

KEYSTONE PIPELINE PROJECT - U.S. PHASE IV (STEELE CITY SEGMENT) PIPELINE ROUTE VARIATION FORM			
1 VARIATION TYPE: Pump Station <input checked="" type="checkbox"/> X			
Does this change require Centerline variation? Yes <input checked="" type="checkbox"/> X No <input type="checkbox"/>			
2 LOCATION (Final PS Location): Sketch: Attached Pictures: -			
State: SD Township: 17N Quad Map: Attached		County: Harding Range: 6E Aerial Map: Attached	
Section: 25 Legal (Initial PS loc.): 19-17N-7E Initial PS MP: 333.6 Final PS MP: - Mar 26th, 2010 C.L.			
3 REASON FOR PUMP STATION RELOCATION (Please include reason for move):			
The Greater Sage Grouse has been now listed in the endangered species list by the US Fish and Wildlife Service. The proposed relocation of Buffalo Pump Station (PS-16) is to avoid having any above ground facilities (pump station and access roads) within a 0.6 mile radius (specified by US Fish and Wildlife Service) from the Greater Sage Grouse Leaks. The proposed reroute is to accommodate this relocation.			
DETAILS OF NEW PUMP STATION LOCATION AND ROUTE VARIATION, IF APPLICABLE (Please describe in detail):			
It is proposed that the Pump Station Buffalo (PS-16) site be increased in acreage to 11.3 Acres from the previous site (8.5 Acres). The pump station has been moved from the southeast corner of the southwest quarter of Sec 19 (T17N-R7E), just north of JB road to the southeast corner of the northwest quarter of Sec 25 (T17N-R6E). The dimensions of the Pump Station have been increased to 760' X 650' from earlier dimensions of 742' X 500'. The proposed reroute starts at the PI near MP 329.3 and deviates towards the south. It continues in this direction for 12,500 ft until it avoids a pond and its sideslopes. Along its path it makes slight a slight deviation to cross a stream feature perpendicularly. The proposed centerline turns towards the southeast and then continues for another ~7,500 ft until it reaches JB road. It then turns towards the south and continues for 3,280 ft (crossing JB road ~5,580 ft west of its current crossing location). Along its path, it passes through the west edge of the proposed PS-16 site. From here, the proposed reroute deviates towards the southeast and continues for 27,470 ft to rejoin the current centerline at the PI near MP 338.6. Along its path, it makes some minor deviations to avoid/cross drainage features at preferred locations.			
ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; routing to pump station, hydraulic impacts, etc.):			
The size of the proposed Pump Station (PS-14) is increased to 11.3 acres from 8.5 acres. The proposed reroute is ~2,605 ft longer than the original route. The additional number of stream crossings are estimated on a desktop analysis. The proposed reroute is based on Desktop analysis and may be tweaked in the field by engineers based on field reconnaissance.			
COST ANALYSIS (costs incurred or saved from the route variation)			
Additional Acreage of the proposed Pump Station site	2.9 acres	\$ 11,600.00	\$4,000/ac
Additional length of route realignment:	2,605 ft.	\$ 937,800.00	\$ 360/ft
Additional length of side-hill construction:		\$ -	\$ 19/ft
Additional length of wetland construction:		\$ -	\$ 195/ft
Additional bore length (Road, RR):		\$ -	\$ 540/ft
Additional foreign line/pipeline crossings:		\$ -	\$ 30,000/EA
Additional waterbody crossing (streams, ponds, etc.):			
20' - 35' +		\$ -	\$ 185,000/EA
10' - 19'		\$ -	\$ 77,250/EA
Less than 10'	2 EA	\$ 65,000.00	\$ 32,500/EA
Additional survey required:			
Civil:	9.86 mile	\$ 49,300.00	\$ 5,000/mile
Cultural:	9.86 mile	\$ 24,650.00	\$ 2,500/mile
Biological:	9.86 mile	\$ 27,608.00	\$ 2,800/mile
Additional length of power line construction:		\$ -	\$ 25/ft
Miscellaneous costs saved or added due to new pump station location from ADDITIONAL IMPACTS listed above:			
Overall estimated costs of the new pump station location:		\$ 1,115,958	
4 LAND / UNIVERSAL FIELD <i>Doug Reichley</i>			
a) Is a new landowner affected by proposed Pump Station relocation?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
b) Is the landowner agreeable to the proposed Pump Station location?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
c) Is relocation proposed to satisfy landowner concerns?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X	
-If yes, name of landowner(s)/track number(s):			
d) Has all the evaluation criteria been examined/provided for this specific discipline?			
Yes <input checked="" type="checkbox"/> X		No <input type="checkbox"/>	
If no, please explain why:			
5 ENGINEERING/CONSTRUCTION <i>David Guen</i>			
a) Maximum deviation perpendicular to proposed alignment:	6,540 ft.		
b) Is relocation proposed for engineering/construction reasons?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X	
c) Will site require noise mitigation measures?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X	
6 ENVIRONMENTAL / TROW <i>Jonathan Minton</i>			
a) Has the previous pump station been environmentally surveyed?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
b) Has the proposed pump station been environmentally surveyed?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
c) Was new pump station location proposed to satisfy environmental issues?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
d) Was pump station relocation proposed to satisfy agency request?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
-If yes, name of agency(s): USFWS			
e) Environmental features:			
Added (+): None at PS-16 site, unknown on reroute.		Subtracted (-): Avoids 0.6-mile Sage Grouse NSO, avoids multiple intermittent and ephemeral waterbody crossings.	
7 POWER INFRASTRUCTURE TECHNICAL <i>Larry Sibbald</i>			
a) Will the new pump station location involve a new utility provider?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
b) Will the new pump station location result in a significant change to the power line routing to the station? If yes, by how many miles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
c) Are there any apparent obstacles to routing a power line to the new station?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
If yes, please list:			
8 ENGINEERING / FACILITIES AND HYDRAULICS <i>Sandra Gigovic</i>			
a) Is the proposed Pump Station area acceptable for PS design?	Yes <input checked="" type="checkbox"/> X	No <input type="checkbox"/>	
b) Will pump station relocation impact hydraulics?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X	
c) Will new pump station location affect valve placement around HCA areas?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
9 STAKEHOLDER RELATIONS / TCPL <i>Bud Anderson</i>			
a) Does the proposed pump station location result in any new stakeholders?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
b) Does it require follow-up with specific stakeholder groups?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
c) Was the new pump station location proposed to satisfy stakeholder request?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
-If yes, please specify issue type (as it aligns to stakeholder database):			
10 Originator: Environmental Date: 9/14/2010		11 Received by: Centerline Coordinator Date: 9/14/2010 Fax to: ?	
12 Assigned Tracking Number: 0179-SD-P2-329.3-338.6-S		13 Filed by: Centerline Coordinator Date: Fax to: ?	

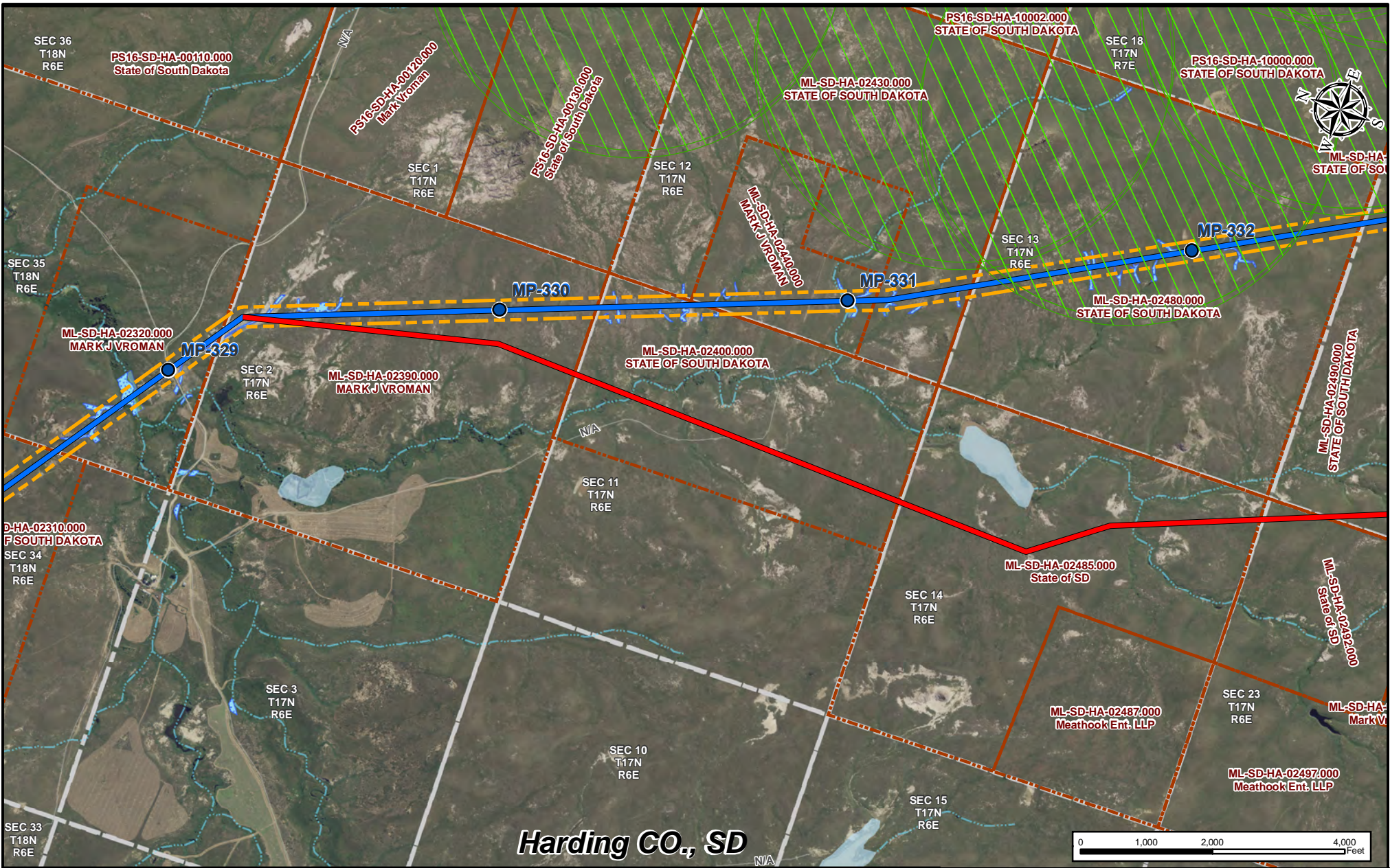
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0179-SD-P2-329.3-338

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0179-SD-P2-329.3-338.6-S

KEYSTONE PIPELINE PROJECT - U.S. PHASE IV (STEELE CITY SEGMENT) ROUTE VARIATION AUTHORIZATION FORM			
Date:	9/14/2010	Tracking Number:	0179-SD-P2-329.3-338.6-S
Description:	Relocation of Buffalo Pump Station (PS-16) and proposed reroute to complement pump station design.	Initial PS MP	333.6 Final PS MP -
		Originated By:	Environmental
		Variation Form Attached:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Universal Field Services - Land	Doug Reichley	Variation:	Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>
Comments:		<i>Doug Reichley</i>	Date: 9/15/2010
		If Rejected Why?	
Construction / Engineering	David Guien	Variation:	Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>
Comments:		<i>David Guien</i>	Date: 9/18/2010
		If Rejected Why?	
Trow - Environmental	Jonathan Minton	Variation:	Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>
Comments:	The route to the new site still requires environmental survey.	<i>Jonathan Minton</i>	Date: 9/15/2010
		If Rejected Why?	
Power Infrastructure Technical	Larry Sibbald	Variation:	Approved <input type="checkbox"/> Rejected <input type="checkbox"/>
Comments:		<i>Name?</i>	Date:
		If Rejected Why?	
Project Management	Butch Wallace	Variation:	Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>
Comments:		<i>R.E. Wallace</i>	Date: 9/20/2010
		If Rejected Why?	
Stakeholder Relations	Bud Anderson	Variation:	Approved <input type="checkbox"/> Rejected <input type="checkbox"/>
Comments:		<i>Name?</i>	Date:
		If Rejected Why?	
Facilities:	Sandra Gigovic	Variation:	Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>
Comments:	Final hydraulic impact of the relocation will need to be reviewed once final pump station mileposts are available.	<i>Sandra Gigovic</i>	Date: 9/30/2010
		If Rejected Why?	
TransCanada:	Alan Lietz	Variation:	Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>
Comments:		<i>Alan Lietz</i>	Date: 10/25/2010
		If Rejected Why?	
Forward to:	Butch Wallace <input checked="" type="checkbox"/> David Guien <input checked="" type="checkbox"/> Doug Reichley <input checked="" type="checkbox"/>	Jonathan Minton <input checked="" type="checkbox"/> Bud Andersen <input checked="" type="checkbox"/> Sandra Gigovic <input checked="" type="checkbox"/>	Larry Sibbald <input checked="" type="checkbox"/> Alan Lietz <input checked="" type="checkbox"/>
Dispute Resolution, if Required:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Comments:		Teleconference Required:	Yes <input type="checkbox"/> No <input type="checkbox"/>
		Decision:	
Database - ?		Database - ?	
Filed By:		Filed By:	
Date:		Date:	
Fax to: ?		Fax to: ?	



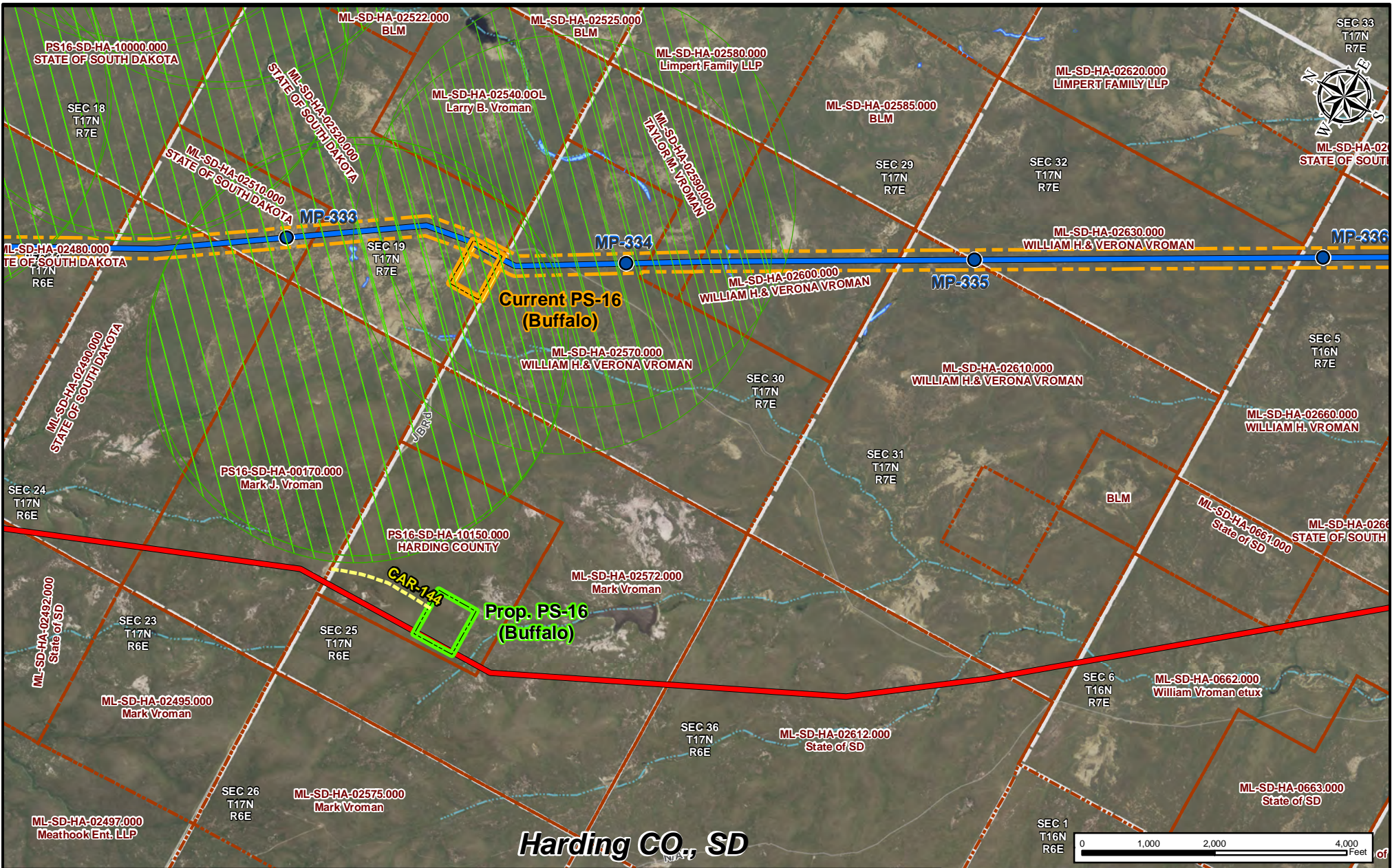
Legend

Milepost	Current Pump Station
Centerline (2010-03-26)	Proposed Pump Station
Prop. ReRoute	300ft Corridor
Waterbody	Parcel Boundary
Wetland	Section Line
Sage Grouse 0.6 Mile Buffer	Access Roads
	County Boundary
	State Boundary



**KEYSTONE XL PROJECT - STEELE CITY SEGMENT
PROPOSED ROUTE VARIATION FOR PS-16
HARDING COUNTY, SD**

	DATE	PROJECT	MAP PARAMETERS		
	Sep 08, 2010	50388X	PROJECTION: UTM 13, NAD83, US FT SCALE: 1" = 2000'		
DRAWN BY	CHECKED BY	APPROVED BY	ROUTE VARIATION NO.	SHEET	REV.
ACB	NJA	ALS	0179-SD-P2-329.3-338.6-S	1	0



Legend

- Milepost
- Centerline (2010-03-26)
- Prop. ReRoute
- Waterbody
- Wetland
- Sage Grouse 0.6 Mile Buffer
- Current Pump Station
- Proposed Pump Station
- 300ft Corridor
- Parcel Boundary
- Section Line
- Access Roads
- County Boundary
- State Boundary



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DRAWN BY	CHECKED BY	APPROVED BY	ROUTE VARIATION NO.	SHEET	REV.
ACB	NJA	ALS	0179-SD-P2-329.3-338.6-S	2	0



Legend

- Milepost
- Centerline (2010-03-26)
- Prop. ReRoute
- ▭ Waterbody
- ▭ Wetland
- Sage Grouse 0.6 Mile Buffer
- ▭ Current Pump Station
- ▭ Proposed Pump Station
- ▭ 300ft Corridor
- ▭ Parcel Boundary
- ▭ Section Line
- ▭ Access Roads
- ▭ County Boundary
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	Sep 08, 2010	50388X			
DRAWN BY	CHECKED BY	APPROVED BY	ROUTE VARIATION NO.	SHEET	REV.
ACB	NJA	ALS	0179-SD-P2-329.3-338.6-S	3	0