

KEYSTONE XL PIPELINE PROJECT

0455-SD-P4-XXX.X-XXX.X-I

KEYSTONE XL PIPELINE PROJECT PIPELINE ROUTE VARIATION FORM			
1	VARIATION TYPE: Refinement: Reroute: ☒ Footprint: Design: Centerline: ☒ Pump Station: Valve Site: CAR: ☒		
2	LOCATION: Sketch: Attached Pictures: N/A State: SD County: Haakon Quad Map: N/A Township: Various Range: Various Aerial Map: See attached map sheets Section: Various Centerline: 6/11/2013 MP: XXX.X to XXX.X		
3	REASON FOR ROUTE VARIATION (Please include reason for route variation): This report consists of 2 proposed CL route variations that will adjust the KXL CL portions that parallel the West River Lyman Jones Waterlines so as to avoid temporary workspaces and/or ATWS impact to waterlines. The offset between KXL and WRLJ waterlines will vary between ~42 ft. to ~120 ft. The route variations have been proposed based on field civil survey data, desktop, LIDAR, pictometry and other aeriels.		
	DETAIL ROUTE VARIATION (Please describe route variation in detail): Listed in "Supplemental Info" Tab. No new landowners have been affected by the proposed route variations. The tracts impacted are as follows: RV-0455-01 = 4 tracts impacted: ML-SD-HK-00280.000 (Kelly Blair); ML-SD-HK-00310.000 (Kelly Blair); ML-SD-HK-00320.000 (Seven Blackfoot Ranch, LLC); ML-SD-HK-00360.000 (Seven Blackfoot Ranch, LLC). RV-0455-02 = 1 tract impacted: ML-SD-HK-11690.000 (J&J Jones Ranch, LLC).		
	ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; crossings, induction bends, etc.): Listed in "Cost Analysis" Tab.		
9	Originator: Engineering Date: 8/7/2013		10
		Received by: Date: 8/7/2013 Fax to: ?	
11	Assigned Tracking Number: 0455-SD-P4-XXX.X-XXX.X-I		12
		Filed by: Date: Fax to: ?	

Keystone XL Pipeline - Supplemental Information for Route Variation Report 0455

Prepared: 2013-08-07

RV ID	MP Start	MP End	State	County	Section	Township	Range	Original Length (ft)	Reroute Length (ft)	Change in Length (ft)	Max. Perp. Deviation (ft)	Reason for Variation	Brief Variation Description	Additional Impacts/Comments	Originator
0455-01	439.68	441.22	SD	HAAKON	31, 32, 5, 8	006N, 005N	019E	8,131	8,131	0.34	31	To adjust the KXL CL portions that parallel the West River Lyman Jones Waterlines to achieve a minimum ~40 ft. offset so as to avoid temporary workspaces impact to waterline.	The proposed route variation starts near MP 439.68 and continues in the same direction as the current CL but shifts gradually (to the east of the current CL) to achieve a 40 ft minimum offset from the West River Lyman Jones Waterlines. The proposed reroute continues to run parallel to the current CL until it reconnects with the current CL near reconnecting near MP 440.78. The reroute continues along the current CL for ~1,881 ft. prior to shifting easterly one last time to achieve the minimum offset. The proposed route variation reconnects with the current CL near 441.22.		Engineering
0455-02	482.49	483.02	SD	HAAKON	31	002N	025E	2,790	2,816	26.22	63	To adjust the KXL CL portions that parallel the West River Lyman Jones Waterlines to achieve a minimum ~120 ft. offset so as to avoid ATWS impact to waterline.	The proposed route variation starts near MP 482.5 and continues easterly for ~129 feet before deviating ~15° from the current CL. It extends in the southeast direction for ~1340 ft, prior to making a turn south. It then continues for ~820 ft before turning east. It extends in a series of 3 PIs for a total distance of 566 ft. to rejoin the CL near MP 483.02.		Engineering

RV ID	Civil Survey Complete?	Civil Survey Needed (ft)	Moves Pump Station?	Moves Valve Site?	In Co-located Area?	Does route variation impact ABB areas?	Biological Survey Complete for Existing Corridor?	Cultural Survey Complete for Existing Corridor?	Biological Survey Complete for Proposed Corridor?	Cultural Survey Complete for Proposed Corridor?	Estimated Length Requiring new Environmental Surveys (ft)	Number of New Landowners impacted by reroute	Number of Landowners on current route impacted by reroute	Is the affected landowner a possible condemnation?	Number of tracts purchased on original route.	Does proposed route variation impact Tribal Lands?	Does proposed route variation impact any Federal/State Lands?
0455-01	NO	8,131	NO	NO	YES	NO	YES	YES	YES	YES	0	0	13	NO	0	NO	NO
0455-02	NO	2,816	NO	NO	YES	NO	YES	YES	YES	YES	0	0	3	NO	0	NO	NO

Keystone XL Pipeline - Cost Analysis for Route Variation Report 0455

Prepared: 2013-08-07

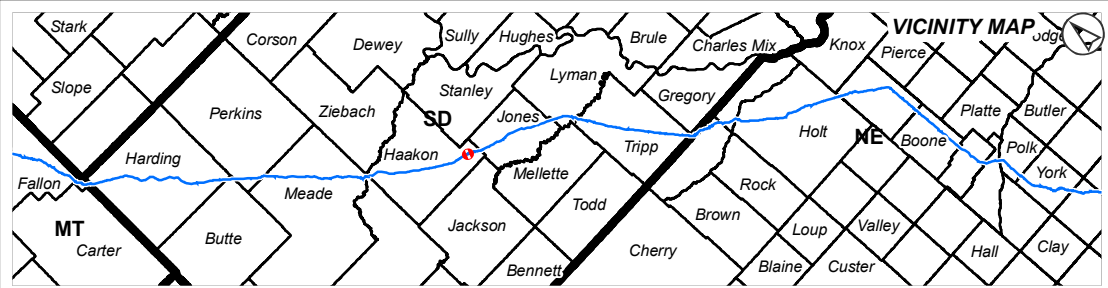
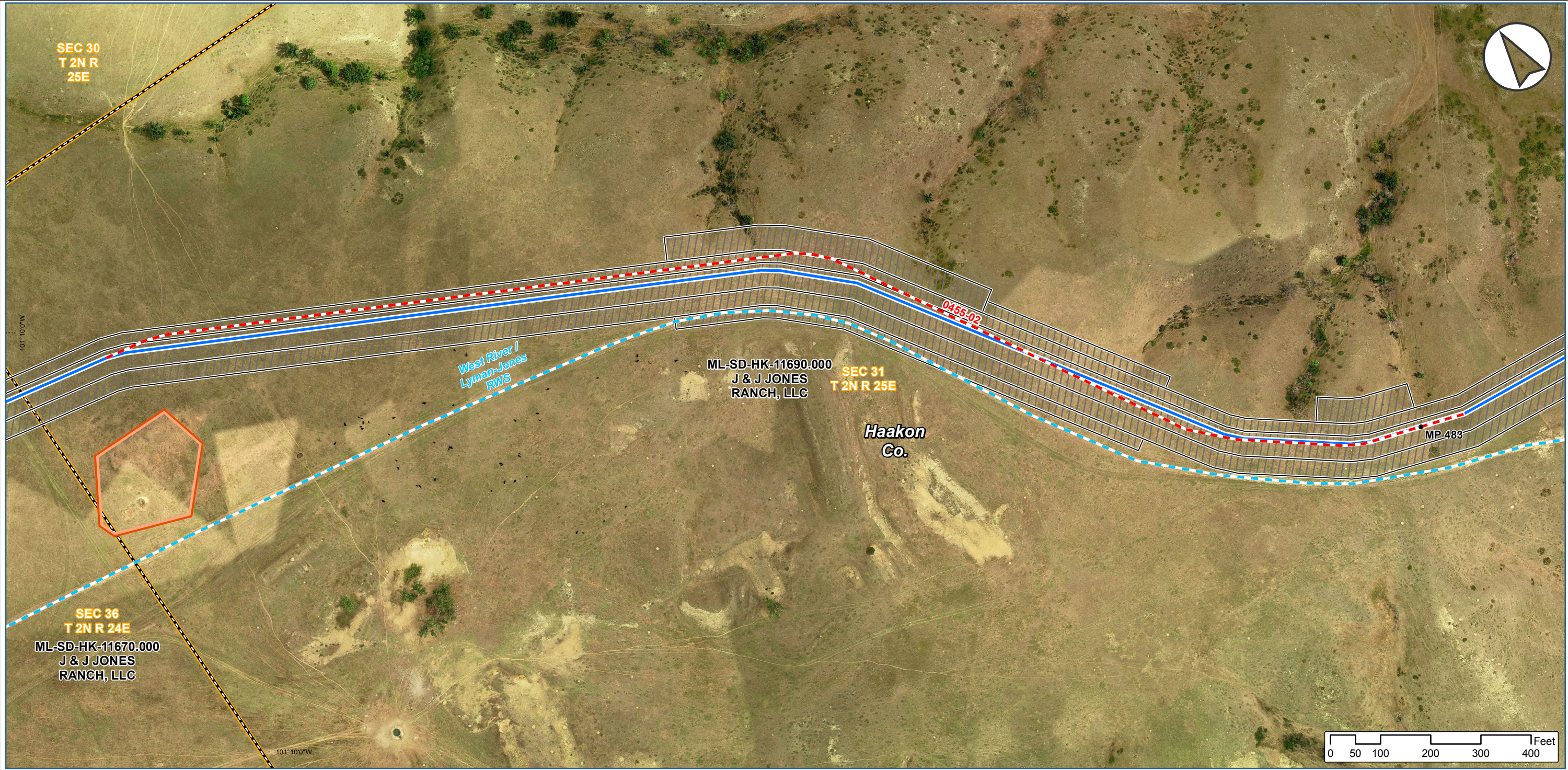
RV ID	Additional length (ft)	Cost \$360/ft	Additional length of wetland construction (ft)	Cost \$195/ft	Additional length of side hill construction (ft)	Cost \$19/ft	Additional bore length (ft)	Cost \$540/ft	Additional Waterbody crossings	Cost (\$77,250/EA btw 10' - 19') (\$32,500/EA < 10')	Cost of Environmental survey (\$5,300/mile)	Cost of Civil survey (\$5,000/mile)	Approximate cost for land purchased on current centerline	Miscellaneous cost for additional impacts	Total Cost
0455-01	0.34	\$ 123.47	0	\$ -	0	\$ -		\$ -	0	\$ -	\$ -	\$ 7,700.22	\$ -		\$ 7,823.69
0455-02	26.22	\$ 9,437.53	0	\$ -	0	\$ -		\$ -	0	\$ -	\$ -	\$ 2,666.79	\$ -		\$ 12,104.32

Overall Estimated Costs of Routes Variations= \$ 19,928.01

Keystone XL Pipeline - Approval form for Route Variation Report 0455

Prepared: 2013-08-07

RV ID		0455-01	0455-02
LAND (TransCanada) Tina Hall	Approval (Y/N)	Y	Y
	Comments	This will likely cost a lot of money to get landowners to sign	
	Signature	Tina Hall	Tina Hall
ENGINEERING (TransCanada) Meera Kothari	Approval (Y/N)	Y	Y
	Comments		
	Signature	Meera Kothari	Meera Kothari
ENGINEERING (exp) Kevin McGlynn	Approval (Y/N)	Y	Y
	Comments		
	Signature	Kevin McGlynn 8-20-13	Kevin McGlynn 8-20-13
ENVIRONMENTAL (TransCanada) Sandra Barnett	Approval (Y/N)	Y	Y
	Comments		
	Signature	Eileen Dutton	Eileen Dutton
FACILITIES (TransCanada) Sandra Gigovic	Approval (Y/N)		
	Comments		
	Signature		
PROJECT MANAGEMENT - MONTANA (TransCanada) Alan Lietz	Approval (Y/N)		
	Comments		
	Signature		
PROJECT MANAGEMENT - SOUTH DAKOTA (TransCanada) James Odom	Approval (Y/N)	Y	Y
	Comments		
	Signature	James Odom	James Odom
PROJECT MANAGEMENT - NEBRASKA (TransCanada) Robert Bradley	Approval (Y/N)		
	Comments		
	Signature		
KEYSTONE XL MANAGER (TransCanada) Steve Marr	Approval (Y/N)		
	Comments		
	Signature		



Keystone XL Project

LEGEND

- Milepost
- Valve
- Power Pole
- Centerline (2012-11-18)
- Route Variation
- Water Pipelines
- Water Centerline
- Access Road
- Overhead Power Line
- Cultural Site
- Workspace
- Wash Station
- Property Parcel
- Section Line
- County Line
- Waterbody
- Wetland
- MDEQ Corridor

KEYSTONE XL PROJECT

PROPOSED ROUTE VARIATION

COUNTY:	HAAKON	DRAWN BY:	RJM
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION		DATE
0	ISSUED FOR REVIEW.		2013-07-09
PRELIMINARY			
DATE:	2013-07-08	PROJECTION:	NAD83 UTM14 N

PREPARED BY:

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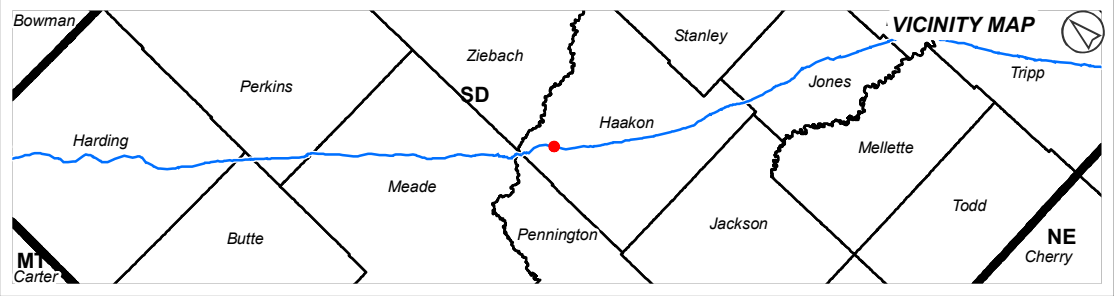
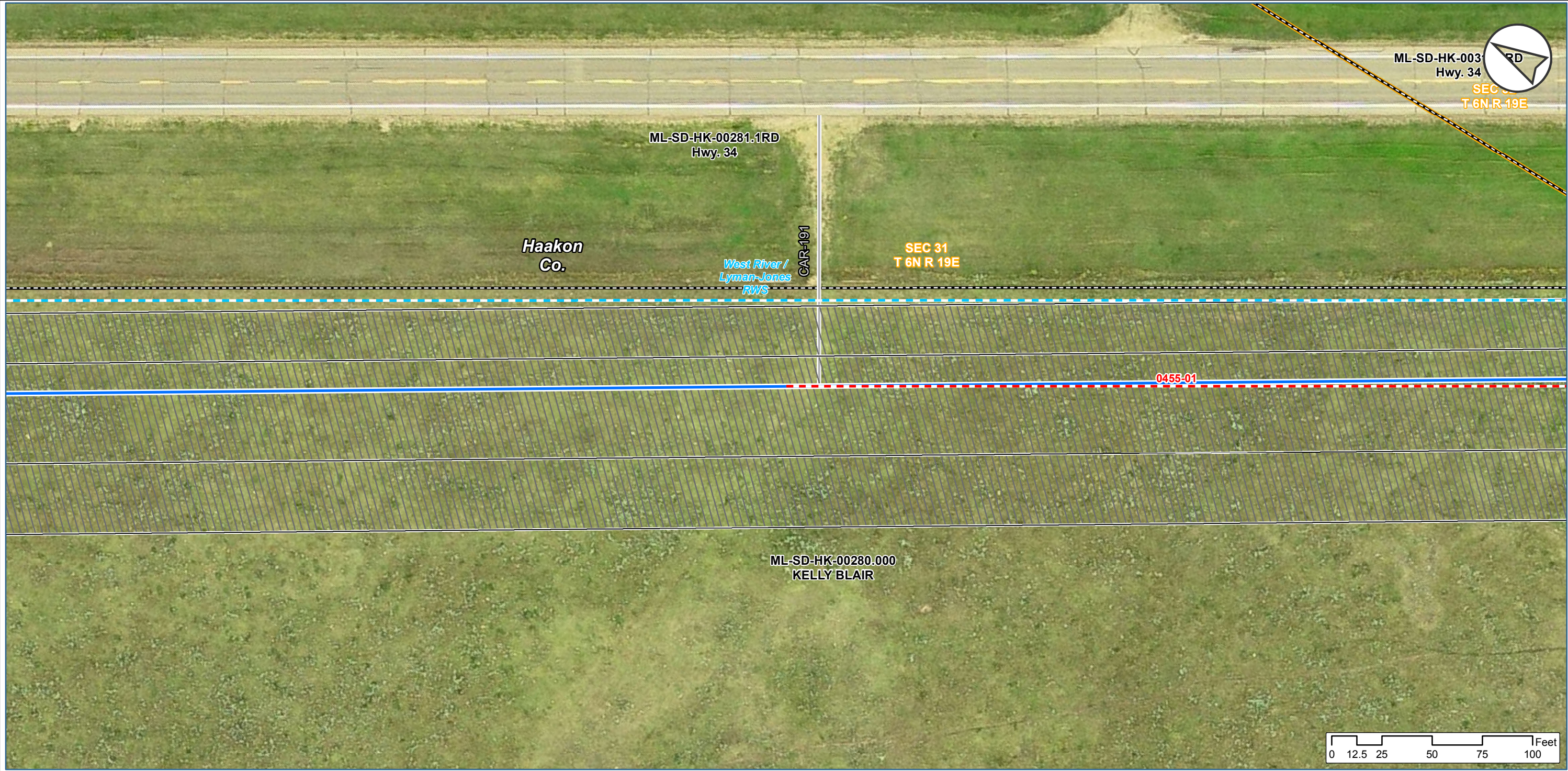
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LEGEND

- Milepost
 - Valve
 - Power Pole
 - Centerline (2012-11-18)
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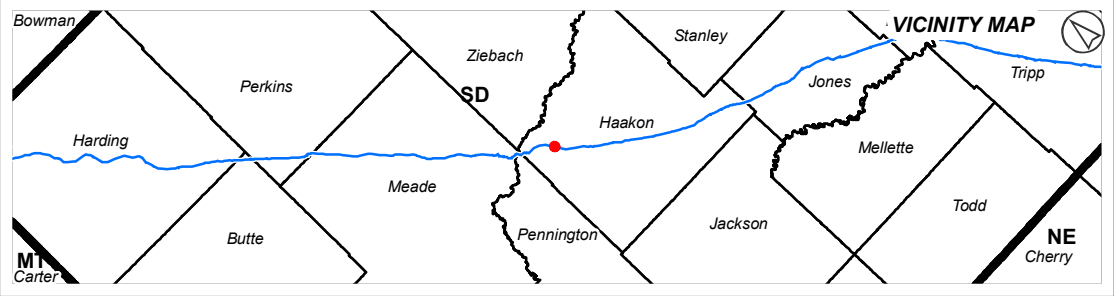
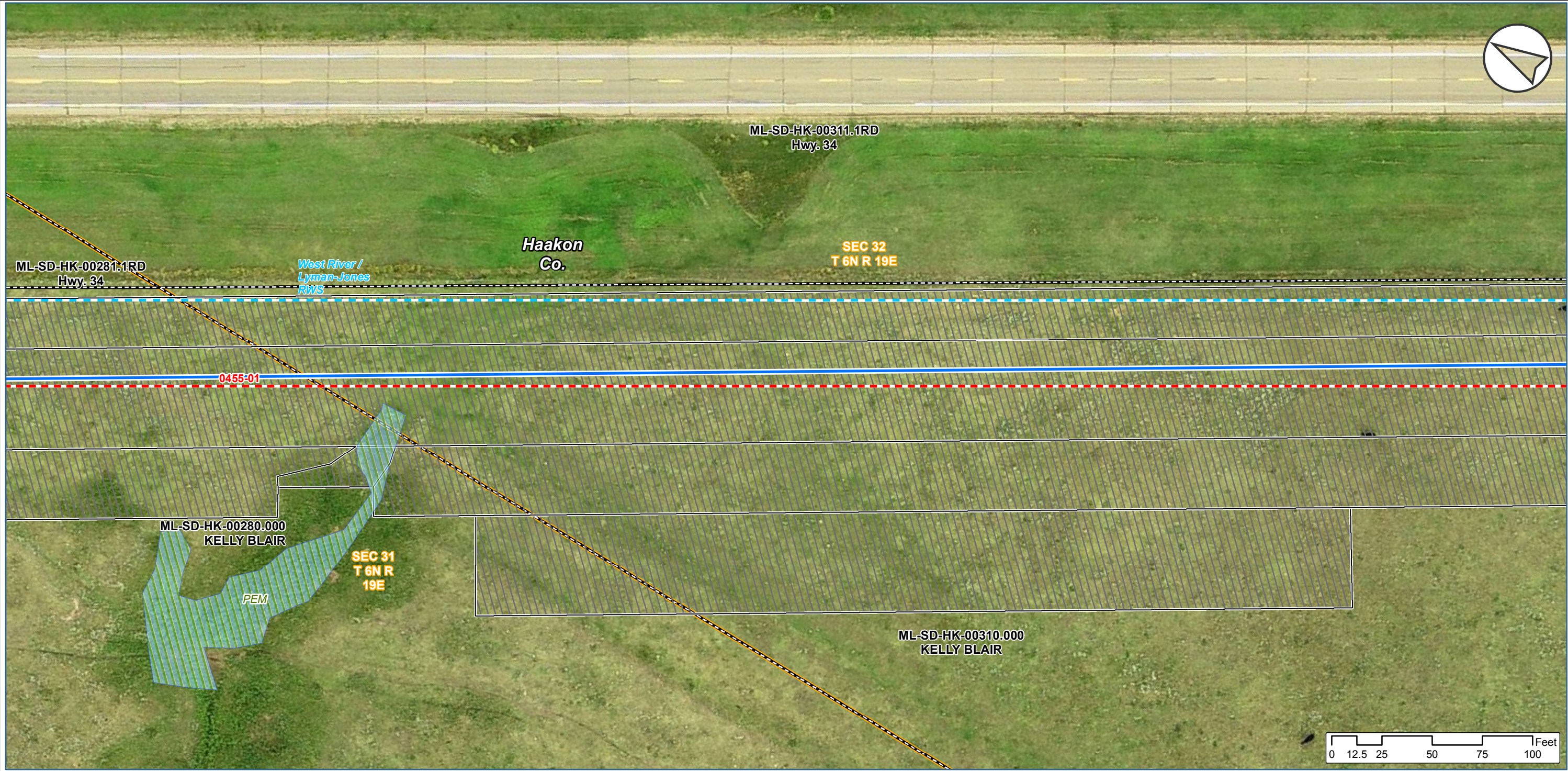
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LEGEND

- Milepost
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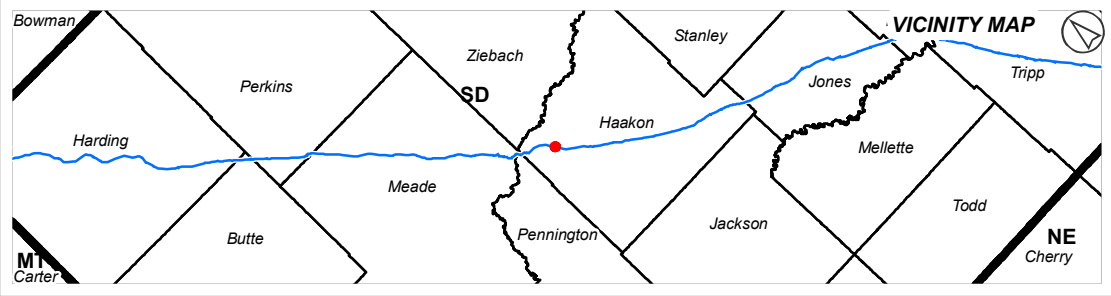
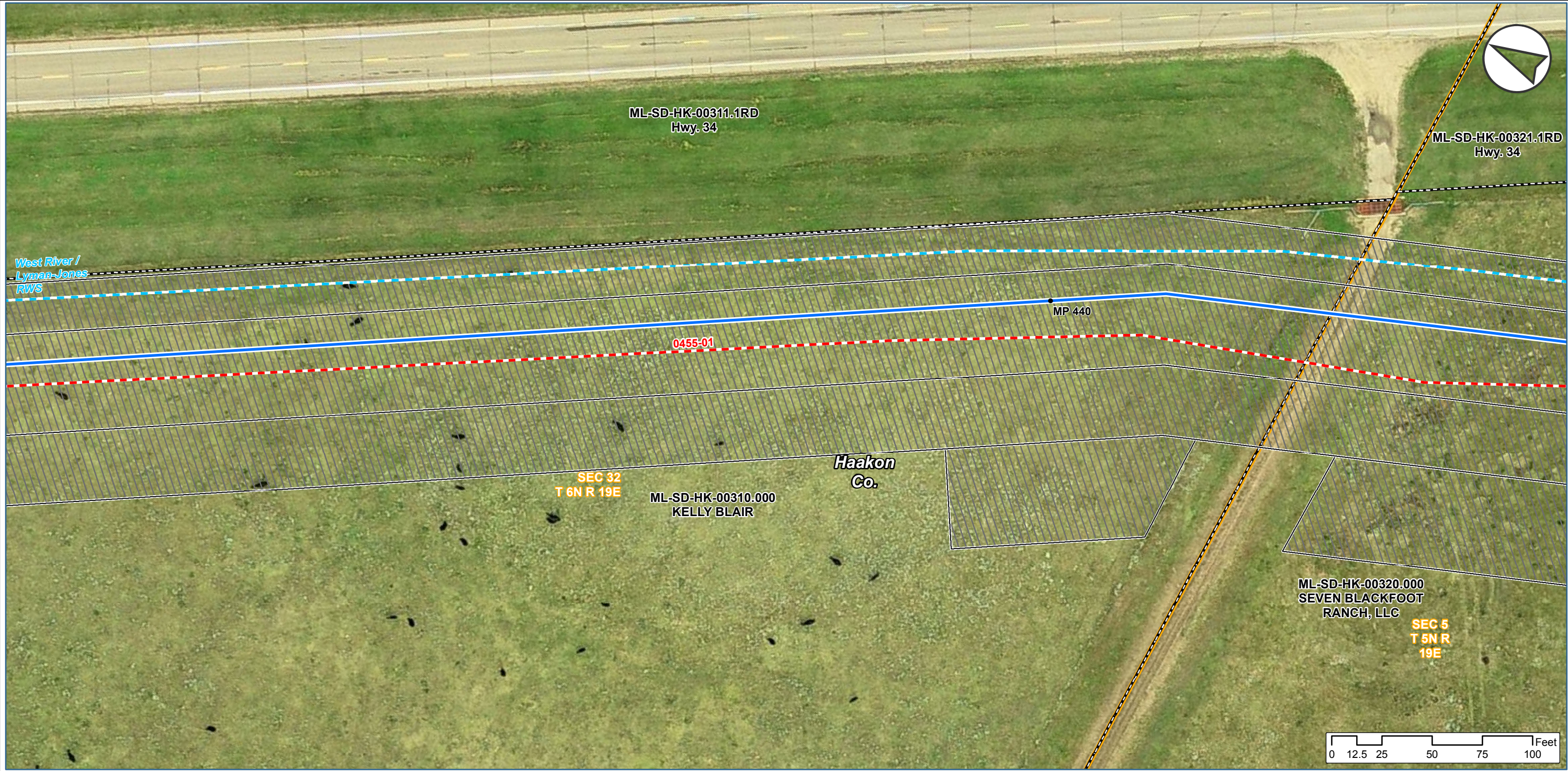
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SHEET: 2 of 11



LEGEND

- Milepost
- Valve
- Power Pole
- Centerline (2012-11-18)
- Route Variation
- Water Pipelines
- Access Road
- Overhead Power Line
- Cultural Site
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KEYSTONE XL PROJECT

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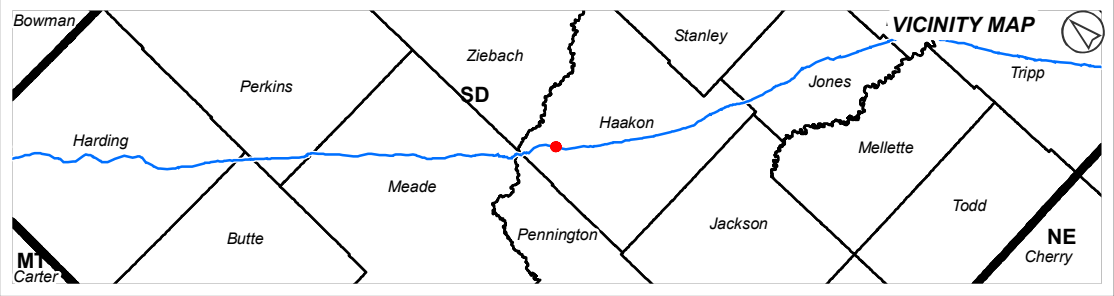
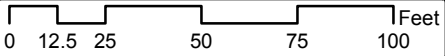
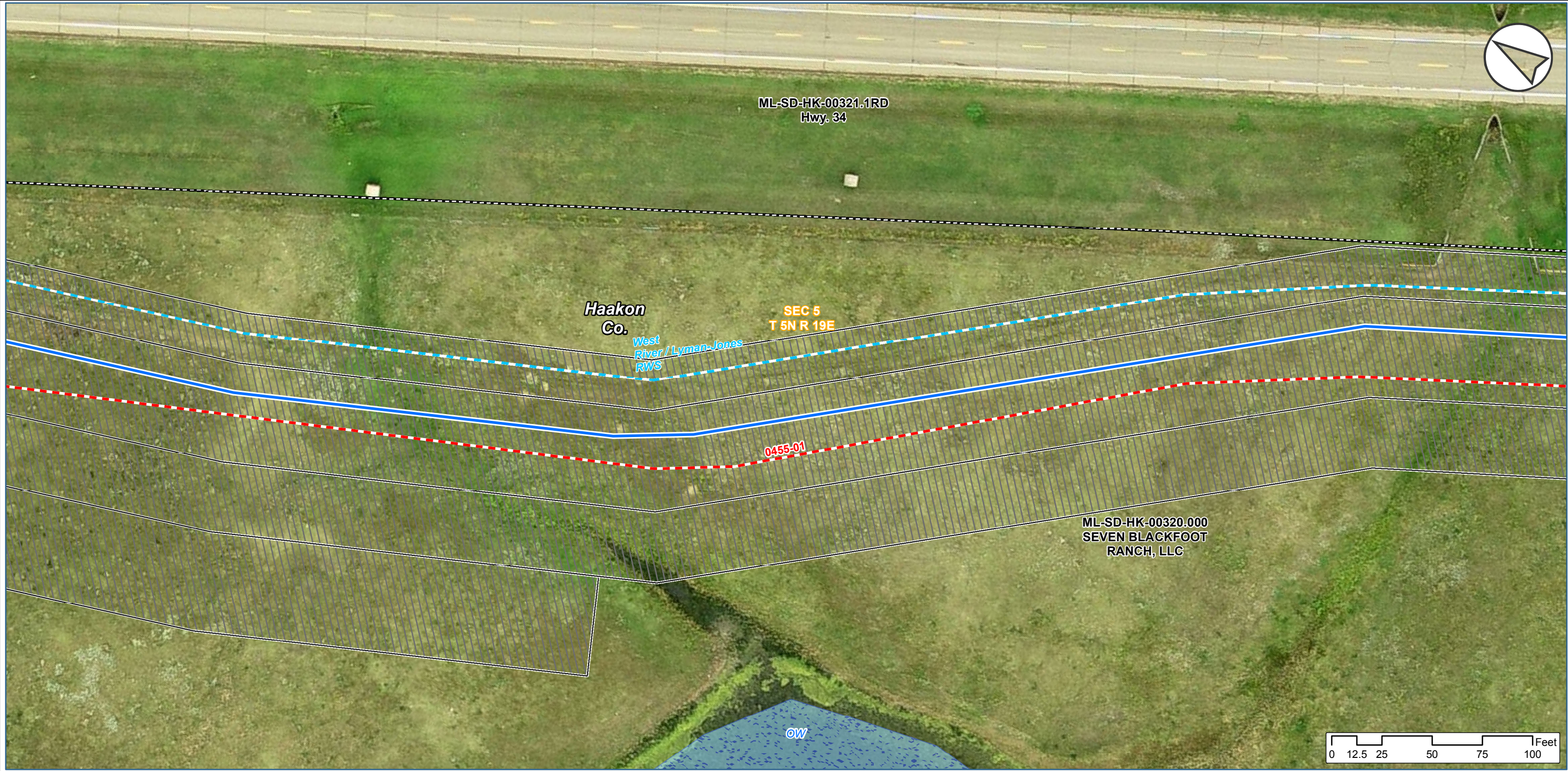
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LEGEND

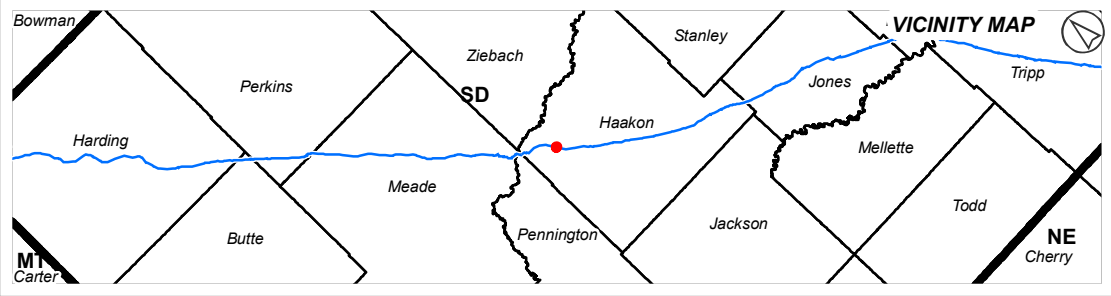
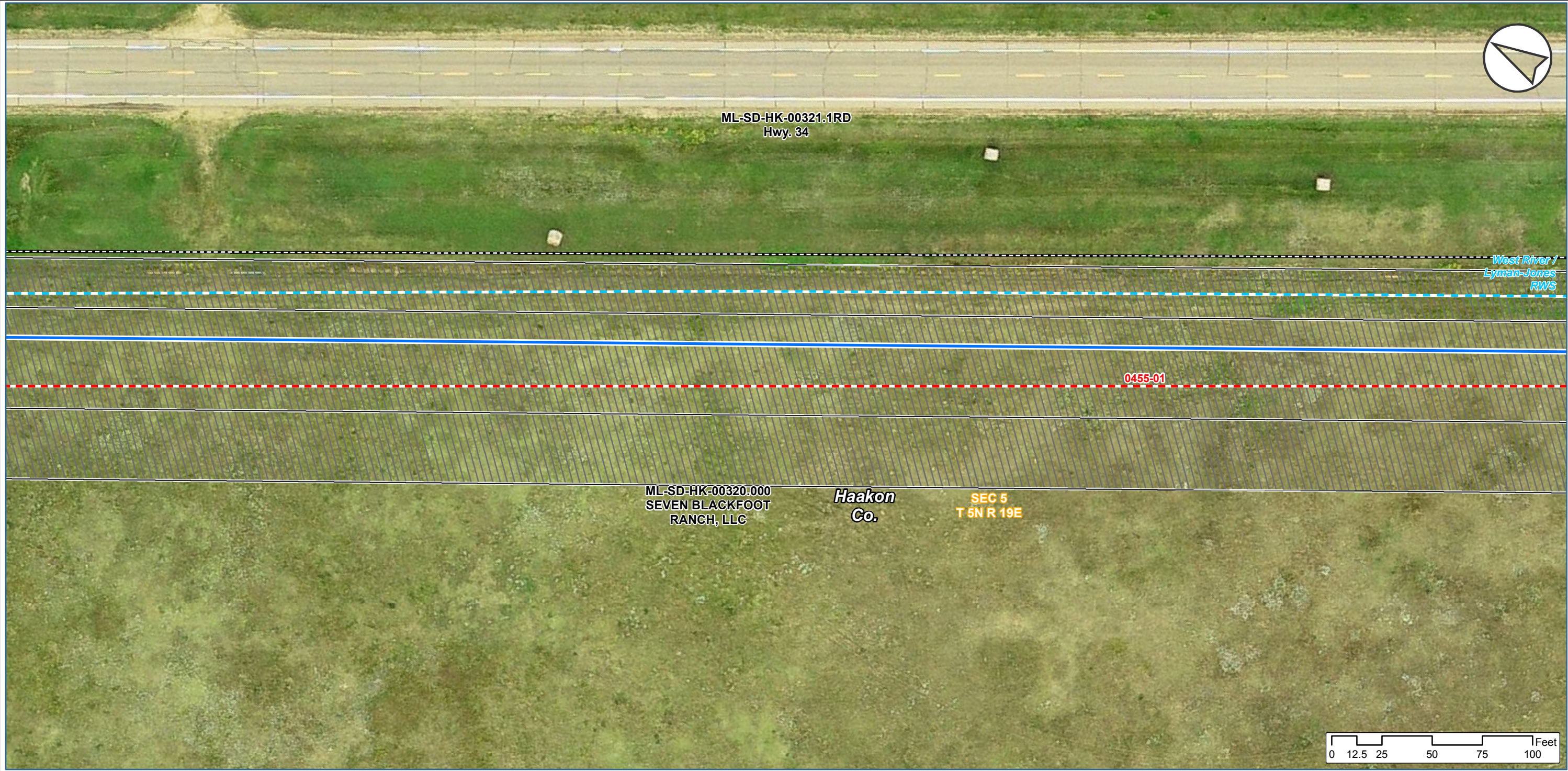
• Milepost	— Access Road	Section Line
⊗ Valve	P—P Overhead Power Line	County Line
⊗ Power Pole	Cultural Site	Waterbody
Centerline (2012-11-18)	Workspace	Wetland
Route Variation	Wash Station	MDEQ Corridor
Water Pipelines	Property Parcel	

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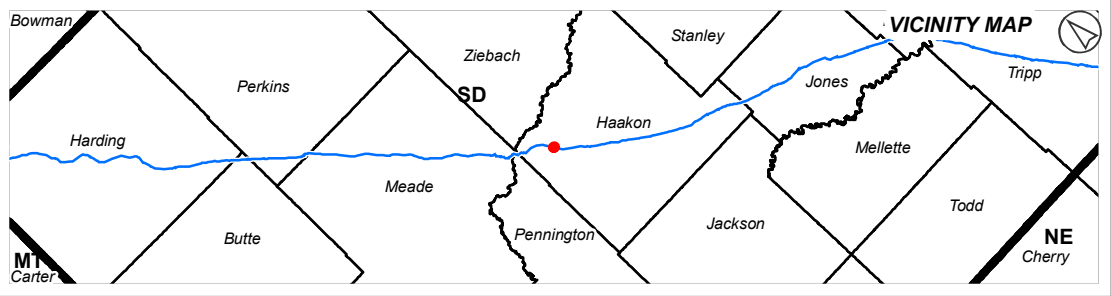
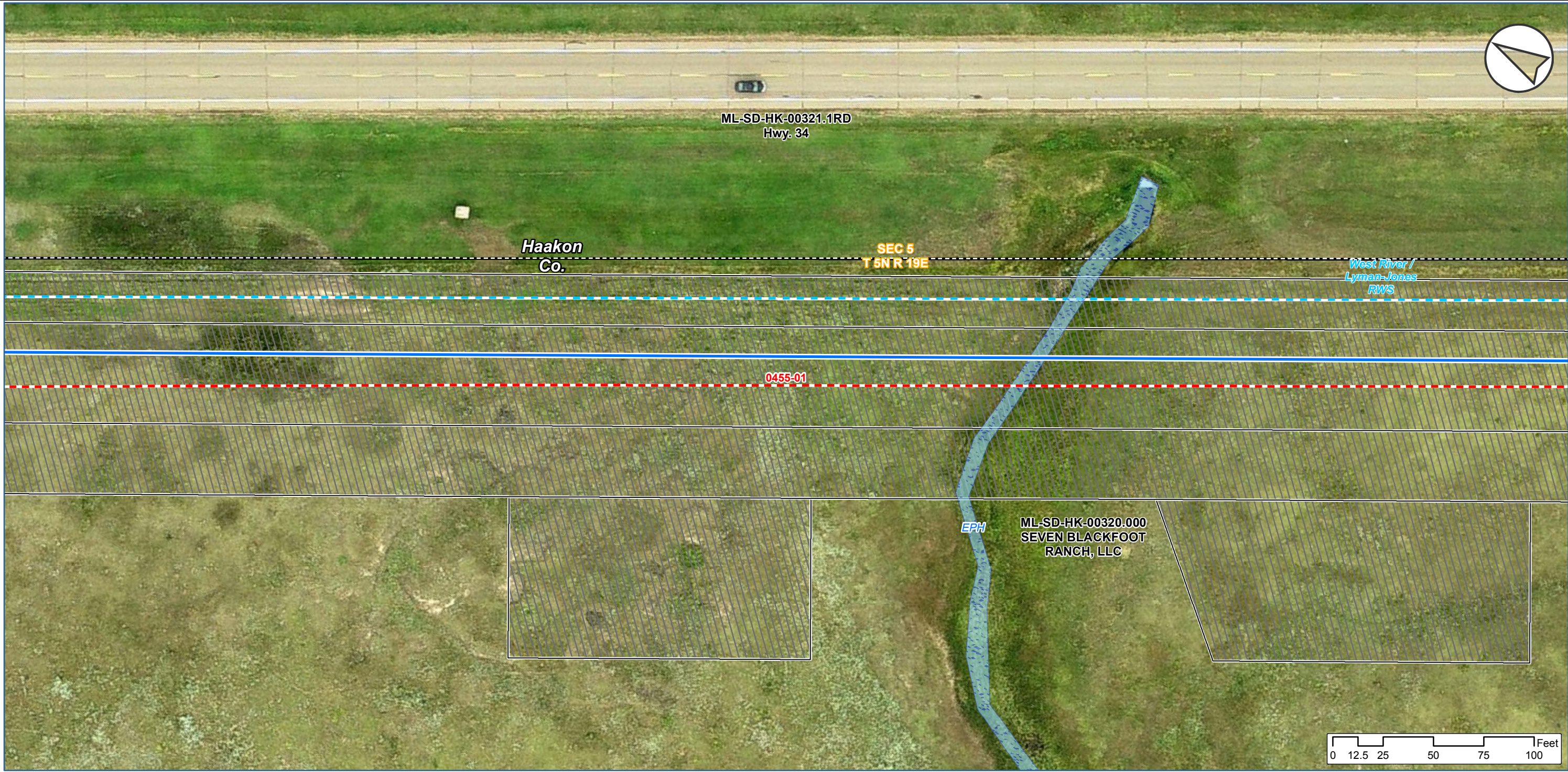
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Valve	P—P Overhead Power Line	County Line
Power Pole	Cultural Site	Waterbody
Centerline (2012-11-18)	Workspace	Wetland
Route Variation	Wash Station	MDEQ Corridor
Water Pipelines	Property Parcel	

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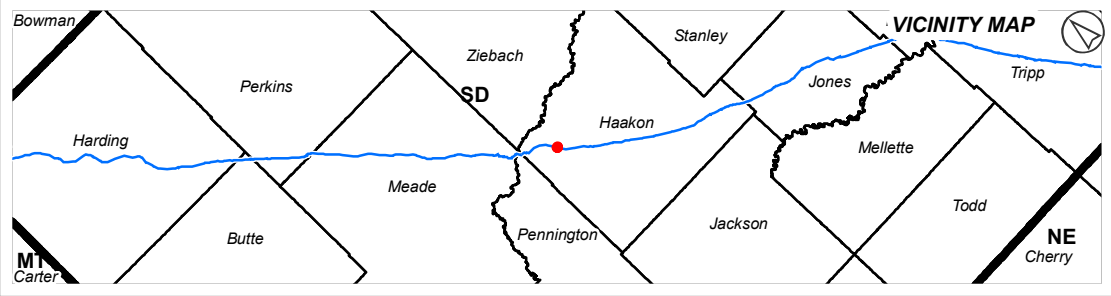
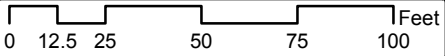
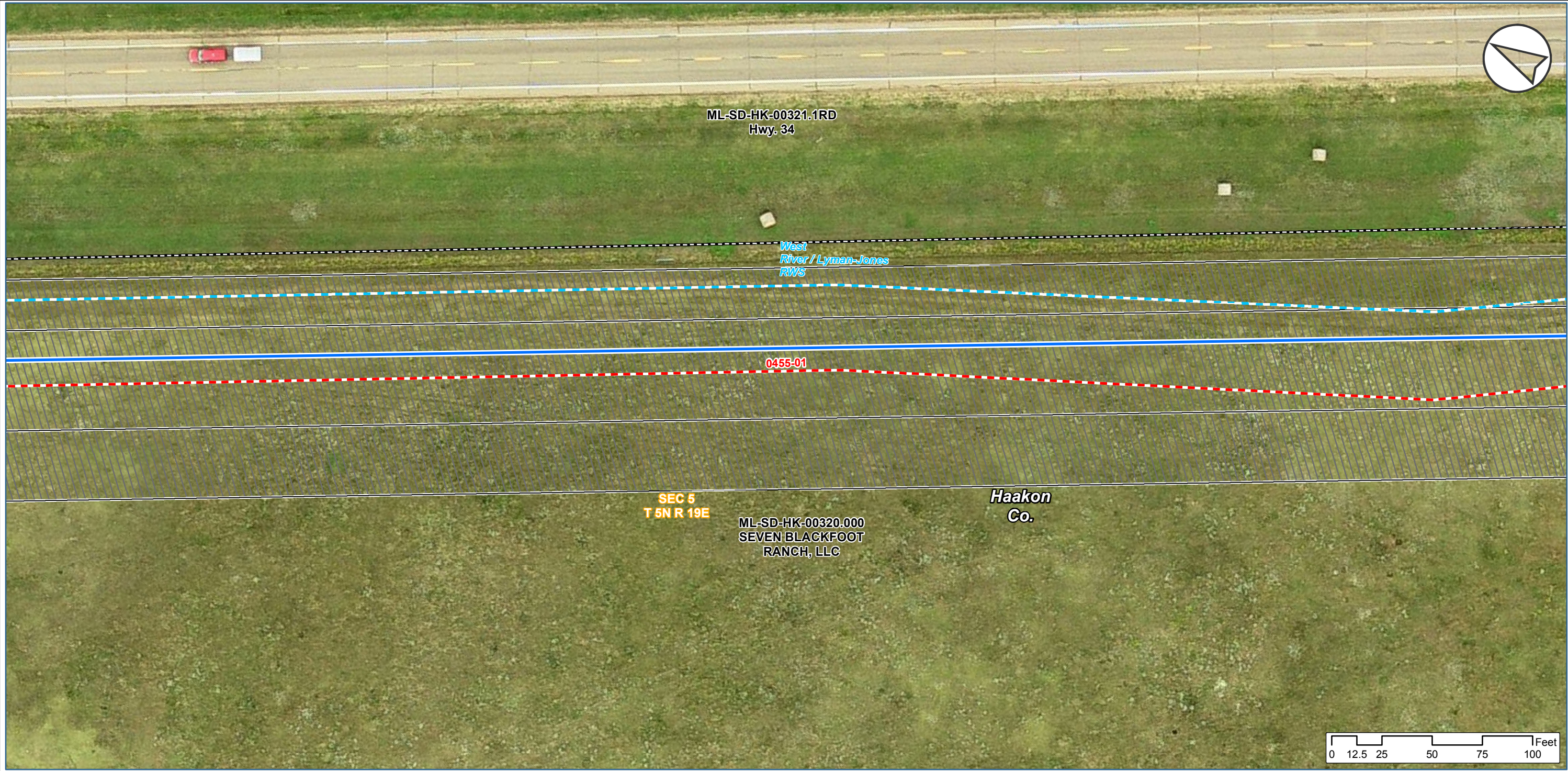
• Milepost	— Access Road	Section Line
Valve	P—P Overhead Power Line	County Line
Power Pole	Cultural Site	Waterbody
Centerline (2012-11-18)	Workspace	Wetland
Route Variation	Wash Station	MDEQ Corridor
Water Pipelines	Property Parcel	

KEYSTONE XL PROJECT PROPOSED ROUTE VARIATION		
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LEGEND

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KEYSTONE XL PROJECT

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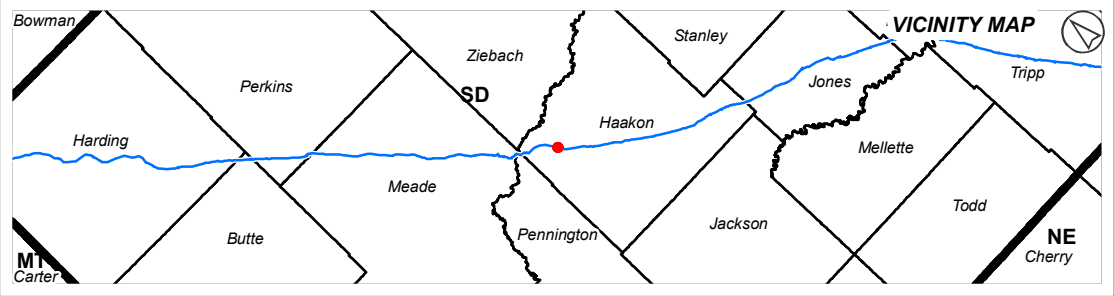
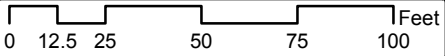
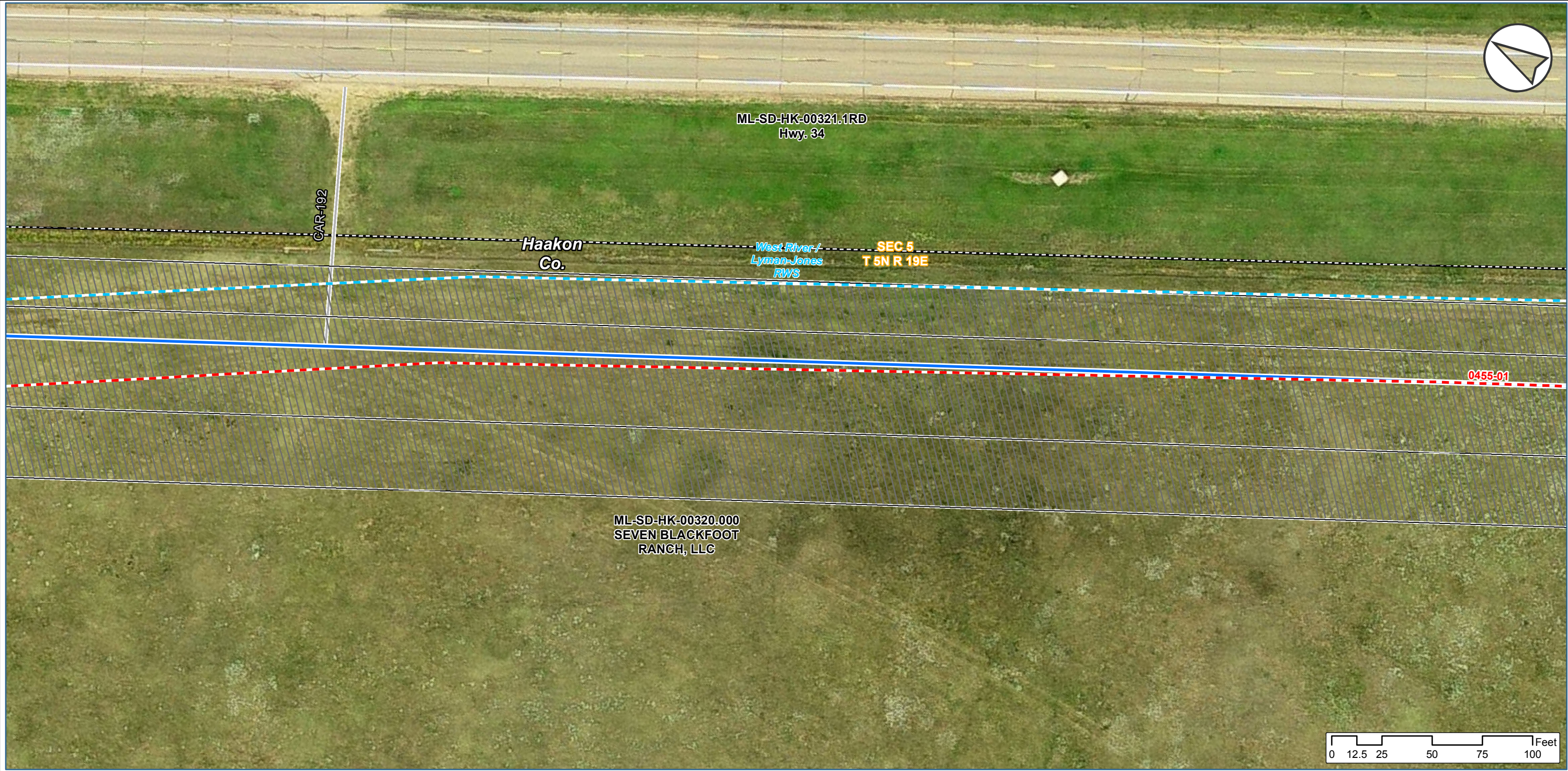


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SHEET:

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LEGEND

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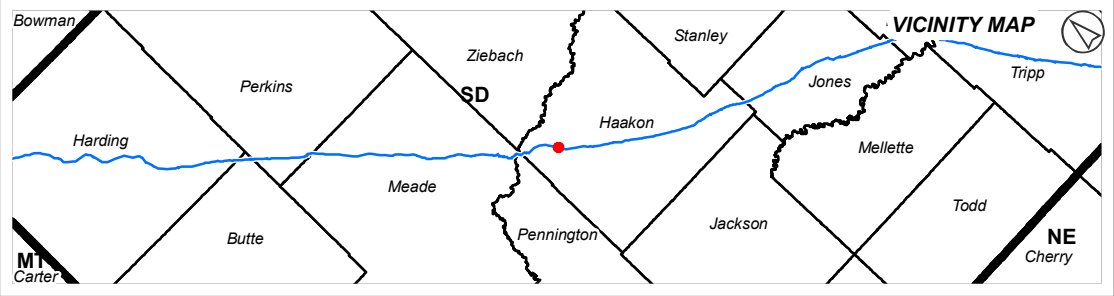
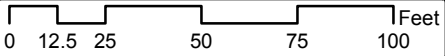
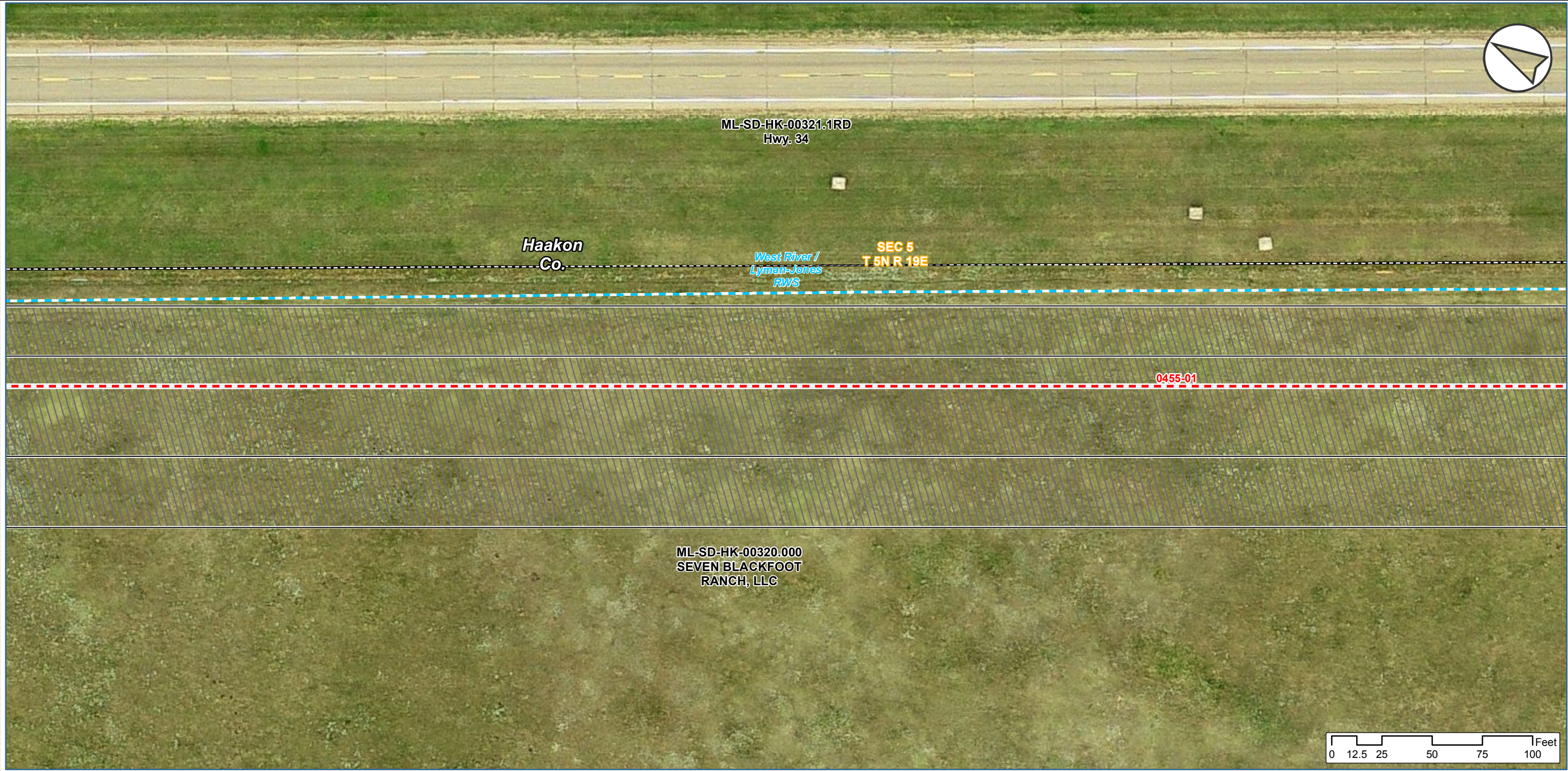
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DWG: XL-46-P-9299-A-CLRV

SHEET: 8 of 11



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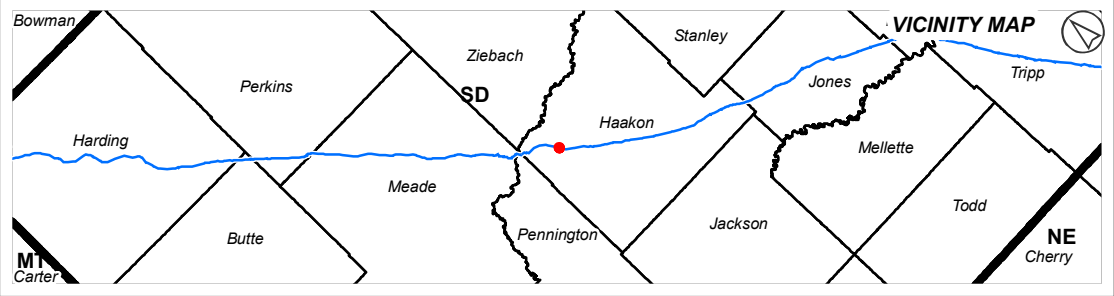
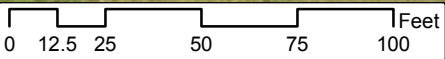
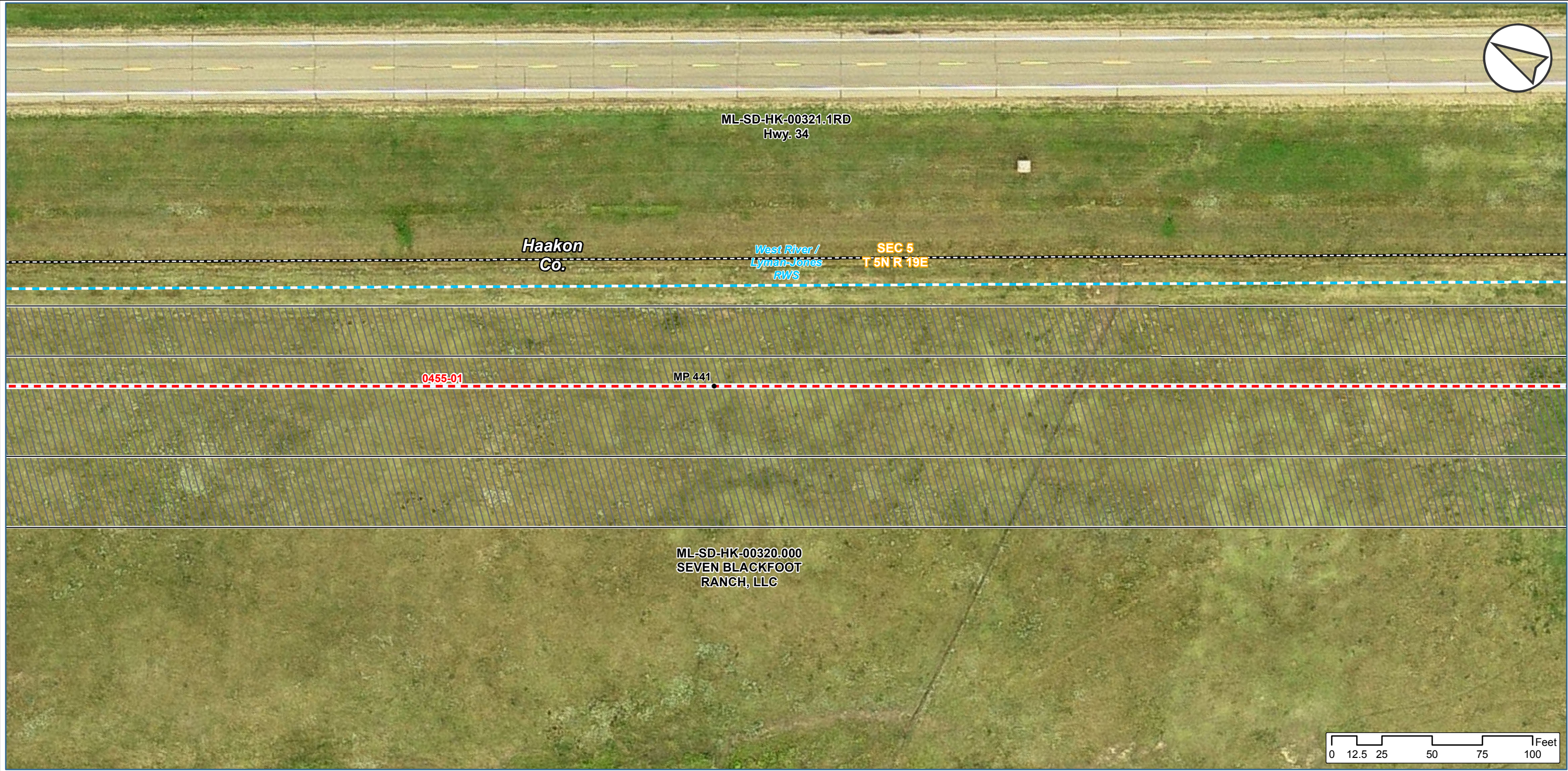
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PREPARED BY:

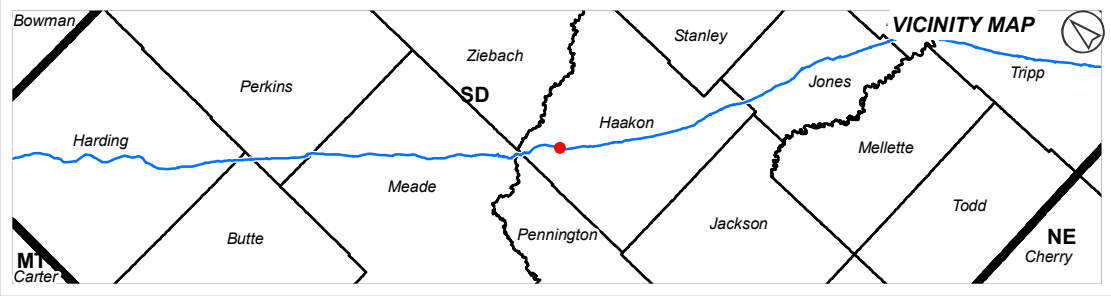
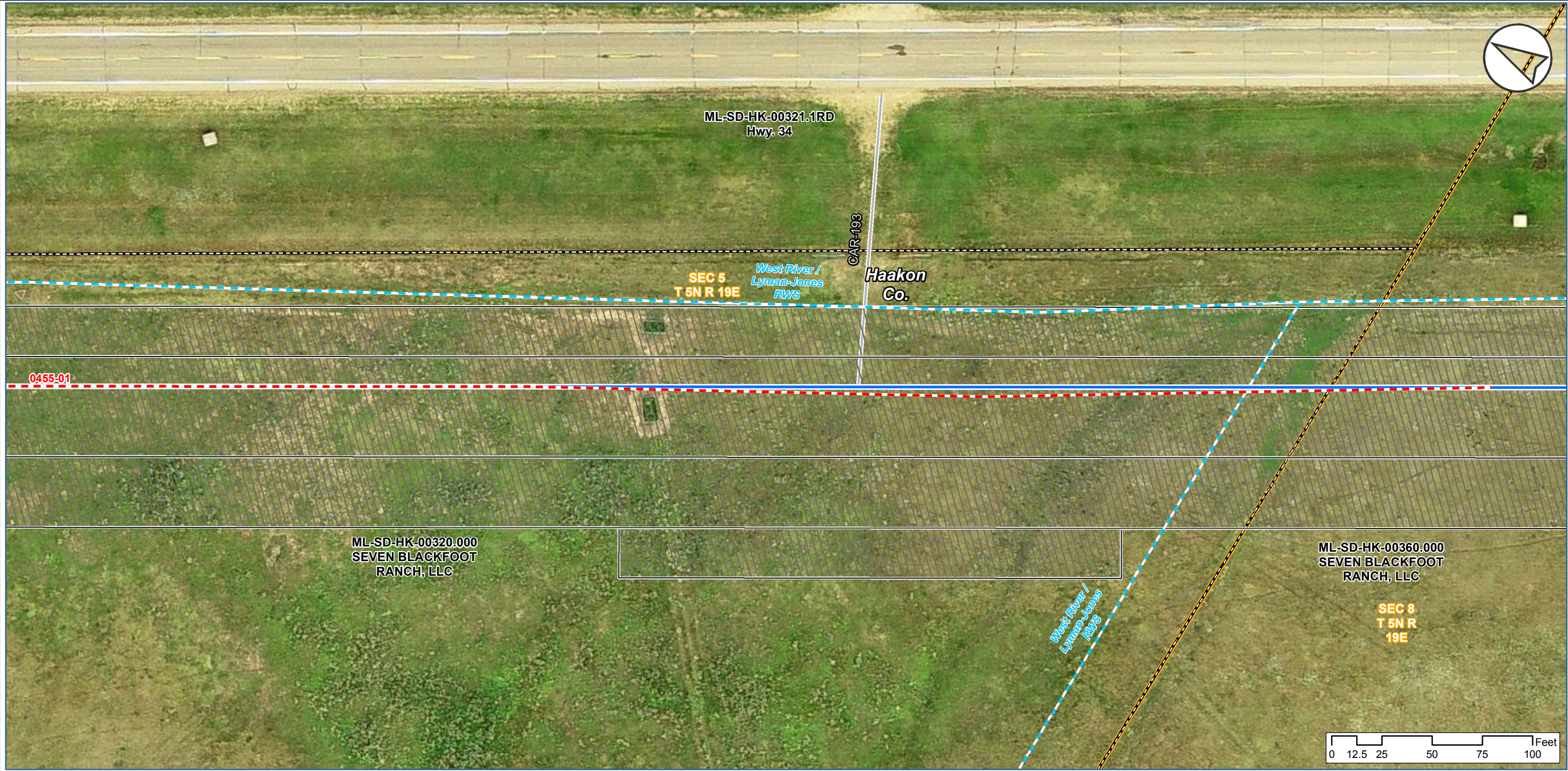
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LEGEND

- Milepost
- Valve
- Power Pole
- Centerline (2012-11-18)
- Route Variation
- Water Pipelines
- Access Road
- Overhead Power Line
- Cultural Site
- Workspace
- Wash Station
- Property Parcel
- Section Line
- County Line
- Waterbody
- Wetland
- MDEQ Corridor

KEYSTONE XL PROJECT PROPOSED ROUTE VARIATION		
COUNTY:	HAAKON	DRAWN BY: RJM
STATE:	SOUTH DAKOTA	CHECKED BY: JP
REV. NO.:	REVISION	DATE
0	ISSUED FOR REVIEW.	2013-07-09
PRELIMINARY		
DATE:	2013-07-08	PROJECTION: NAD83 UTM14 N

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