

KEYSTONE XL PIPELINE PROJECT

0280-SD-P4-296.2-297.7-S

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"/> See Attached State: <input type="text"/> SD County: <input type="text"/> Harding Quad Map: <input type="text"/> N/A Township: <input type="text"/> 21N Range: <input type="text"/> 02E Aerial Map: <input type="text"/> See attached map sheet Section: <input type="text"/> 03, 10, 11 Centerline: <input type="text"/> 3/14/2012 MP: <input type="text"/> 296.20 to <input type="text"/> 297.66		
3	REASON FOR ROUTE VARIATION (Please include reason for route variation): The primary reason for this reroute is to avoid constructability issues with the current alignment (rough terrain, large hill, multiple drop-offs (~50-95 ft. drop), side hill construction) by shifting current CL/workspaces in a better terrain. Furthermore, the Landowner would prefer this southernmost route. This reroute has been proposed based on a field recon effort and civil survey data.		
DETAIL ROUTE VARIATION (Please describe route variation in detail): Route variation starts near MP 296.2 and deviates ~43.5° southeast of CL. It continues in this direction for ~3,088 ft. Then the reroute turns slightly south for ~697.1 ft. before turning east towards the CL. It extends in this direction for ~4,106 ft. and rejoins the current CL near MP 297.7.			
ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; crossings, induction bends, etc.): No New Landowners are impacted by this route variation. 4 Tracts are impacted by reroute: ML-SD-HA-00460.000 (Rebecca Holsti) ML-SD-HA-00470.000, ML-SD-HA-00510.000, ML-SD-HA-00530.000 (All 3 tracts: Wayne and Susan Nelson) Miscellaneous Savings include: avoid large hill construction, avoid multiple dropoffs, avoid pipeline integrity issues in the future.			
Is there an increase/decrease in the number of crossings? Yes <input type="text"/> No <input checked="" type="checkbox"/>			
If yes, please list: <input type="text"/> <input type="text"/>			
COST ANALYSIS (costs incurred or saved from the route variation)			
Additional length of route realignment:	194	ft.	\$ 69,760.47 \$ 360/ft
Additional length of side-hill construction:	-1,300	ft.	\$ (24,700.00) \$ 19/ft
Additional length of wetland construction:		ft.	\$ - \$ 195/ft
Additional bore length (Road, RR):		ft.	\$ - \$ 540/ft
Additional foreign line/pipeline crossings:		EA	\$ - \$ 30,000/EA
Additional water body crossing (streams, ponds, etc.):			
35 - 65' +		EA	\$ - \$ 185,000/EA
10' - 19'		EA	\$ - \$ 77,250/EA
Less than 10'		EA	\$ - \$ 32,500/EA
Additional survey required:			
Civil:	1.49	mile	\$ 7,472.77 \$ 5,000/mile
Cultural:	1.49	mile	\$ 3,736.39 \$ 2,500/mile
Biological:	1.49	mile	\$ 4,184.75 \$ 2,800/mile
Miscellaneous costs saved or added due to route variation from ADDITIONAL IMPACTS listed above:			\$ (65,000)
Overall estimated costs of the route variation:	\$ (4,545.62) (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.):

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: ft.

b) Does variation (CL) (including workspaces) falls within 500 ft. MDEQ Corridor? Yes 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:

Date:

10

Received by:

Date:

Fax to: ?

11

Assigned Tracking Number:

12

Filed by:

Date:

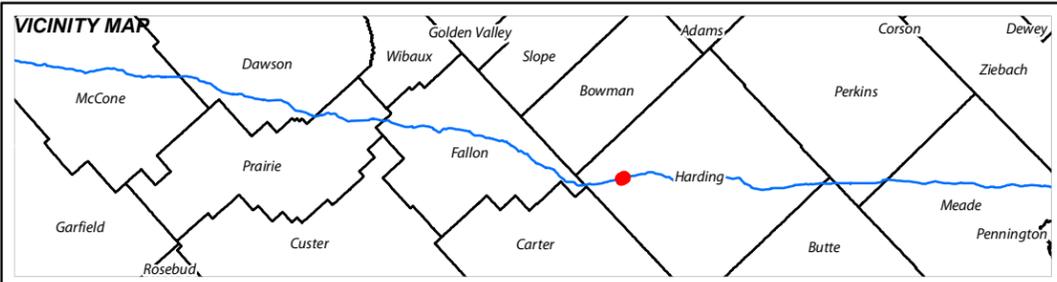
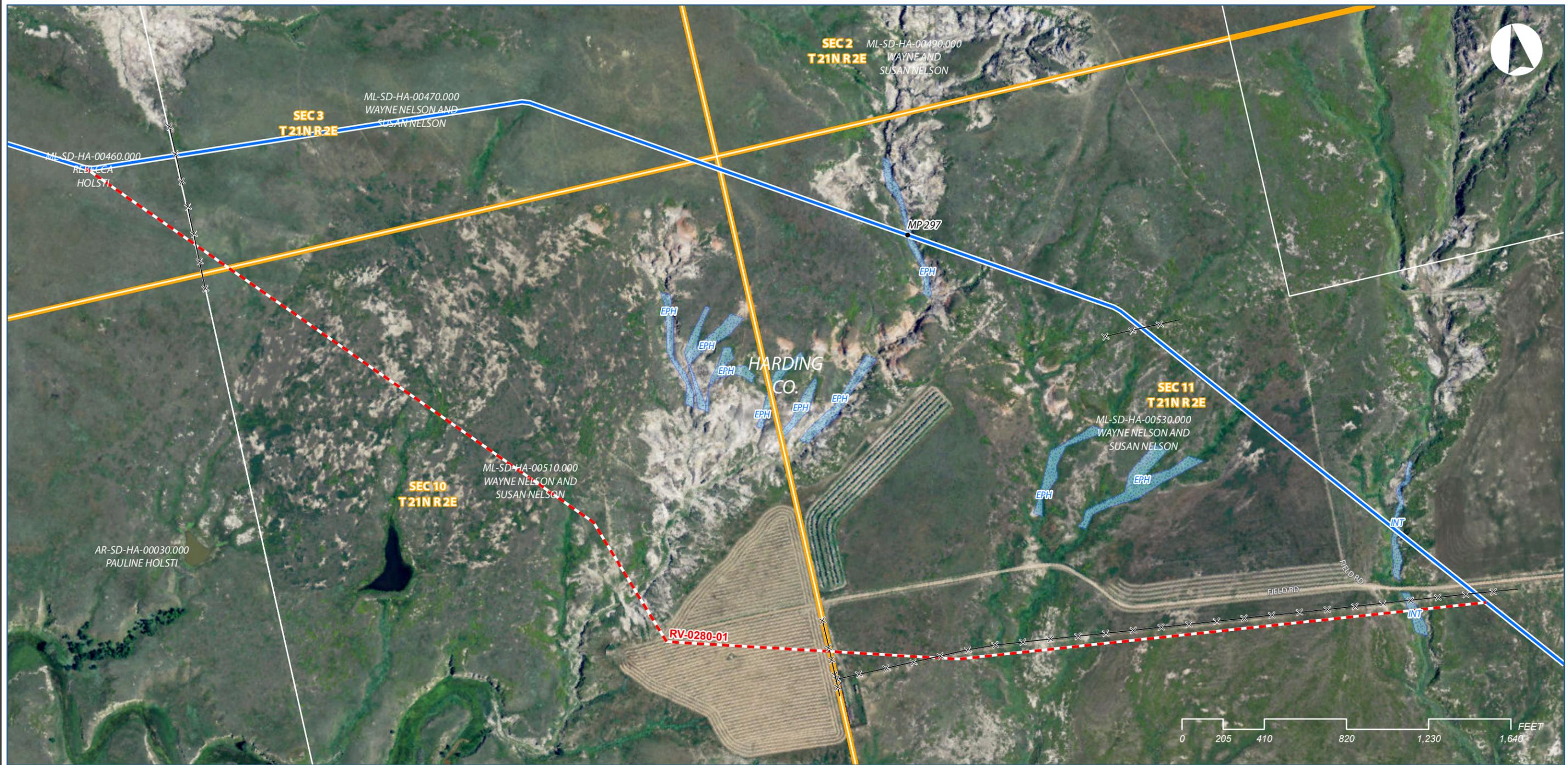
Fax to: ?

0280-SD-P4-296.2-297.7-S

KEYSTONE XL PIPELINE PROJECT

KEYSTONE XL PIPELINE PROJECT ROUTE VARIATION AUTHORIZATION FORM	
Date: <u>3/22/2012</u>	Tracking Number: <u>0280-SD-P4-296.2-297.7-S</u>
Description: <u>The primary reason for this reroute is to shift CL and workspaces out of and away from rough terrain, large hill, multiple drop-offs (~50-95 ft. drop), side hill construction.</u>	MP: <u>296.2</u> to <u>297.7</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"/> <i>Tina Hall</i> Date: <u>4-18-12</u>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
TransCanada - Engineering Meera Kothari	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <i>M. Kothari</i> Date: <u>5-14-12</u>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
Exp - Engineering Butch Wallace	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <i>B. Wallace</i> Date: <u>6-19-2012</u>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
Exp - Environmental Jonathan Minton	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> <i>J. Minton</i> Date: <u>5-11-12</u>
Comments: <u>Pending survey - change moves toward existing known cultural sites.</u>	If Rejected Why? <input type="text"/>
Stantec - Risk Assessment Heidi Tillquist	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: <input type="text"/>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
Facilities - TransCanada Sandra Gigovic	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: <input type="text"/>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
TransCanada - PM (Montana) Alan Lietz	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: <input type="text"/>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
TransCanada - PM (South Dakota) James Odom	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: <input type="text"/>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
TransCanada - PM (Nebraska) Robert Bradley	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: <input type="text"/>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
TransCanada - Keystone XL Manager Steve Marr	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Date: <input type="text"/>
Comments: <input type="text"/>	If Rejected Why? <input type="text"/>
Forward to: Tina Hall <input type="checkbox"/> Jonathan Minton <input type="checkbox"/> James Odom <input type="checkbox"/> Meera Kothari <input type="checkbox"/> Heidi Tillquist <input type="checkbox"/> Robert Bradley <input type="checkbox"/> Butch Wallace <input type="checkbox"/> Sandra Gigovic <input type="checkbox"/> Steve Marr <input type="checkbox"/> Alan Lietz <input type="checkbox"/>	

0280-SD-P4-296.2-297.7-S



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 PHASE IV, US
Proposed Route Variation 0280-01

COUNTY:	HARDING	DRAWN BY:	PD
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW.	2012-03-19	
PRELIMINARY			
DATE:	2012-03-19	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



RV-0280-01 - Looking Northwest at minute 05:32.532
03/14/2012 CL (blue line)



RV-0280-01 - Looking Northwest at minute 05:34.867
03/14/2012 CL (blue line)



RV-0280-01 - Looking Northwest at minute 05:40.106
03/14/2012 CL (blue line)