

KEYSTONE XL PIPELINE PROJECT

0291-SD-P4-356-9-357.2-1

KEYSTONE XL PIPELINE PROJECT PIPELINE ROUTE VARIATION FORM			
1	VARIATION TYPE: Refinement: <input type="text"/> Reroute: <input checked="" type="checkbox"/> Footprint: <input type="text"/> Design: <input type="text"/> Centerline: <input checked="" type="checkbox"/> Pump Station: <input type="text"/> Valve Site: <input type="text"/> CAR: <input type="text"/>		
2	LOCATION: Sketch: <input type="text"/> Pictures: <input type="text"/> N/A State: <input type="text"/> SD County: <input type="text"/> Harding Quad Map: <input type="text"/> N/A Township: <input type="text"/> 15N Range: <input type="text"/> 09E Aerial Map: <input type="text"/> See attached map sheet Section: <input type="text"/> 33 Centerline: <input type="text"/> 3/14/2012 MP: <input type="text"/> 356.88 to <input type="text"/> 357.24		
3	REASON FOR ROUTE VARIATION (Please include reason for route variation): The primary reason for this reroute is to avoid paralleling and crossing creek (Unnamed Tributary to North Fork Moreau River) multiple times. The reroute also eliminates reclamation issues at the drainage crossing. The reroute has been proposed based on the field reconnaissance effort.		
DETAIL ROUTE VARIATION (Please describe route variation in detail): Route variation starts near MP 356.9 and deviates ~13° southeast of CL. It continues in this direction for ~721.5 ft. This allows more distance and effectively avoids crossing the unnamed tributary to North Fork Moreau River twice. The route then turns further east towards the current CL and extends for ~1,209 ft. and rejoins the current CL near MP 357.2.			
ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; crossings, induction bends, etc.): No New Landowners are impacted by this route variation. Three tracts are impacted by reroute: ML-SD-HA-03590.000 (State of South Dakota) ML-SD-HA-03600.000 (J M Bar Limited Partnership) Additional Savings include Reclamation issues at the drainage crossings : ~\$30,000			
Is there an increase/decrease in the number of crossings? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, please list: <input type="text"/> Reroutes eliminates 3 drainage crossing.			
COST ANALYSIS (costs incurred or saved from the route variation)			
Additional length of route realignment:	<input type="text"/> 26	ft.	\$ 9,502.14 \$ 360/ft
Additional length of side-hill construction:	<input type="text"/>	ft.	\$ - \$ 19/ft
Additional length of wetland construction:	<input type="text"/>	ft.	\$ - \$ 195/ft
Additional bore length (Road, RR):	<input type="text"/>	ft.	\$ - \$ 540/ft
Additional foreign line/pipeline crossings:	<input type="text"/>	EA	\$ - \$ 30,000/EA
Additional water body crossing (streams, ponds, etc.):			
35 - 65' +	<input type="text"/>	EA	\$ - \$ 185,000/EA
10' - 19'	<input type="text"/>	EA	\$ - \$ 77,250/EA
Less than 10'	<input type="text"/> -3	EA	\$ (97,500.00) \$ 32,500/EA
Additional survey required:			
Civil:	<input type="text"/> 0.37	mile	\$ 1,828.00 \$ 5,000/mile
Cultural:	<input type="text"/> 0.00	mile	\$ - \$ 2,500/mile
Biological:	<input type="text"/> 0.22	mile	\$ 627.45 \$ 2,800/mile
Miscellaneous costs saved or added due to route variation from ADDITIONAL IMPACTS listed above:			\$ (30,000)
Overall estimated costs of the route variation:	<input type="text"/> \$ (115,542.42)		(See "Additional Impacts" above)

4 **LAND / TransCanada** *Tina Hall*

a) Is a new landowner affected by the proposed variation? Yes No

b) Is the affected landowner/tract a possible condemnation? Yes No

c) Does proposed route variation impact Tribal Lands? Yes No

d) Does proposed route variation impact any Federal/State Lands? Yes No
 -If yes, name type (i.e. USFWS, BLM, etc.): State of South Dakota

e) Is proposed realignment outside the easement/workspace? Yes No

f) Is realignment proposed to satisfy landowner request? Yes No
 -If yes, name of landowner(s)/track number(s):

g) Has all the evaluation criteria been examined/provided for this specific discipline? Yes No
 If no, please explain why:

5 **ENGINEERING/CONSTRUCTION - TransCanada** *Meera Kothari*

a) Maximum deviation perpendicular to proposed alignment: 154 ft.

b) Does variation (CL) (including workspaces) falls within 500 ft. MDEQ Corridor? Yes N/A No

c) Has the centerline been staked for construction? Yes No

d) Does route variation affect HDD crossing alignment? Yes No

e) Is realignment proposed for engineering/construction reasons? Yes No

f) Will the route variation require the relocation of a pump station? Yes No

g) Has all the evaluation criteria been examined/provided for this specific discipline? Yes No
 If no, please explain why:

6 **ENVIRONMENTAL / exp** *Jonathan Minton*

a) Has the corridor been environmentally surveyed? Yes No

b) Has the proposed variation been environmentally surveyed? Yes No

c) Does proposed route variation impact Sage Grouse areas? Yes No

d) Does route variation impact ABB areas? Yes No

e) Was variation proposed to satisfy environmental issues? Yes No

f) Was realignment proposed to satisfy agency request? Yes No
 -If yes, name of agency(s):

g) Environmental features:
 Added (+): Subtracted (-):
 Wetland ID # for newly impacted wetlands:

h) Has all the evaluation criteria been examined/provided for this specific discipline? Yes No
 If no, please explain why:

7 **ENGINEERING / FACILITIES AND HYDRAULICS (if applicable)** *Sandra Gigovic*

a) Will the route variation require the relocation of a pump station? Yes No

b) Will route variation impact hydraulics? Yes No

c) Are additional valves required at HCA's or water crossing? Yes No

d) Has all the evaluation criteria been examined/provided for this specific discipline? Yes No
 If no, please explain why:

8 **STAKEHOLDER RELATIONS / TCPL (if applicable)** *Bud Andersen*

a) Does the variation result in any new stakeholders? Yes No

b) Does the variation require follow-up with specific stakeholder groups? Yes No

c) Was the variation proposed to satisfy stakeholder request? Yes No
 -If yes, please specify issue type (as it aligns to stakeholder database):

d) Has all the evaluation criteria been examined/provided for this specific discipline? Yes No
 If no, please explain why:

9 Originator: Engineering
 Date: 3/28/2012

10 Received by:
 Date: 3/28/2012
 Fax to: ?

11 Assigned Tracking Number: 0291-SD-P4-356.9-357.2-I

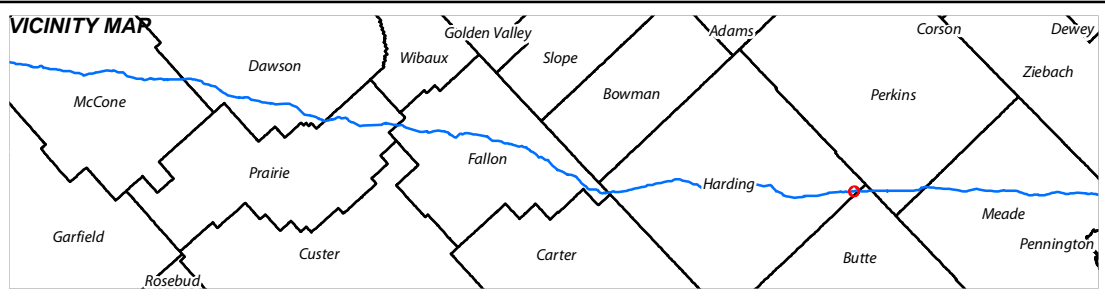
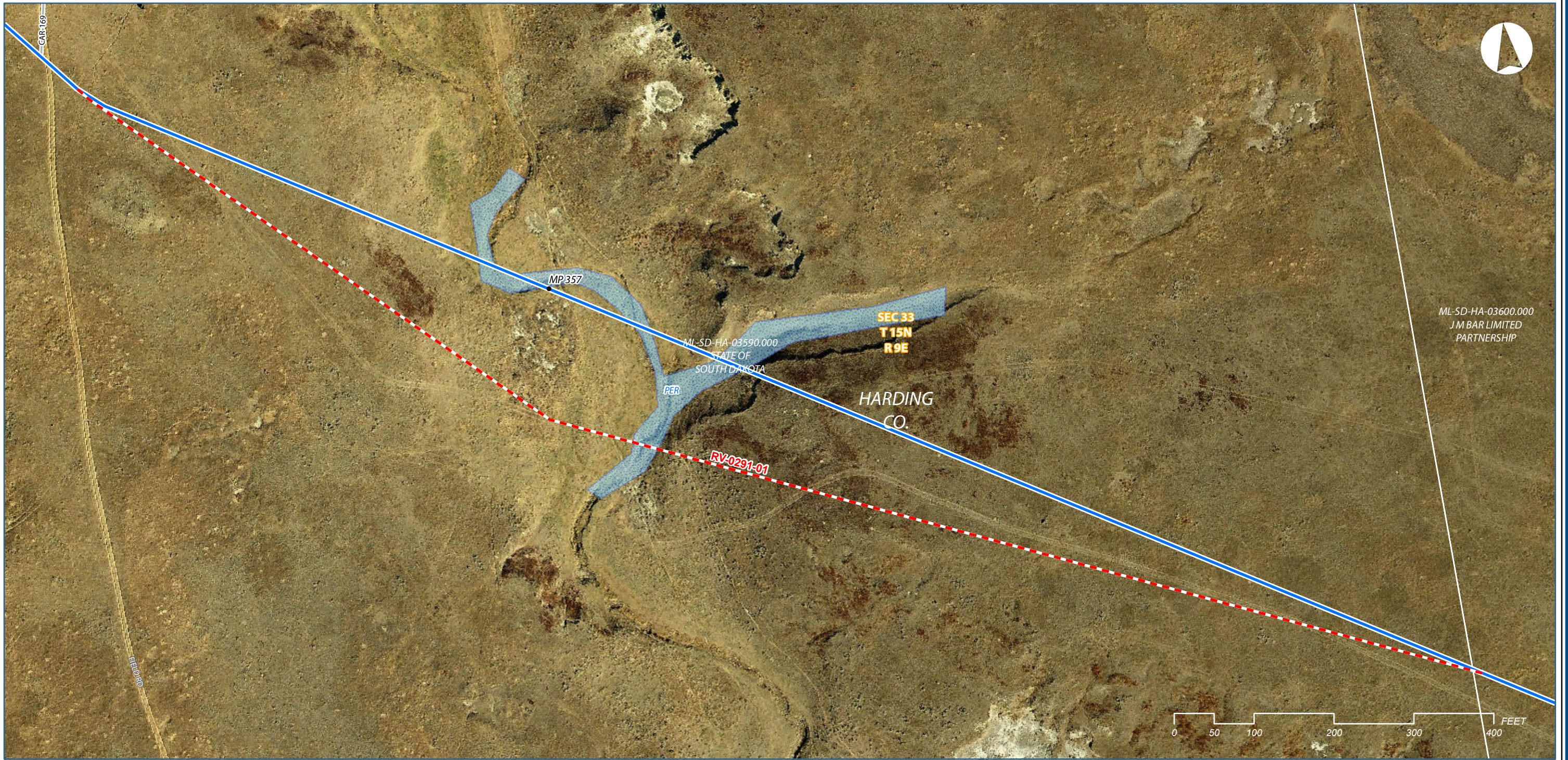
12 Filed by:
 Date:
 Fax to: ?

0291-SD-P4-356.9-357.2-I

KEYSTONE XL PIPELINE PROJECT

KEYSTONE XL PIPELINE PROJECT ROUTE VARIATION AUTHORIZATION FORM		
Date: <u>3/28/2012</u>	Tracking Number: <u>0291-SD-P4-356.9-357.2-1</u>	
Description: <u>The primary reason for this reroute is to avoid paralleling and crossing creek (Unnamed Tributary to North Fork Moreau River) multiple times.</u>	MP: <u>356.9</u> to <u>357.2</u>	Originated By: <u>Engineering</u>
	Variation Form Attached: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
TransCanada - Land	Tina Hall	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <u>[Signature]</u> Date: <u>4-16-12</u>
Comments:		If Rejected Why?
TransCanada - Engineering	Meera Kothari	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <u>[Signature]</u> Date: <u>4-27-12</u>
Comments:		If Rejected Why?
Exp - Engineering	Butch Wallace	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <u>[Signature]</u> Date: <u>4-17-2012</u>
Comments:		If Rejected Why?
Exp - Environmental	Jonathan Minton	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <u>[Signature]</u> Date: _____
Comments:		If Rejected Why?
Stantec - Risk Assessment	Heidi Tillquist	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: _____
Comments:		If Rejected Why?
TransCanada - Facilities	Sandra Gigovic	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: _____
Comments:		If Rejected Why?
TransCanada - PM (Montana)	Alan Lietz	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: _____
Comments:		If Rejected Why?
TransCanada - PM (South Dakota)	James Odom	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <u>[Signature]</u> Date: <u>May 23, 2012</u>
Comments:		If Rejected Why?
TransCanada - PM (Nebraska)	Robert Bradley	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: _____
Comments:		If Rejected Why?
TransCanada - Keystone XL Manager	Steve Marr	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <u>[Signature]</u> Date: <u>June 15/12</u>
Comments:		If Rejected Why?
Forward to:	Tina Hall <input type="checkbox"/> Meera Kothari <input type="checkbox"/> Butch Wallace <input type="checkbox"/>	Jonathan Minton <input type="checkbox"/> Heidi Tillquist <input type="checkbox"/> Sandra Gigovic <input type="checkbox"/> Alan Lietz <input type="checkbox"/>
		James Odom <input type="checkbox"/> Robert Bradley <input type="checkbox"/> Steve Marr <input type="checkbox"/>

0291-SD-P4-356.9-357.2-1



LEGEND

- MILEPOST
- KEYSTONE XL CL (2012-03-14)
- - - PROPOSED ROUTE VARIATION
- ▭ SECTION LINE
- ACCESS ROAD
- PUMP STATION
- ⊗ VALVE
- SURVEYED FENCE
- ▭ PROPERTY PARCEL
- ▭ CULTURAL SITE
- ▨ WETLAND
- ▨ WATERBODY
- ▭ 500FT MDEQ CORRIDOR
- HDD ENTRY / EXIT

KEYSTONE XL PROJECT

Proposed Route Variation 0291-01

COUNTY:	HARDING	DRAWN BY:	PD
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW.	2012-03-28	

PRELIMINARY

DATE:	2012-03-28	PROJECTION:	NAD83 UTM13 N
-------	------------	-------------	-----------------

PREPARED BY:

exp Energy Services Inc.

t: +1.850.385.5441 | f: +1.850.385.5523
1300 Metropolitan Blvd.
Tallahassee, FL 32308
U.S.A.

www.exp.com



The new identity of Trow Engineering Consultants, Inc.

- BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
- INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

DWG:	XL-30-P-9200	SHEET:	1
------	--------------	--------	---