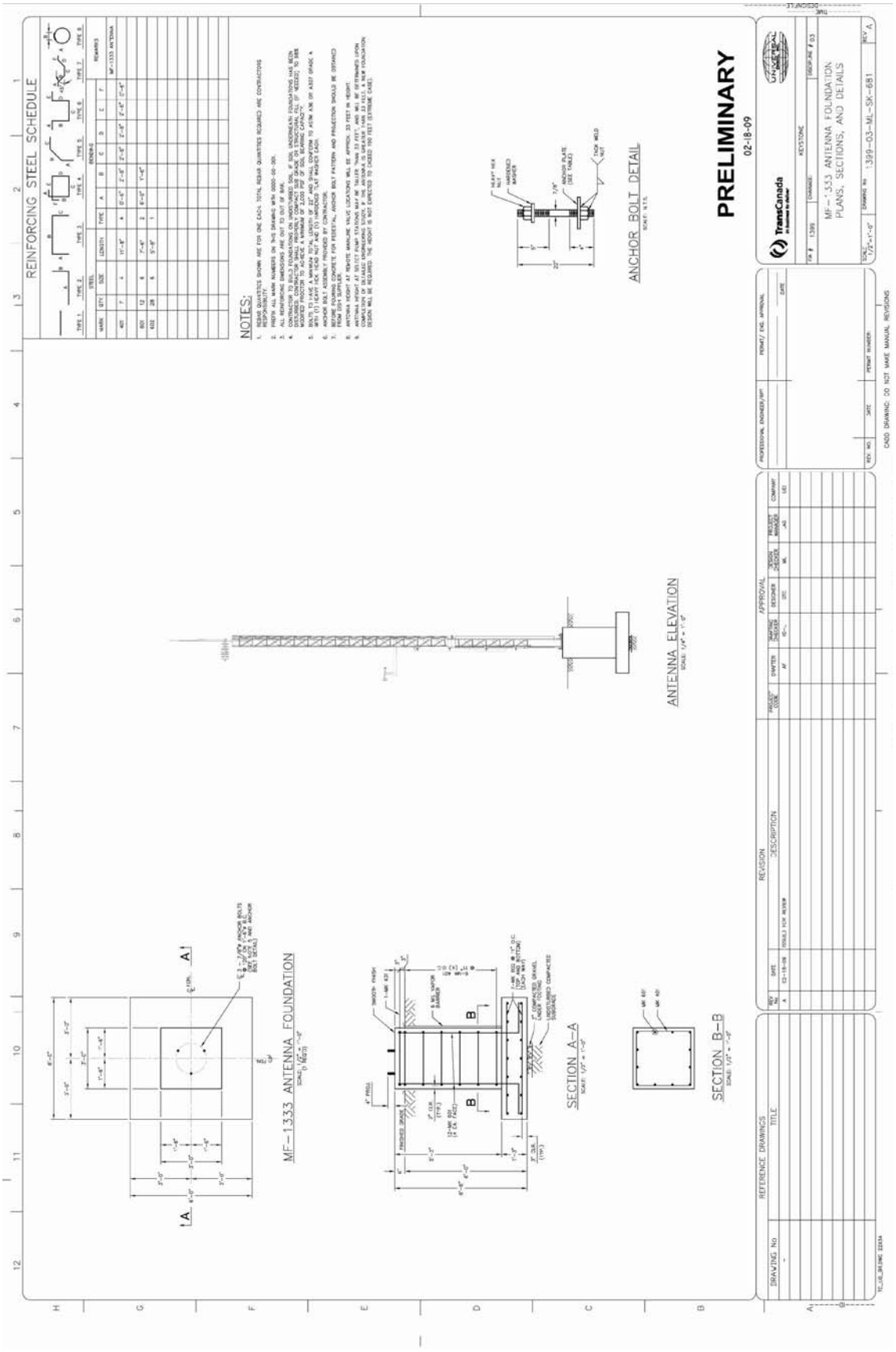


Figure Section 17.20.1509(11)

Clarification for Section 17.20.1511 (4)(a) and (c)

DEQ Request:

a) Width of ROW for topsoil salvage.

It is unclear where topsoil would be salvaged from the entire ROW. See p. 1-26, 1.4.4, last sentence, "and where there is another need to separate topsoil from subsoil." Please identify where these areas would be located and the reasons for additional topsoil stripping.

c) Locations of alternatives for topsoil salvage

See the comment under 4(a) above.

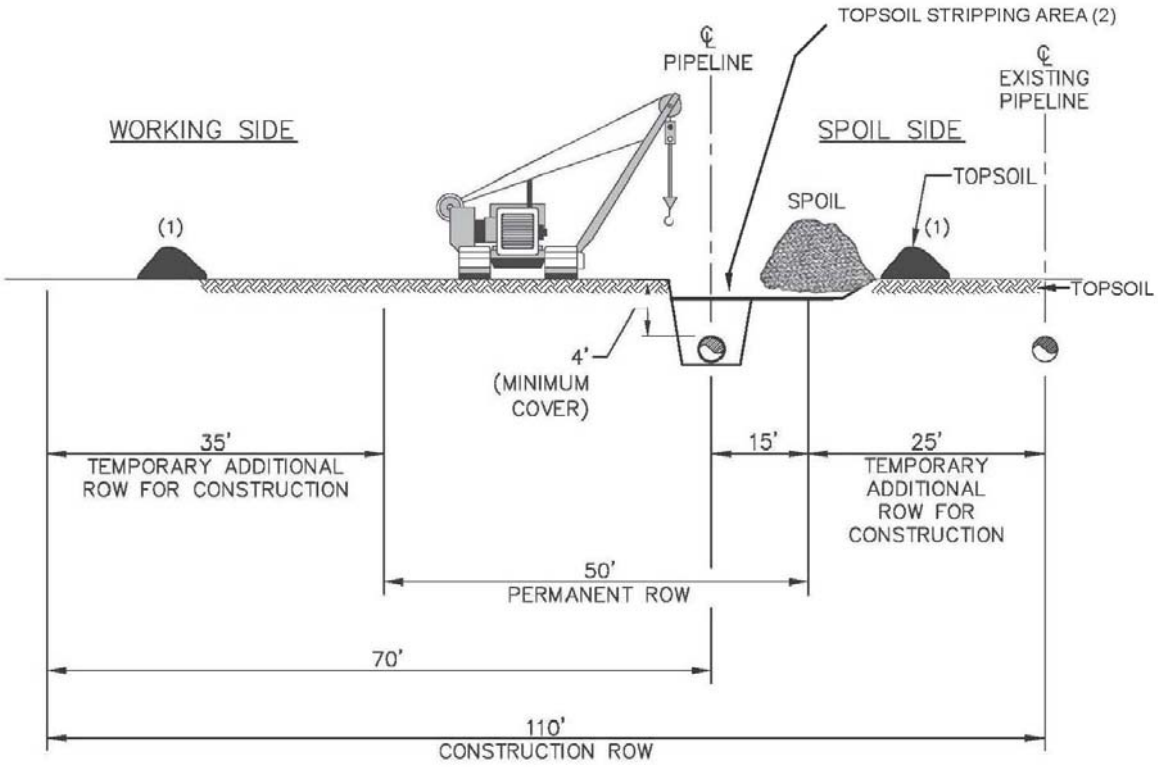
Keystone Response:

As discussed in Section 1.4.4, Keystone is committed to preserving topsoil in excavated areas by segregating it from the subsoil. Keystone's intentions are to excavate the trench and remove the topsoil along the trench where the subsoil will be stockpiled (**Figure 1-5**). The topsoil will be stored separately from the subsoil thus making it easier to restore the area after construction is complete.

Because the terrain in Montana varies widely, there will be sites along the route that require full right of way grading to provide a safe and effective construction area. One potential area is along the sides of steep hills, and in or around ravines. The steepness of this terrain is impractical and unsafe for construction equipment and personnel. These sites will likely require the entire width of the construction right of way be graded to a near-level configuration. Keystone may also conduct full right-of-way shipping in other areas where it is beneficial from a construction stand-point, or where required by landowners or land managers.

Where full construction right of way stripping is required, topsoil will be removed to a designated portion of the right of way or additional temporary workspace and segregated from subsoil. Upon completion of the pipeline construction, this site will be restored and the topsoil will be redistributed across the surface of the excavated area.

DEQ has requested Keystone's definition of other areas that may require modified topsoil stripping. These areas are not known at this time and will be identified prior to construction based on site-specific environmental conditions. Topsoil stripping requirements may also be modified due to the landowner or land management agency's request.



(1) ALTERNATE TOPSOIL PLACEMENT LOCATIONS
(2) TOPSOIL STRIPPING AREA MAY VARY AT RIVER CROSSINGS AND STEEP SLOPES

Figure 1-5 Typical Construction ROW with 25-foot Minimum Offset

Clarification for Section 17.20.1511(7)(b) and (c)

DEQ Request:

b) Estimates of trench width

Provide the width that the burial depth would be carried laterally to account for lateral stream channel migration.

2/23/09 – DEQ Incomplete. Provide the width that the burial depth would be carried laterally to account for lateral stream channel migration. This information is needed for analyses of impacts.

c) Estimates of scour depth

Keystone Response:

The design of the pipeline along the preferred route for channel crossings will be completed prior to construction based on preconstruction surveys and calculations. The standard design will be to install the pipeline 5 feet below the channel depth for a distance of 15 feet beyond the normal high water banks. Each channel crossing will be evaluated prior to construction in the manner described below and will take into account the hydrologic and hydraulic parameters associated with general scour and channel migration.

Scour - For scour assessment, various methodologies will be applied and are dependent on the composition of the soil and available information at the crossing. The steps are summarized below:

- Every identified crossing will first be screened based on the delineation of the tributary drainage area. Those drainage basins that are less than 10 square miles in area will be determined not to require further evaluation and the minimum pipe burial requirement of 5 feet will be assumed to be adequate for the crossing design.
  - Basin areas will be determined from the available USGS maps, DEM data and aerials. To determine the 100 year return frequency of inflow to rivers and streams, the available National Flood Frequency regression equations will be applied or new projections will be made using the actual USGS Stream Gage data using the Log-Pearson Type III Distribution or Weibell Formula.
- A second screening will include an evaluation for scour to determine if there is potential to require pipe burial below 5 feet in depth.
  - The mean competent velocity methodology will be used for the evaluation of scour for cohesive and non-cohesive soils. This methodology is described fully in Transportation Association of Canada's Guide to Bridge Hydraulics. In addition, the Critical Shear Stress and Maximum Permissible Velocity will be compared for the evaluation of scour for cohesive and non-cohesive soils. These methodologies are outlined in Ven Te Chow's Open Channel Hydraulics. Institutions such as the FHWA, USACE, USDA consider the same general method albeit the formula may be different.
- The crossings identified with scour potential will undergo a final evaluation, which may require redesign, to conduct a thorough assessment of the hydrologic and hydraulic condition in order to determine proper pipe depth and length. As discussed below, evaluation may include obtaining detailed cross sections by survey, photos, grab samples, and and/or shallow boreholes to determine subsurface geology.

Stream Meander - The evaluation of stream meander migration will be assessed as follows:

- The initial screening criteria will be a visual inspection of historic and present day aerial photos to determine if significant changes in channel alignment have occurred.
- If changes are observed that potentially may exceed 15 feet in a 50 year pipe service period, additional investigations will be conducted using the circle analysis to determine the appropriate design length required for the crossings.
  - For lateral migration assessment, the methodology as described in the National Cooperative Highway Research Program (NCHRP) Report 533: Handbook for Predicting Stream Meander Migration (Transportation Research Board of the National Academies) will be applied to project the degree of lateral migration. This method involves comparisons of historic and present-day aerial photographs. The stream positions from both the historic and present-day photos are overlain in ArcGIS to estimate the rates of change in the stream position. Circles are used to represent the stream curvature.
- Each crossing will be designed based on the findings of the hydrologic and hydraulic assessments to be performed prior to construction.

Evaluation - The evaluation of scour and stream meander will require collection and analysis of a significant amount of data. Examples of this information are identified below:

- Collection and processing data for the actual engineering evaluation may require a significant amount of time not accounted for in the detailed analysis. Each of the following steps will also require acquisition of appropriate permits and access, as well as mobilization of field crews and equipment.
  - Grab samples may be acquired at major crossings (those that have the potential for significant scour in excess of 5 feet).
  - Boreholes may be acquired near crossings.
  - Cross section survey data for major crossings: 40 – 50 ft upstream of crossing, at the crossing, and downstream of the crossing may also be required.
- An average of 8 hours is spent analyzing each crossing based on the complexity of the crossing and required analysis to finalize the depth and length of the pipe for each crossing.

Because of the site-specific nature of the work, it will not commence until precise crossing locations are determined. It is not considered feasible to conduct these investigations, contact landowners, and impact landowners that are not part of the preferred route nor part of the EIS notification and scoping process crossings on alternative routes.

Clarification for Section 17.20.1512(7)(a-g)

DEQ Request:

7) Detailed spill contingency plan, describing;

a) Immediate notification procedures

b) Type and location of emergency response personnel and equipment

c) Any mutual aid agreements to supply personnel and equipment and respond in the event of a spill

d) Response procedures

e) Equipment testing procedures

f) Frequency of field training exercises

g) Plan update procedures

Keystone Response:

A SPCC Plan template is included in the following pages. Page numbers are specific to the SPCC template.

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Response to SIR-1.21

DEQ Request:

SIR-1.21. Page 4-50, ¶3. Check with each County Conservation District crossed by the alternatives to determine which streams are considered perennial within the district and report your findings to DEQ.

Keystone Response:

MDEQ requested that Keystone inquire with each county conservation district crossed by the alternatives to determine which streams are considered perennial within the district. The following were contacted:

Daniels	Stanley French	P.O. Box 605	Scobey	MT 59263	406-487-2872
Dawson	Peggy L. Newton	102 Fir St. FP	Glendive	MT 59330	406-377-5565
Little Beaver	Starla Gundlach	P.O. Box 917	Baker	MT 59313	406-778-2217
McCone	Jeanne Kirkegard	P.O. Box 276	Circle	MT 59215	406-485-2660
Phillips	Pat Anderson	HC 72 Box 7615	Malta	MT 59538	406-654-1334
Prairie	Sandy Brown	P.O. Box 622	Terry	MT 59349	406-635-5381
Roosevelt	Deb Bickel	P.O. Box 517	Culbertson	MT 59218	406-787-5232
Sheridan	Judy Benson	119 N. Jackson	Plentywood	MT 59254	406-765-1801
Valley	Pat Johnson	54062 Hwy 2 W. #2	Glasgow	MT 59230	406-228-4337

Perennial streams identified as a result of these discussions are summarized in the following table and discussions, by county.

County/Conservation District	Conservation District Perennial Stream/Rivers Crossed	Project Identified Perennial Stream/Rivers Crossed
Daniels	West Fork Poplar River East Fork Poplar River	West Fork Poplar River (A1A) Poplar River (A1A)
Dawson	Yellowstone River	Yellowstone River (B)
Fallon (Little Beaver CD)	Sandstone Creek Little Beaver Creek Pennel Creek	Sandstone Creek (B) Little Beaver Creek (B) Boxelder Creek (B)
McCone	Redwater River	Redwater River (B)
Phillips	None Crossed	Frenchman Creek (A & A1A)
Prairie	Cabin Creek	Cabin Creek (B)

County/Conservation District	Conservation District Perennial Stream/Rivers Crossed	Project Identified Perennial Stream/Rivers Crossed
Roosevelt	Maps rec'd in mail, but did not indicate which streams/rivers are considered perennial.	Poplar River (A) Big Muddy Creek (A) Shotgun Creek (A)
Sheridan	Big Muddy Creek Lake Creek	Big Muddy Creek (A1A) Lake Creek (A1A)
Valley	Rock Creek Middle Fork Porcupine Creek Frenchman Creek Milk River Missouri River	Rock Creek (A, A1A, & B) Middle Fork Porcupine Creek (A1A) Frenchman Creek (B) Milk River (B) Missouri River (B)

Daniels County Conservation District

Route A1A passes through Daniels County and crosses the West Fork Poplar River, a perennial waterbody as identified by Keystone. The project has identified a crossing of the Poplar River below the confluence of the East and Middle forks where Keystone has also classified it as perennial. Mr. French indicated the only perennial streams in Daniels County near the proposed route are the Middle and West forks of the Poplar River. The Poplar River is considered the Middle Fork Poplar River by the conservation district, which indicates the Middle Fork begins at the US/Canada border. The facsimile map copy received indicates this as well.

Dawson County Conservation District

The Yellowstone River and an unnamed slough within its floodplain have been identified as perennial waterways crossed by Route B in Dawson County. Ms. Newton indicated that the Yellowstone River is the only perennial stream in Dawson County.

Little Beaver (Fallon County) Conservation District

Fallon County is crossed by Route B. Keystone has identified the following waterway crossings as perennial: Sandstone Creek; Little Beaver Creek; and Boxelder Creek. Ms. Gundlach indicated that Pennel Creek, Sandstone Creek, and Little Beaver Creek were the only perennial streams in Fallon County. A map of the perennial streams of Fallon County has been received. Pennel Creek was identified by Keystone as it is attributed in the National Hydrography Dataset (NHD) dataset as intermittent (FCode: 46003) at the crossing. Upon further investigation, the NHD dataset identified Pennel Creek as perennial (FCode: 46006) approximately 2 miles downstream of the crossing. The conservation district verified the perennial classification change at the eastern edge of Section 25, Township 9 North, Range 57 East, which is located near the NHD's change. Boxelder Creek was identified as perennial by Keystone due to the assumption stated in the MFSA application regarding the NHD attributes of "Artificial Path."

McCone County Conservation District

Keystone has identified the Redwater River as a perennial stream crossing by Route B in McCone County. Ms. Kirkegard indicated the Redwater River is the only perennial stream in the county. She will send a map of the streams of the county for our reference.

Phillips County Conservation District

All routes cross Phillips County with nearly identical paths. Route B differs slightly from those of routes A and A1A. Keystone identified Frenchman Creek as a perennial stream, due to the "Artificial Path" attribute of the NHD dataset. Mr. Kindle said that the only streams that were perennial in the county were the Milk River and the Missouri River. He said he would send a map of the perennial streams for the county. Neither of these rivers are crossed by the Project in Phillips County.

Prairie County Conservation District

Keystone has identified Cabin Creek as the only perennial stream crossed in Prairie County by Route B.

Several attempts have been made to contact the Prairie County Conservation District, and multiple messages have been left. The conservation district office staff was spoken to on one occasion, but they were unable to provide any information due to time constraints. Previous contact with the conservation district produced the "Prairie County Conservation District Rules to Implement the Natural Streambed and Land Preservation Act of 1975, Senate Bill 310," Rule 6.1, which indicates that perennial streams in the county are those listed as such on USGS maps. This is consistent with the NHD data, which has been derived from USGS maps.

Roosevelt County Conservation District

Routes A and A1A both pass through Roosevelt County on entirely separate routes. Keystone has identified the Poplar River, Big Muddy Creek and Shotgun Creek as perennial crossings on Route A and East Shotgun Creek as a perennial crossing on Route A1A in Roosevelt County.

Maps were received by mail; however perennial streams/rivers were not indicated. Direction was provided to contact the Department of natural Resources and Conservation if further information is needed.

Sheridan County Conservation District

Route A1A crosses Sheridan County. Keystone has identified perennial crossings in this county as Big Muddy Creek and Lake Creek. Mr. McCall with the Sheridan County Conservation District said that Big Muddy Creek, Beaver Creek, Whitetail Creek, and Lake Creek are all perennial streams within the county. An email with a map of perennial streams indicated Beaver and Whitetail creeks are tributaries of Big Muddy Creek that are located north of Route A1A.

Valley County Conservation District

Valley County is crossed by all 3 routes in different locations. The following streams have been identified by Keystone as perennials crossed by one or more routes: Rock Creek (A, A1A, & B), Middle Fork Porcupine Creek (A1A), Frenchman Creek (B), the Milk River (B), and the Missouri River (B). During a phone conversation, the Valley County Conservation District confirmed that the list of perennial streams crossed was accurate.

Conclusion:

Keystone has included all perennial stream crossings that were identified by conservation districts. Keystone has included additional perennial streams in several locations, based on the NHD attribute "Artificial Path" designated as perennial in the original application. This has occurred in Fallon and Phillips counties.

Response to SIR-1.27

DEQ Request:

How the product will be priced.

Chapter 2.3 has a very general discussion. Supplemental Information Request (SIR-1.27): Please provide a more detailed discussion of how revenues will cover costs over time. This includes how much of the capacity has to be used and under contract in order to remain profitable. It will also include the tariff rates that would be charged, and the likely lengths of contracts.

Keystone Response:

Financing

Keystone will obtain the funds required for construction of the Project from a combination of bank or capital markets and its partners or their affiliates. The ultimate parents of the partners are TransCanada Corporation (TransCanada) and ConocoPhillips.

TransCanada currently generates approximately CAN $2.8 billion of cash from its operations each year. Its operating subsidiary, TransCanada Pipelines, LP is rated at the "A-" by Standard and Poor's and "A3" level by Moody's Investor Service. Recently, TransCanada has successfully raised approximately US $3.5 billion of debt and equity in the capital markets. TransCanada has assets of US $30 billion.

ConocoPhillips is an integrated energy company with interests around the world. Headquartered in Houston, Texas, the company has approximately 33,600 employees and US $185 billion of assets. ConocoPhillips is rated "A-" by Standard and Poor's and "A1" by Moody's Investors Service.

Both TransCanada and ConocoPhillips have committed to the Project to provide their share of funds requested by Keystone. Accordingly, Keystone anticipates that it will have access to sufficient funds to complete the Project.

Financial Viability

Keystone expects to have a full life unlevered internal rate of return (IRR) in the range of 7 percent to 9 percent. The current level of long-term transportation contracts of 380,000 bpd, with an average life of 17 years, provides a sufficient rate of return for the Project to proceed.

The tolls payable under the long term transportation contracts will have two components - fixed and variable. The fixed portion of the toll will not change over the term of the contract and is designed to recover invested capital. Contract shippers are obligated to pay the fixed component of the toll with respect to their individual contract volumes for the term of the contract, whether or not crude oil is shipped.

The second component of the toll payable by contract shippers is the variable toll, through which operations, maintenance, and administrative expenses are allocated to all barrels shipped and is intended to provide Keystone with a flow through recovery of actual operating costs for actual volume shipped.

Response to SIR-1.29

DEQ Request:

1b) Utilize or parallel existing utility &/or transportation corridors

SIR-1.29: Why was paralleling the pipeline corridor in the Baker area not considered?

Keystone Response:

DEQ has requested that Keystone analyze a route variation in southeast Montana, near the city of Baker. This reroute would split from Route B for approximately 63 miles and follow an existing transmission pipeline southeast through Montana and North Dakota, returning to the original Route B in South Dakota (Figure SIR 1.29). Analysis of this variation, the Baker reroute, follows.

Although the Baker Reroute is 2.1 miles shorter than Route B, Route B is preferred for several reasons. From a public safety perspective, Route B will impact no municipal watersheds, while the Baker Reroute would potentially impact Baker Lake, a municipal water supply for Baker, MT. Additionally, and the Baker Reroute crosses an Ecological USA, while Route B does not. From a constructability standpoint, the Baker reroute would traverse an area with a large number of oil and gas wells, with the associated roads, underground gathering lines, and power lines. Crossing this area with a large diameter pipe would require special crossing techniques, including HDD, and would greatly increase the expense and time required for construction as well as potentially temporarily interrupt collection of product from those wells. As previously discussed, the Baker Reroute would also require permit acquisition within North Dakota, which would increase expense, and since some processes can require long lead time, could also impact Project schedule.

The following permits and approvals would potentially be required for the North Dakota portion of the Baker Reroute:

- ND Department of Health, Division of Water Quality
    - National Pollutant Discharge Elimination Systems (NPDES) permits (Clean Water Act, Section 402)
        - Notice of Intent (NOI), Stormwater Pollution Prevention Plan (SWPPP) for construction
        - Application for discharge of hydrostatic test water and/or construction dewatering
    - Water Quality Certification (Clean Water Act, Section 401)
    - Hydrostatic Testing NDG - 07000 (or Short Form C) Temporary Dewatering Hydrostatic Testing Permit)
    - Construction Stormwater NDR10-0000, Application (Notice of Intent) to Obtain Coverage Under NPDES General Permit for Storm Water Discharges Associated with Construction Activity
- North Dakota Department of Health
    - Permit to Construct (potentially Minor Source, depending on amount of emissions)
    - Permit to Operate (potentially Minor Source, depending on amount of emissions

- North Dakota State Historic Preservation Officer
    - Section 106 Compliance Process
- North Dakota State Game and Fish Department
    - State Threatened and Endangered Species Consultation
- North Dakota Public Service Commission
    - Ten Year Plan
    - Corridor Permit
    - Route Permit
- North Dakota State Water Commission
    - Temporary Water Use Permit

Costs associated with permitting for the Baker Reroute include time and materials to conduct surveys, such as equipment, survey crew travel expenses and wages; meetings with state and local agencies to discuss the permitting process and project specifics; and a significant amount of work for the preparation and submission of permit applications. All of these costs would not be incurred if the Baker Reroute were not selected. Additionally, the permitting process could add an additional 6 months or more to the Project schedule. The surveying and permitting this reroute will prove to be a time consuming and costly process

Table 1 includes a summary comparison of environmental information between the Baker reroute and Route B.

Table 1 Comparison of Impacts for Baker Reroute and Route B (miles crossed or number

	Baker Reroute	**Route B**	**Notes**
Ownership			
Length	62.8	64.9	Although Route B is slightly longer, it will have the least amount of impacts and is more cost effective.
Private	46.8	62.8	Route B traverses more private land but has the least amount of impacts.
BLM	13.9	1.4	The Baker Reroute crosses more significant BLM, State, and UTL easement land where many recreational uses may be impacted.
State Land	1.5	0.7	
UTL Easement	0.5	0.5	
Structures	18	59	Route B has a greater impact on structures.
Land Use			
i. National Wilderness Areas	0.0	0.0	None of these land uses are crossed by either

Table 1 Comparison of Impacts for Baker Reroute and Route B (miles crossed or number

	Baker Reroute	Route B	Notes
ii. National Primitive Areas	0.0	0.0	route.
iii. National Wildlife refuges and ranges	0.0	0.0	
iv. State wildlife management areas and wildlife habitat protection areas.	0.0	0.0	
v. National parks and monuments	0.0	0.0	
vi. State parks	0.0	0.0	
vii. National recreation areas	0.0	0.0	
viii. Wild and Scenic rivers	0.0	0.0	
ix. Roadless areas	0.0	0.0	
x. slopes greater than 30%	1.1	4.6	Route B has more steep slopes, however, this does not affect constructability.
xi. specially managed buffers around national wilderness and national primitive areas	0.0	0.0	None of these land uses are crossed by either route.
b) State and federal waterfowl production areas	0.0	0.0	
c) National natural landmarks, areas of critical environmental concern, special interests areas, research botanical areas, outstanding natural areas	See Below	See Below	

Table 1 Comparison of Impacts for Baker Reroute and Route B (miles crossed or number

	Baker Reroute	Route B	Notes
National Natural Landmarks	0.0	0	None of these land uses are crossed by either route.
ACEC	0.0	0	
Special Interest Areas	0.0	0	
Research botanical areas	0.0	0	
Outstanding natural areas	0.0	0	
d) Critical habitat(MT only)	0.0	0	
e) Habitats of listed threatened and endangered species occupied seasonally	3	4	Number of the different species the route crosses, not miles of individual habitats. Route B will impact one more species than the Baker Reroute.
f) National historic landmarks, National register districts	0	0	None of these land uses are crossed by either route.
g) National historic districts and sites nominated to or designated by SHPO	Unknown	Unknown	Information is being compiled
h) Municipal watersheds	Baker	0	The Baker Reroute crosses upgradient of the town of Baker, Montana, and crosses Baker Lake. Route B, however, does not cross any municipal watersheds.
i. Streams and rivers listed in Montana Department of Fish, Wildlife, and Parks (FWP) rivers database as being Class 1 or 2 streams or rivers	0	0	None of these land uses are crossed by either route.
j. Streams listed by DEQ pursuant to 75-5-702 MCA that are not attaining beneficial uses of water	2	2	Sandstone Creek And Boxelder Creek. Data of streams that are not attaining beneficial uses of water can be found in Attachment A, Mapbook 3.
k. Highly erodible soils and areas with severe reclamation constraints	0.2	2.8	Route B has more highly erodible soils due to steep slopes.
l. Incompatible with published visual management plans[a]	See Below	See Below	
VRM Class II[a]	3.1	2.1	The Baker Reroute is less compatible with visual management plans as Route B.
VRM Class III[a]	7.6	4.4	
VRM Class IV[a]	31.6	47.3	
m) Winter distribution of elk, deer, moose	See Below	See Below	

Table 1 Comparison of Impacts for Baker Reroute and Route B (miles crossed or number

	Baker Reroute	Route B	Notes
White-Tail deer[a]	0.0	0.0	There are no distribution areas crossed by the project for this species.
Mule Deer[a]	4.4	7.0	Area Defined as General and Winter habitat. Route B disturbs a larger portion of habitat as compared to the Baker Reroute.
Pronghorn (Antelope) [a]	25.8	13.6	Area Defined as General and Winter habitat. The Baker Reroute impacts significantly more Pronghorn habitat than Route B.
Elk[a]	0.0	0.0	There are no distribution areas crossed by either route for these species.
moose[a]	0.0	0.0	
mountain goat[a]	0.0	0.0	
bighorn sheep[a]	0.0	0.0	
n) Major elk summer security areas[a]	0.0	0.0	This designated area is not crossed by either route.
o) Seasonally occupied mountain sheep and mountain goat habitats[a]	0.0	0.0	
p) Sage and sharp-tailed grouse leks[b]	27	26	Route B and the Baker Reroute are almost identical in impacting Sage Grouse Leks.
Sage Grouse Brooding Habitat and General Distribution[b]	42.3	36.7	The Baker Reroute impacts a more significant amount of brooding habitat and distribution areas as compared to Route B.
Sage Grouse General Distribution[b]	22.0	21.6	Sage grouse distribution is almost identical between the two routes.
Sage Grouse Lek Area[b]	0.0	0.0	None of these land uses are crossed by either route.
SharpTail Grouse General Distribution[b]	0.0	0.0	
SharpTail Grouse Lek Area[b]	0.0	0.0	
q) High Waterfowl densities (prime waterfowl habitat) [a]	0.0	0.0	
r) Undeveloped land or water areas with natural features of unusual scientific…	0.0	0.0	
s) Geologic units of formations with a high probability of including paleontological resources	62.8	64.9	The routes traverse an almost identical probability of paleontological resources.
t) Sites that have religious or heritage significance to Native Americans	NA	NA	Due to the confidentiality of sites that have religious or heritage significance to Native Americans, this information cannot be obtained. This information will only be shared

Table 1 Comparison of Impacts for Baker Reroute and Route B (miles crossed or number

	Baker Reroute	Route B	Notes
			by the tribes with the DOS through the NEPA process. Locations as such, are not made public due to their significance to Native Americans. Therefore, it has yet to be determined if either route would impact such sites
u) Standing water bodies	2	5	Route B impacts more standing waterbodies.
v) Surface supplies of potable water	3	3	The same number of potable water sources is crossed by both routes.
w) Active faults near substations, switchyards, or terminus points	NA	NA	There are no active faults found within this region.
Cretaceous Clays [a]			
Low[a]	26.5	15.4	The Baker Reroute traverses more Cretaceous Clays than Route B.
Moderate[a]	6.7	2.8	
High or Very High[a]	0.06	0.3	
LULC			
Forest	0	<0.1	Route B crosses forested areas.
Grassland	54.7	51.3	The Baker Reroute crosses more grassland than Route B.
Wetlands	0.0	0.2	Route B crosses a small amount of wetlands.
Agriculture	6.1	11.8	Route B crosses a larger portion of agricultural areas than the Baker Reroute.
Developed ROW	1.3	0.6	The Baker Reroute crosses a greater portion of developed ROW which will increase impacts as opposed to Route B.
Vegetation Cover	NA	NA	The vegetative cover type for both routes are similar.
Rivers (Perennial or Intermittent) (Number of Stream Crossings)	75	67	The Baker Reroute impacts more streams as compared to Route B.
Roads	63	32	Almost twice as many roads are impacted by the Baker Reroute than Route B which is much more disruptive to local traffic and more costly to the project.
HCA (Other Populated Areas)	0	0	No HCA's are crossed by either route.
Ecological USA	12.7	4.1	More ecological areas of importance are found along the Baker Reroute, impacting a larger distribution of species or habitat.

Table 1 Comparison of Impacts for Baker Reroute and Route B (miles crossed or number

	Baker Reroute	Route B	Notes
Water protection areas	0	0	No water protection areas are crossed by either route.
Water wells	6	20	Route B approaches more water wells than the Baker Reroute.
Oil and Gas Wells(Within 1/4 mi)	331	0	The Baker Reroute would impact a large number of oil and gas wells. Traversing this area during construction would be very costly in time, money, and safety. Route B does not impact any oil or gas wells.

Comparison of locations within Montana only. Information for North Dakota and South Dakota were not analyzed.

[a] Comparison of locations within Montana and South Dakota only. Information for North Dakota was not analyzed.

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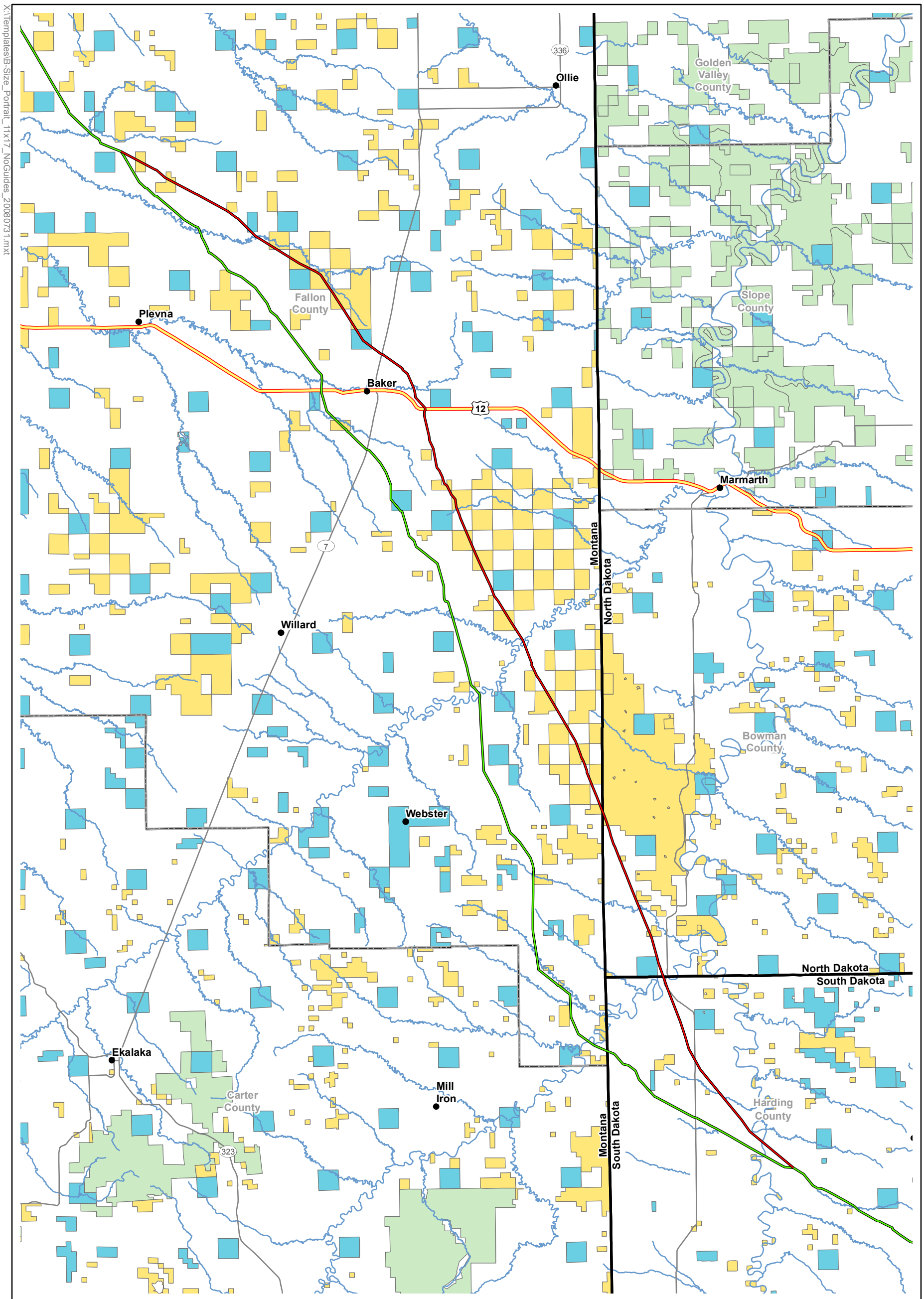

Response to SIR-1.33

DEQ Request:

2) Explanation of methods.

While information presented on pages 4-6 and 4-7 for the overview survey does include a very brief explanation of the methods used, it does not include an explanation of how preferred location criteria, cost, reliability and engineering considerations, and other factors were considered when selecting alternative locations. SIR-1.33: Provide a list of key locations in Montana that were visited during field reconnaissance. Identify what resource issues were reviewed during these site visits.

2/23/09 - DEQ did not find a response to SIR-1.33 in Attachment P.

Keystone Response:

Key locations in Montana that were visited either on the ground, studied from the air, or both during field reconnaissance, included the major river crossing locations (Missouri, Milk, Yellowstone), the Bitter Creek WSA, the canal crossing at the Medicine Lake NWR, Rock Creek, Buggy Creek, and Frenchman Creek. At all locations, Project personnel were looking for potential constructability issues, such as areas with shallow or exposed rock (to determine where ripping or blasting might be required) and areas with steep or rough terrain (to determine where special construction techniques might be required and where restoration might be challenging). Project personnel also were determining general vegetation cover types and making note of raptor nests, any unique habitats, and other special status species habitat indicators at all locations along each route. Additionally, PHMSA High Consequence Areas were evaluated during the reconnaissance visits/aerial overflights.

Response to SIR-1.38

DEQ Request:

f) Viewer characteristics

Comment: Proximity to the pipeline and number of residences were considered in the impact analysis. SIR-1.38: Figure 4 showing BLM Visual Resource Management Areas does not consider locations of residences, although views from residences are considered sensitive in the impact analysis. Provide the number of residences along each alternative within Management Areas II, III and IV.

Keystone Response:

Residential viewpoints along Route options are listed in Tables 1 through 3 and summarized in Table 4.

Table 1 Houses within 0.75 Miles of the Route A Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
2.3	SW	2,200	IV	None
6.4	SW	2,250	IV	Rolling terrain
24.2	NE	1,750	II	Barrier hill
59.0	S	2,000	III	Windbreak
59.5	S	1,200	III	Windbreak
60.2	NE	1,000	III	None
60.9	NNE	800	III	None
73.8	NNE	1,900	IV	Barn barrier
88.0	NNE	3,300	IV	None
95.8	SSW	2,500	IV	Windbreak
96.2	NNE	2,800	IV	Building, partial
96.6	NNE	3,960	IV	Windbreak, partial
97.5	NNE	3,000	IV	Orchard, barn
97.6	NNE	1,600	IV	Minor landscaping
101.0	SSW	3,400	III	Windbreak, partial
101.4	SSW	2,350	III	Windbreak, partial
102.2	NNE	2,300	IV	Building, partial
108.7	NNE	1,700	IV	Building, partial
110.4	NNE	2,450	III	None
110.5	NNE	2,400	III	None
116.4	N	500	IV	Windbreak, barn

Table 1 Houses within 0.75 Miles of the Route A Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
127.0	N	2,500	IV	None
130.5	N	1,900	IV	None
132.0	N	2,300	IV	None
133.1	NNE	2,400	IV	None
133.2	N	1,500	IV	Building, partial
133.6	NNE	2,100	IV	None
136.2	NNE	2,150	IV	None
136.3	SSW	3,200	IV	None
137.8	N	2,850	IV	Building, partial
139.0	S	950	IV	Windbreak
140.1	S	900	IV	None
147.9	SW	1,550	IV	None
148.0	SW	2,200	IV	Vegetation
148.2	NE	2,150	IV	None
150.1	SSW	2,300	IV	Vegetation, buildings
155.4	NNE	2,300	IV	None
156.6	N	2,100	III	None
157.2	NNE	3,250	III	Vegetation, buildings
157.9	SSW	1,400	IV	Vegetation
158.7	NNE	1,900	IV	Vegetation
159.1	SSW	3,850	IV	Vegetation, buildings
159.8	SSW	3,550	IV	Windbreak
159.8	NNE	2,750	IV	Vegetation
160.8	SW	950	IV	Windbreak
162.9	SSW	3,450	IV	None
163.1	SSW	3,650	IV	Buildings
170.5	NNE	2,650	II	None
170.8	SSW	1,350	IV	None
171.1	SW	1,800	IV	Windbreak
172.8	W	1,500	II	None
173.3	NE	3,750	II	None
178.3	NE	2,100	IV	None

Table 2 Houses within 0.75 Miles of the Route A1A Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
2.3	SW	2,200	IV	None
6.4	SW	2,250	IV	Rolling terrain
24.2	NE	1,750	II	Barrier hill
59.0	S	2,000	IV	Windbreak
62.5	S	3,000	IV	Building, partial
63.7	S	3,900	IV	None
66.6	N	1,000	IV	Triple windbreak
67.0	S	2,400	IV	Windbreak, partial
75.2	S	3,950	IV	Windbreak, partial
79.9	N	1,800	IV	None
85.9	N	2,150	IV	Windbreak; partial building
87.2	N	900	IV	None
88.2	N	3,150	IV	None
95.8	N	1,800	IV	Building, partial
109.5	N	2,400	III	Building, partial
109.5	S	800	III	Windbreak
111.6	N	600	IV	Building, partial
118.7	N	600	IV	None
119.6	N	3,600	IV	None
121.6	N	2,800	IV	None
121.6	S	1,500	IV	Windbreak
121.6	S	3,450	IV	Windbreak, buildings
121.7	N	700	IV	Windbreak
121.7	S	3,750	IV	Windbreak, minor
128.7	S	3,900	IV	Windbreak
130.7	N	1,350	IV	Building, partial
131.0	N	1,550	IV	None
131.8	N	900	IV	None
134.8	S	1,300	IV	Windbreak
136.5	S	300	IV	Windbreak, buildings
145.2	N	2,000	IV	Buildings

Table 2 Houses within 0.75 Miles of the Route A1A Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
146.3	N	3,000	IV	Buildings, partial
146.5	S	1,800	IV	Windbreak
147.1	S	2,600	IV	Windbreak
148.5	S	1,800	IV	Vegetation, partial
149.7	N	1,150	IV	None
155.2	N	2,250	IV	None
159.4	W	50	IV	None
161.7	E	500	IV	None
164.0	NW	2,900	III	Building, partial
169.8	E	3,700	IV	None
170.2	E	2,900	IV	Windbreak, buildings
174.8 - 175.3[1]	W	50 - 1,500	IV	None
175.7	E	2,400	IV	Windbreak
176.6	W	600	IV	None
176.9	W	450	IV	None
177.8	SW	2,800	IV	Windbreak, partial
179.8	NE	1,600	III	Vegetation, minor
180.3	SW	400	III	None
181.2 - 181.7[2]	SW	2,700 - 3,950	III - IV	Buildings, variable
181.7	NE	3,200	IV	None
183.1	SW	650	IV	None
183.7	NE	3,000	IV	Windbreak
186.5	NE	3,750	IV	Windbreak, partial
190.1	S	2,300	IV	None
193.7	S	1,600	IV	None
194.1	N	400	IV	None
195.3	N	1,500	IV	None
195.4	N	2,900	IV	None
196.8	N	150	IV	Building, partial
197.1	N	400	IV	None

Table 2 Houses within 0.75 Miles of the Route A1A Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
200.7	N	2,600	IV	None
201.1	S	1,550	IV	Windbreak, partial
204.2	SW	2,500	IV	Buildings, partial

[1]Homestead community; approximately 22 residences within 0.75 mile.

[2]Froid community; approximately 50 residences within 0.75 mile.

Table 3 Houses within 0.75 Miles of the Route B Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
2.3	SW	2,200	IV	None
6.4	SW	2,250	IV	Rolling terrain
24.9	ENE	1,750	II	Barrier hill
33.9	NE	1,000	IV	None
66.4	E	1,100	IV	Topography, forested
67.1	S	1,500	IV	Vegetation, irregular
68.3	SW	850	III	None
68.6	SW	1,000	III	None
69.8	NE	1,500	III	None
70.0	NE	750	III	None
70.3	SW	350	III	None
70.4	SW	900	III	Vegetation
70.4	SW	1,700	III	Vegetation, irregular
72.8	SW	1,000	IV	None
76.7	SW	1,250	IV	Windbreak, vegetation
77.7	NE	700	IV	Barrier
79.9	NE	1,200	III	None
82.3	W	1,500	II	None
82.7	E	1,600	II	Vegetation, heavy
82.7	W	700	II	None
82.7	W	2,000	II	Vegetation

Table 3 Houses within 0.75 Miles of the Route B Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
83.4	NE	1,100	II	None
84.0	NE	1,150	II	Vegetation, heavy
84.5	SW	1,900	IV	Vegetation
87.3	NE	1,450	II	Vegetation
87.4	NE	600	II	Vegetation
123.0	SW	2,100	IV	Topography, vegetation
127.5	NE	3,000	II	Topography, windbreak, vegetation
138.7	NE	1,400	IV	Vegetation
142.8	ENE	850	IV	Vegetation
144.4	SW	1,200	IV	None
146.9	WSW	1,400	III	Vegetation, irregular
147.5	E	700	III	Vegetation
151.7	NNE	1,250	III	Windbreak, vegetation
152.3	NE	2,270	III	None
153.2	N	1,300	III	Vegetation, irregular
157.3	SW	3,150	III	Vegetation
165.2	W	650	IV	None
166.2	W	3,180	IV	Windbreak, vegetation
167.0	W	2,550	IV	None
168.7	NE	1,150	IV	Vegetation
171.0	W	3,090	IV	Vegetation
176.3	NE	1,800	IV	Vegetation
178.0	NE	1,800	IV	Vegetation
189.8	W	1,100	IV	None
193.6	WSW	750	II	Vegetation
194.0	NE	800	II	None
194.1	SW	2,150	II	Windbreak
194.1	NE	2,730	II	None
195.2	WSW	2,000	II	None
195.2	ENE	2,360	II	Windbreak
198.1	S	1,250	IV	None

Table 3 Houses within 0.75 Miles of the Route B Centerline

Mile Post	Direction	Distance (feet)	VRM Class	Screening Notes
198.1	S	3,450	IV	None
198.5	N	2,050	IV	Vegetation
201.9	SW	950	IV	None
204.1	W	3,000	III	Vegetation
206.3	E	3,650	III	None
222.3	SW	650	IV	Vegetation, irregular
234.2	WSW	1,100	IV	Vegetation, irregular
239.6	NE	750	IV	Vegetation
243.8	E	2,730	II	None
243.8	E	3,360	II	None
244.0	E	2,640	II	None
244.3	E	1,910	II	None
246.9[1]	NE	3,820	IV	Barrier, low
248.4	N	800	III	None
248.6	SW	1,150	III	Vegetation, irregular
252.2	W	1,000	IV	None
257.0	E	500	IV	None
270.1	NE	1,800	IV	Vegetation, irregular
272.4	E	2,000	IV	Windbreak

[1]Baker community; small number of residences within 0.75 mile.

Table 4 Residences on all Routes by Visual Resource Management Class

	Route A	Route A1A	Route B
Class II	4	1	20
Class III	10	55[1]	18
Class IV	39	79[2]	33[3]
Total	53	135	71[3]

[1]Includes approximately 50 residences of the Froid community
[2]Includes approximately 22 residences of the Homestead community
[3]Does not include a small number of houses associated with the Baker community.

Response to SIR-1.41

DEQ Request:

1a) Summary of the most important impacts of the facility

SIR-1.41: Clarify the disbursement period for property tax payments to counties shown in Table 4-87 (page 4-178). Impact zones for associated facilities are not addressed.

Keystone Response:

Disbursement – The property tax payments indicated in **Table 4-87** (page 4-178) are annual disbursements calculated using an estimated allocated unit value for the Montana portion of the pipeline. Montana is expected to continue to assess and collect property taxes on the pipeline so long as the Montana Department of Revenue (MDOR) determines there is taxable value attributable to the pipeline. The property taxes for associated facilities owned by the pipeline owner are included in the annualized property tax projections provided in **Table 4-87**. Associated facilities owned by other entities will be taxable to those separate entities. For example, the electric transmission lines for the pump stations will be owned by the electric provider. It is expected that the electrical providers will be electrical cooperatives, which are also centrally accessed under unit value methods by the MDOR. For economic impact analysis, the MDOR recommends applying an effective tax rate of 1.5 percent (based on their estimated average levy rate of 500 mills applied to a taxable value of 3 percent) of original installed cost for the first year of property tax payments. As a general rule, the MDOR assesses electrical cooperatives on a historical or original cost, less depreciation basis.

Response to Request at DEQ Meeting 2/11/09

DEQ Request

Discuss siting/routing constraints in Canada that require crossing in Morgan, MT. Discuss a route alternative that follows the Express Pipeline and then the Platte Pipeline to Steele City.

Keystone Response:

Summary of the Proposed Canada–United States Border Crossing for the Proposed Keystone XL Project

The Steele City Segment of the proposed Keystone XL Project (Project) starts in Hardisty, Alberta and interconnects with the Keystone Mainline near Steele City, Nebraska. Morgan, Montana was selected as the Canada-United States border crossing of the proposed pipeline route. This location was selected based on routing criteria for both the US and Canadian portion of the Project. Some key criteria (e.g., overall route length and initial and final delivery points) were considered for the overall Project, regardless of route segment location. Criteria used for the US segments are discussed in other portions of the MFSA document, and criteria used for the portions of the Steele City Segment in Canada are discussed below.

Routing Criteria in Canada

In Canada, Keystone adopted specific selection criteria and best management practices for routing of the proposed transmission pipelines. Routing and siting criteria reflect project economics, constructability, regulatory requirements and known environmental or stakeholder issues of concern. The criteria employed on the Project used to evaluate corridor alternatives were:

- minimizing length to reduce overall environmental and socio-economic footprint and ensure facilities are economical to construct and operate;
- paralleling existing infrastructure owned by TransCanada (the Foothills Pipeline in Canada/Northern Border Pipeline in the US), wherever practical, to reduce new ROW and temporary workspace and minimize potential effects on environmental resources (e.g., native plant communities and wildlife habitat), minimizing the number of affected landowners, and minimizing impacts to agricultural operations;
- limiting the number and complexity of major river crossings and road, rail and utility crossings ; and
- avoiding, where practical, environmental and land use features.

The proposed Project corridor selection process began with the following fixed control points within Canada:

- The initiating Hardisty pump station and Terminal at Hardisty, Alberta.
- Suitable crossings of the Red Deer River, South Saskatchewan River, and Frenchman River;
- Avoidance of two prairie national wildlife areas, and
- an international border crossing within a suitable industrial corridor and potentially even parallel TransCanada existing infrastructure (Saskatchewan segment, the Foothills Pipeline ROW.

The corridor selection was directly influenced by control points in Canada and the US, and the presence of existing linear infrastructure. This in turn influenced length. Based on this analysis, a corridor contiguous with the existing Foothills pipeline (see **Figure 4-2**) was identified as the preferred corridor.

Comparison of the Proposed Keystone XL Pipeline Route and the Express-Platte Pipeline System Route

DEQ requested that Keystone consider following the existing right-of-way (ROW) for the Express and Platte Pipeline Systems from Hardisty, Alberta to Steele City, Nebraska. The Express Pipeline runs south from Hardisty through central Montana and into central Wyoming before turning east and ending near Casper, Wyoming. The Platte Pipeline runs southeast from Casper, Wyoming and east across southern Nebraska before intersecting the Keystone Mainline near Steele City, Nebraska and continuing on to its delivery point near Wood River, Illinois. Figure SIR-1 Section 17.20.1311(1) shows an overview of all alternatives considered for the Steele City route, including the Express-Platte Route.

During the initial routing of the Keystone XL Pipeline, consideration was given to utilizing existing pipeline corridors; however, overall length and area of impact is often an overriding concern. The Steele City Segment of the Keystone XL Pipeline is proposed to transport oil from Hardisty, AB to an interconnection point with the Keystone Mainline near Steele City, NE. However, the Express Pipeline was constructed to deliver oil to markets in central Montana and Wyoming. These locations are not intended markets for the Keystone XL Pipeline and the benefits of paralleling another system are far outweighed by the added length and impact that this route has as compared to the relatively direct route that is proposed for the Keystone XL Project.

The Steele City Segment of the proposed Keystone XL Project starts in Hardisty, Alberta and interconnects with the Keystone Mainline near Steele City, Nebraska. In Canada, the proposed Keystone XL route (Route B) parallels a Foothills Pipe Lines Ltd. natural gas line through much of Saskatchewan and this Foothills pipeline then interconnects with the Northern Border Pipeline at the border crossing at Morgan, Montana. The proposed Keystone XL route then parallels Northern Border for approximately 25 miles in Phillips County before deviating to the southeast near Frenchman Creek near the boundary of Valley County. This deviation from Northern Border is required to cross the Missouri River in a narrow corridor between the reservation and Ft. Peck Lake and to avoid the Ft. Peck Indian Reservation. This crossing was a major control point in determining the overall routing of the Keystone XL Pipeline and helped to determine the location of the international border crossing. The proposed route then continues to the southeast, leaving Fallon County, Montana to enter the extreme northwest corner of South Dakota. Maintaining a relatively direct path to Steele City, the proposed route crosses into Nebraska in eastern Keya Paha County and after continuing southeast across Nebraska it parallels the Keystone Mainline for roughly the last seven miles before the reaching the proposed Steele City Tank Farm.

The 24-inch Express Pipeline, installed in 1996, also originates in Hardisty, Alberta and transports a variety of light, medium, and heavy crude oil to markets in Montana, Wyoming, Utah, and Colorado. From the origin, it travels southwards for approximately 170 miles until it crosses Hwy 1, where it deviates towards southeast to the Canada-United States border. For the first 110 miles, it travels through open prairie land, predominantly agricultural. As it crosses the Red Deer River, it is routed through dense oil fields for approximately 55 miles up to the S Saskatchewan River. These oil fields could create a significant impact and risk to the construction of the Keystone XL Pipeline due to the numerous potential collector lines and above normal construction activity in the region. The Express route then crosses significant drainage features and rough terrain for roughly 30 miles before it enters the United States in Hill County, Montana.

After the Express route crosses into Montana, the area is predominately agricultural, which is unique to region that the pipeline traverses. The pipeline crosses the Milk River and a few drainage features south of Hwy 2 before entering Chouteau County, and then crosses the Missouri River immediately west of the designated National Wild and Scenic River and Upper Missouri Breaks National Park. Express then continues into Fergus County and in and out of Judith Basin County where the land use remains agricultural; however, there also are

a greater number of densely populated areas. Routing of a major pipeline through this much agricultural land can be beneficial for construction, but can also impose a more significant impact on the local population than routing through rougher, more remote terrain.

The Express Pipeline then crosses into Wheatland County between the Little Belt Mountains, Lewis and Clark National Forest, and the Big Snow Mountains, and subsequently traverses through Golden and Stillwater Counties where it passes through more agricultural land and varied drainage features. The route then crosses the Yellowstone River and its tributaries at the border of Carbon County with difficult terrain features on both sides of the river. For a major portion of Carbon County, the pipeline travels through the Pryor Mountain ranges, which can be difficult for construction. Reclamation of the terrain can be even more difficult.

The Express Pipeline enters Wyoming through a valley between two mountainous regions into Big Horn County adjacent to Custer National Forest. The line is routed south approximately 130 miles in a plateau type terrain predominately uncultivated land with occasional farmed areas near streams or water sources. Express then continues for approximately 90 miles through similar terrain into Casper Wyoming where it joins the Platte 20-inch that is routed from its origin at Casper to its termination at Wood River, Illinois. As the Platte Pipeline travels southeast, it traverses a mixture of cultivated lands and low population areas; however, as the pipeline moves eastward there are significantly more small areas of population. The Platte Pipeline route through Nebraska crosses predominately agricultural land and is located approximately 10 to 15 miles south of the Platte River in the central portion of Nebraska. The route then continues generally eastward until it reaches the proposed location of the Keystone Tank Farm near Steele City, Nebraska.

Table 2 below compares the relative lengths and number of crossings estimated for each of the routes. The total estimated length of the route from Hardisty to Steele City paralleling the Express-Platte System is 1,331 miles, which is approximately 13% (152 miles) longer than 1,179 miles of the Keystone XL route. There is an even more substantial increase in the number of anticipated road and stream crossings of 39 percent and 45 percent respectively.

Table 2 Routing Alternative Comparison

Route (From Hardisty, AB to Steele City, NE)	Length (mi)	Road Crossings (ESRI Data) [1]					River Crossings (ESRI Data) [2]
		Class 1	Class 2	Class 3	Class 4	Total	
XL Steele City - CAN	328	1	0	20	75	**96**	N/A
XL Steele City – US (Route B)	851	4	2	38	698	**742**	404
Express-Platte – CAN	270	2	0	15	24	**41**	N/A
Express-Platte – US	1,061	10	0	62	1,053	**1,125**	584
XL Steele City – Combined (Route B)	1,179	5	2	58	773	**838**	N/A
Express-Platte - Combined	1,331	12	0	77	1,077	**1,166**	N/A
Steele City to Express-Platte Change	**152**	7	-2	19	304	**328**	**180**
Steele City to Express-Platte % Change	**13%**	140%	-100%	33%	39%	**39%**	**45%**

[1] Road crossing information was compiled from GIS road data provided by ESRI and does not necessarily reflect the actual number of road crossings that would be encountered. The numbers are provided as a relative reference only. The "Class" of the road indicates how major it is (1 being major and 4 being minor).

[2] Stream crossing information was compiled from GIS river data provided by ESRI and does not necessarily reflect the actual number of stream crossings that would be encountered. The numbers are provided as a relative reference only and are only available for the United States portion of the routes.

No drinking water protection areas are located along the Express Pipeline. Route B has been adjusted to avoid all drinking water protection areas.

Keystone believes that paralleling the Express-Platte System would substantially increase the length and added features crossed, would increase the amount of environmental impact, and increase constructability issues. The Express-Platte System is also routed through significantly rougher terrain as described above in order to serve markets in central Montana and Wyoming. For these reasons, we strongly believe that the proposed Keystone XL Pipeline route is less invasive and best-suited route from Hardisty, Alberta to Steele City, Nebraska.

Overall, Route B for the Steele City Segment of the Keystone XL Pipeline is the most direct route from Hardisty, Alberta to Steele City, Nebraska, minimizing the impact of the project by paralleling existing Rights-of-Way where practical and avoiding major environmental, cultural, and terrain features.

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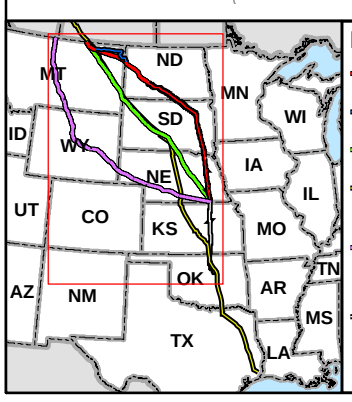
Alberta
Saskatchewan
Manitoba
Montana
North Dakota
South Dakota
Wyoming
Nebraska
Colorado
Kansas
New Mexico
Texas
Oklahoma



Legend

- Option A
- Option A1A
- Option B (Preferred)
- Western Alternative
- Express/Platte Co-locate Alternative
- Cushing Extension (Permitted Under Keystone)

Land Ownership (Affected States)

- Bureau of Indian Affairs/Tribal
- National Park Service
- DOD-USACE
- US Bureau of Land Management
- US Bureau of Reclamation
- US Forest Service
- US Fish and Wildlife Service
- State Land

TransCanada Keystone XL Project

Figure 1
DEQ Request; 2/11/09 Meeting
Alternative Routes
Steele City Segment

0 25 50 100 Miles
0 25 50 100 Kilometers
1:4,750,000

N