NORTH DAKOTA PUBLIC SERVICE COMMISSION

APPLICATION OF
VANTAGE WEST SPUR LATERAL PIPELINE PROJECT
for
CERTIFICATE OF CORRIDOR COMPATIBILITY and ROUTE PERMIT
ADDENDUM NO. 1

Vantage Pipeline US LP
July 2015

PEMBINA

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July 17, 2015

APPLICATION OF

VANTAGE WEST SPUR LATERAL PIPELINE PROJECT

for

CERTIFICATE OF CORRIDOR COMPATIBILITY and ROUTE PERMIT

ADDENDUM NO. 1

The following information that has been compiled as Addendum No. 1 to the Application of Vantage Pipeline US LP for Certificate of Corridor Compatibility and Route Permit previously filed with the North Dakota Public Service Commission on April 13, 2015.

The addendum has been prepared to address eight minor revisions in the route alignment that have occurred since April 13, 2015. This addendum updates only the sections of the original application where information has changed due to the route revision. These updates are based on additional environmental and cultural surveys and analysis completed after April 13, 2015. The information presented below will reference sections and exhibits from the original application where changes resulting from the route revision. The attached exhibit amendments have maps (Exhibit D) illustrating the sections of the pipeline route affected by the route revision.

CERTIFICATE OF CORRIDOR COMPATIBILITY

A.1 Describe the type of facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed.
Vantage Pipeline US LP (Vantage; owned/operated by Pembina Pipeline Corporation) is proposing to construct and operate approximately 46.7 miles of new, high vapor pressure (HVP) steel pipeline from a natural gas processing plant near Williston, North Dakota to an existing pipeline system near Stady, North Dakota, which currently transports ethane to the Alberta petrochemical industry. The preferred route (east route) was chosen as the final alignment, and eight minor revisions were made to that route. The general location of the project is in Exhibit A.

A.3.1.d Approximate length of facility
Vantage proposes to construct and operate 46.7 miles of pipeline from ONEOK Partners' Stateline II Plant near Williston, North Dakota to an existing pipeline, the Vantage Pipeline, near Stady, North Dakota. Ownership of land crossed by the Vantage West Spur Lateral Pipeline route is identified and updated in Table 1. The general pipeline route and updated locations of the block valves is in Figure 1.

Table 1. Ownership of Lands Crossed by the Vantage West Spur Lateral Pipeline Project Route.

LAND TYPE/LOCATION	PREFERRED ROUTE	
	CROSSING LENGTH (MILES)	PERCENT OF ROUTE
Federal lands	0.0	0.0
State lands	0.5	1.07%
County lands	0.0	0.0
Incorporated areas	0.0	0.0
Private land outside incorporated	46.2	98.93%
Total	**46.7**	**100%**

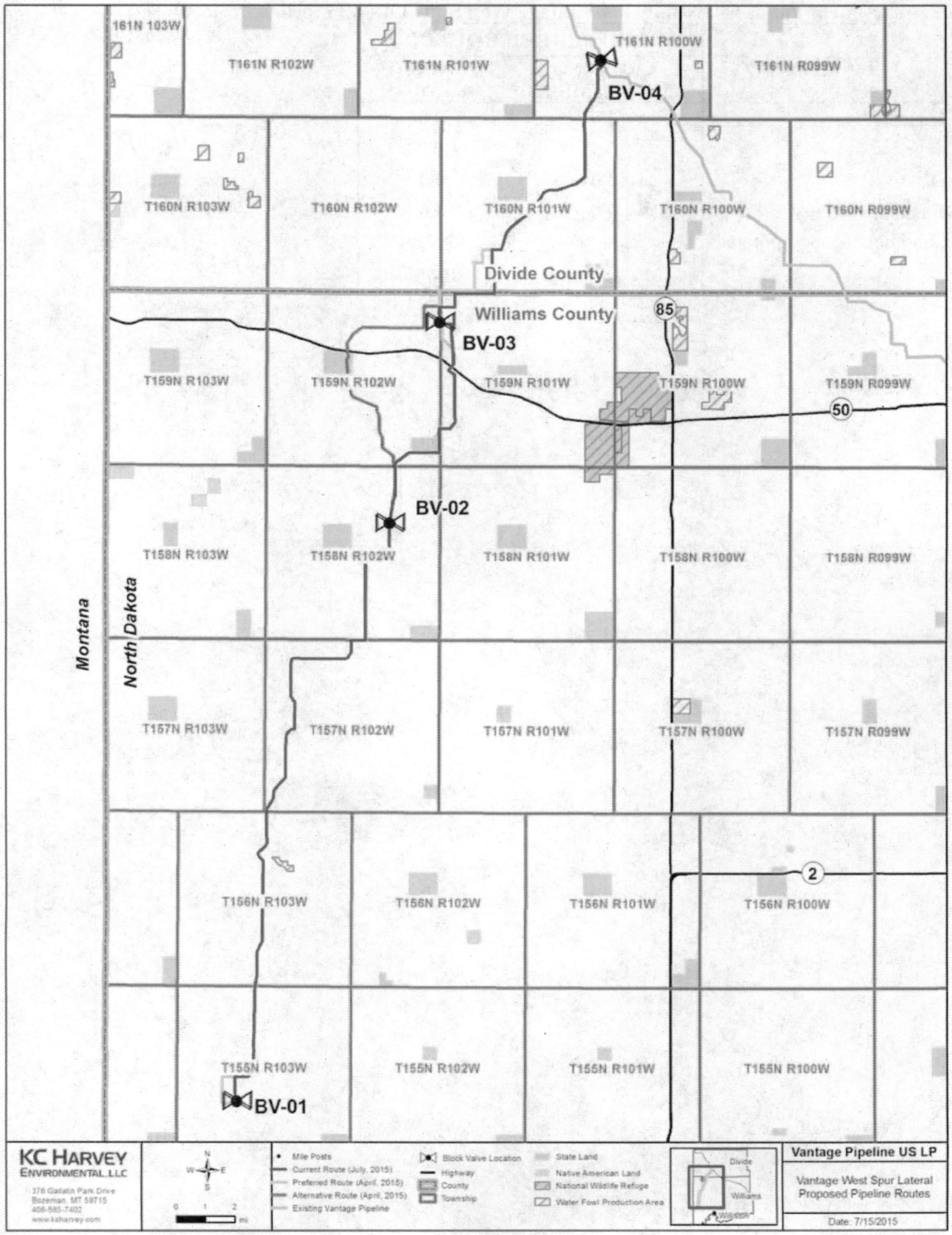

Figure 1. Block value locations.

B.1.2 Cultural Resources Laws, Codes and Guidelines: Results

The Class III cultural resource inventories identified 65 sites (Table 1). These consist of 43 prehistoric sites, 21 historic sites, and one (1) multicomponent site. All of the prehistoric sites contain stone features such as stone rings, cairns and alignments. The historic sites are made up of a railroad, a historic school, two historic farmsteads, three foundations/depressions, two cemeteries, two grain silos, two concrete culverts, and eight historic material scatters. The multicomponent site (32WI1663) contains prehistoric stone rings and the Lein Mine. In addition to the sites, the investigation identified 10 isolated finds consisting of less than five artifacts or isolated farm implements. The investigation observed no cultural districts or rural historic landscapes. Although there are several sites that share similar attributes, the sites are neither concentrated nor sufficiently linked by theme to be identified as districts. Likewise, the project area is rural, but lacks evidence for a planned or designed development that is required for a historic landscape.

The significance of the prehistoric sites is unknown. Further investigation is needed to ascertain whether the sites have sufficient materials to address pertinent archaeological questions, and can be placed within a meaningful temporal or cultural context. None of the historic sites within the corridor are recommended significant. Isolated Finds are not significant.

Vantage has successfully rerouted the pipeline construction corridor to avoid 59 sites, either by abandoning a route or by maintaining a 45-ft buffer from the site. Of the sites located within the construction corridor, one site (32DV0152) is determined not significant. Five sites (32DV157, 32WI1721, 32WI1724, 32WI1725, and 32WI1742) contain prehistoric stone features, and the sites' significance remains unknown.

At two sites (32DV157 and 32WI1742), a consultant archaeologist will direct the placement of fencing around the sites to limit potential impacts. In addition, the consultant archaeologist will monitor construction in the vicinity of the sites.

At three sites (32WI1721, 32WI1724 and 32WI1725) the Vantage West Spur Pipeline will be bored beneath the site, and vehicular traffic and equipment will be diverted to a shoofly that passes to the west. If conditions for boring are not sufficiently stable for hydraulic directional drilling the pipeline will be diverted to the shoofly.

To avoid secondary impacts associated with artifact collecting and vandalism from/to any of the identified sites, Vantage would limit all activities by workers to the defined temporary construction corridor. This would provide a 45-foot buffer to the identified sites and would minimize the visibility of all but the standing structures and buildings. Although two cemeteries (32WI1694 and 32WI1698) are not significant, the Vantage West Spur Pipeline has routed the pipeline to maintain a 100-ft buffer between the construction corridor and the edge of the cemetery boundaries. This will minimize the temporary visual effects of construction.

Table 2. Summary of sites identified during the 2014 and 2015 field inventory.

Site Number	Site Type	Determination of Significance	Within Current ROW	Comments
32WI0217	Prehistoric Stone Features-Ten Rings	Unevaluated	No	Abandoned Route
32WI0481	Historic Railroad	Not Significant	Yes	No Further Work
32WI1657	Stone Features (4 rings)	Unknown	No	Abandoned Route
32WI1658	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1659	Stone Features (3 rings, 4 arcs, 2 alignments)	Unknown	No	Abandoned Route
32WI1660	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1661	Stone Features (2 rings)	Unknown	No	Abandoned Route
32WI1662	Stone Features (2 rings)	Unknown	No	Abandoned Route
32WI1663	Multicomponent:Stone Features (3 rings, 1 cairn) and Historic Mine	Prehistoric component unknown, Historic component not significant	No	Abandoned Route
32WI1664	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1665	Stone Features (5 rings, 1 arc)	Unknown	No	Abandoned Route
32WI1666	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32WI1667	Historic School (Augedahl School)	Not Significant	Yes	Outside construction corridor with 45 ft buffer
32WI1668	Historic Farmstead	Not Significant	No	Abandoned Route
32WI1669	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32WI1670	Historic Depression	Not Significant	No	Abandoned Route
32WI1671	Historic Farmstead	Not Significant	No	Abandoned Route
32WI1672	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32WI1673	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32WI1693	Historic Grain Bins	Private	No	Outside construction corridor with 45 ft buffer
32WI1694	Historic Cemetery	Private	No	Outside construction corridor with 45 ft buffer
32WI1695	Prehistoric Stone Feature-Single Ring	Private	No	Outside construction corridor with 45 ft buffer
32WI1696	Historic Material Scatter	Private	No	Outside construction corridor with 45 ft buffer
32WI1697	Historic Grain Bins	Private	No	Outside construction corridor with 45 ft buffer
32WI1698	Historic Cemetery	Private	No	Routed Pipeline to maintain 100 ft buffer
32WI1699	Prehistoric Stone Features-Two Rings	Private	No	Abandoned Route
32WI1700	Prehistoric Stone Features-Nine Rings and Arc	Private	No	Abandoned Route
32WI1701	Prehistoric Stone Feature-Cairn	Private	No	Routed Pipeline to maintain 100 ft buffer

Site Number	Site Type	Determination of Significance	Within Current ROW	Comments
32WI1702	Prehistoric Stone Features-Two Rings	Private	No	Outside construction corridor with 45 ft buffer
32WI1703	Prehistoric Stone Feature-Single Ring	Private	No	Outside construction corridor with 45 ft buffer
32WI1704	Historic Granary	Private	No	Outside construction corridor with 45 ft buffer
32WI1705	Prehistoric Stone Features-Five Rings	State	No	Abandoned Route
32WI1706	Historic Pump House	Private	No	Abandoned Route
32WI1707	Prehistoric Stone Features-Seven Cairns	Private	No	Abandoned Route
32WI1708	Prehistoric Stone Feature-Single Ring	Private	No	Abandoned Route
32WI1709	Historic Material Scatter	Private	No	Abandoned Route
32WI1710	Prehistoric Stone Feature-Cairn	Private	No	Abandoned Route
32WI1718	Prehistoric Stone Features-Eleven Stone Rings	Private	No	Abandoned Route
32WI1719	Prehistoric Stone Features-Rings, Cairn and Unknown	Private	No	Abandoned Route
32WI1720	Prehistoric Stone Features-Two Cairns	Private	No	Abandoned Route
32WI1721	Prehistoric Stone Features-Rings, Arc, Cairns and Alignment	Private	Yes	Directionally drill below site and shoofly traffic to the west. If boring is not possible, construct along shoofly corridor
32WI1722	Prehistoric Stone Features-Cairn	Private	No	Abandoned Route
32WI1723	Prehistoric Stone Features-Three Rings	State	No	Abandoned Route
32WI1724	Prehistoric Stone Features-Two Rings and Two Cairns	Private	Yes	Directionally drill below site and shoofly traffic to the west. If boring is not possible, construct along shoofly corridor
32WI1725	Prehistoric Stone Features-Eight Rings and Three Arcs	Private	Yes	Directionally drill below site and shoofly traffic to the west. If boring is not possible, construct along shoofly corridor
32WI1726	Prehistoric Stone Features-Two Rings and Arc	Private	No	Abandoned Route
32WI1727	Prehistoric Stone Feature-Single Ring	Private	No	Abandoned Route
32WI1728	Prehistoric Stone Feature-Single Ring	Private	No	Abandoned Route

Site Number	Site Type	Determination of Significance	Within Current ROW	Comments
32WI1738	Prehistoric Stone Feature-Single Ring	Private	No	Abandoned Route
32WI1739	Prehistoric Stone Features-Two Cairns	Private	No	Abandoned Route
32WI1741	Historic Material Scatter	Private	No	Abandoned Route
32WI1742	Prehistoric Stone Features-Five Cairns	State	Yes	Fence and monitor
32WI1765	Concrete Culvert	Recommended Not Significant	Yes	Outside construction corridor with 45 ft buffer
32WI1766	Concrete Culvert	Recommended Not Significant	Yes	Outside construction corridor with 45 ft buffer
32DV0146	Stone Features (2 ring)	Unknown	No	Abandoned Route
32DV0147	Stone Features (3 rings, 1 arc)	Unknown	No	Abandoned Route
32DV0148	Stone Feature (1 ring)	Unknown	No	Abandoned Route
32DV0149	Stone Features (11 cairns, 1 ring, 1 alignment)	Unknown	No	Abandoned Route
32DV0150	Stone Feature (1 cairn)	Unknown	No	Abandoned Route
32DV0151	Historic Cultural Material Scatter	Not Significant	No	Abandoned Route
32DV152	Historic Farmstead	Private	Yes	No Further Work
32DV153	Prehistoric Stone Features-Three Rings	Private	No	Outside construction corridor with 45 ft buffer
32DV154	Prehistoric Stone Feature-Single Ring	Private	No	Outside construction corridor with 45 ft buffer
32DV155	Prehistoric Stone Features-Two Rings	Private	No	Outside construction corridor with 45 ft buffer
32DV157	Prehistoric Stone Feature- Arc	Private	Yes	Fence and monitor

B.2.1 U.S. Army Corps of Engineers (USACE)

The wetland investigation resulted in the identification and mapping of wetlands within the 500 foot survey corridor of the revised route. A total of 70 wetlands are located within the 500-foot Vantage West Spur Lateral Pipeline survey corridor. Type 1 PEM and PFO wetlands, and one Type 6 PSS wetland were observed in the survey corridor. No Type 2, 3, 4 or 5 wetlands occur in the study corridor. Table 3 summarizes the identified wetlands within the 500 foot corridor by wetland type. Not all wetlands within the 500 foot corridor will be impacted, see Exhibit F.2.

Table 3. Wetlands by Type within the project 500-ft Corridor.[1]

CLASSIFICATION		WETLANDS OBSERVED		
		Revised Route		
Circular 39[2]	Cowardin[3]	Number	Area (acres) in 500 ft corridor	Area (acres) in workspace
1	PEM	68	24.96	1.53

1	PFO	1	0.5	0.07
6	PSS	1	0.6	0.0
Totals		70	26.06	1.6

[1] Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated. Not all the wetlands within the 500 foot corridor will be impacted, see Exhibit F.
[2] Wetlands of the United States, Circular 39. (Shaw and Fredine, 1956)
[3] Classification of Wetlands and Deepwater Habitats of the United States. (Cowardin et al.1979)

Wetland Impacts. The proposed Vantage West Spur Lateral Pipeline would be installed using open-cut trenching techniques. Vantage would maintain a 30-foot permanent right-of-way. Additionally, a 70-foot temporary construction right-of-way would be established adjacent to the permanent right-of-way. However, neck-down workspace areas will be used around wetlands to avoid or minimize impacts

For the field investigation, a 500-foot corridor was surveyed for wetlands and waterbodies on the revised route (Exhibits F.2 through F.4). The field investigation resulted in the identification and mapping of 70 wetlands and 12 waterbodies are present within the preferred 500-foot corridor. Fifty-nine (59) wetlands and four (4) waterbodies would be avoided during construction by routing around the wetland or waterbody within the 500-ft corridor. Eleven (11) wetlands and 8 waterbodies would be within or on the edge of the 30-foot permanent right-of-way. Overall, 1.6 acres of wetlands will be temporarily impacted on the revised route.

B.3.1 U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS)

Both the revised pipeline routes cross 0.16 miles of prime farmland (previously 0.17 miles). A desktop analysis using the Soil Survey Geographic (SSURGO) database identified prime farmland in the study area. During the routing process, the survey corridor was able to avoid the majority of prime farmland areas; however, 0.16 miles will be crossed.

B.3.7 North Dakota Department of Trust Lands (NDDTL)

The pipeline route crosses a half section of NDDTL. Vantage was issued a survey permit (ROW#6210) and conducted field surveys for environmental and cultural features. Vantage representatives also applied for and received a right-of-way permit (ROW #7497). All payments have been received by the NDDTL and the Right-of-Way documents were signed on June 18, 2015.

B.3.8 North Dakota State Water Commission (NDSWC)

Vantage will apply for a Temporary Water Permit for use of surface water during hydrostatic testing. The application will be submitted 30 days prior to construction.

ROUTE PERMIT

B.2.6 Irreversible and irretrievable commitments of natural resources should the proposed corridor or route be designated.

A total surface area of 0.38 acres (previously 0.32 acres) would be occupied by block valves and access roads located along the revised pipeline route. Block valve locations and access roads would be removed and the land would be restored to its original state when the pipeline is no longer in operation; therefore, minimal irreversible and irretrievable commitments of natural resources will result from the Project.

B.2.9.a Cultural Resource Inventory Results

The Class III cultural resource inventories identified 65 sites. These consist of 43 prehistoric sites, 21 historic sites, and one multicomponent site. All of the prehistoric sites contain stone features such as stone rings, cairns and alignments. The historic sites are made up of a railroad, a historic school, two historic farmsteads, three foundations/depressions, two cemeteries, two grain silos, two concrete culverts, and eight historic material scatters. The multicomponent site (32WI1663) contains prehistoric stone rings and the Lein Mine. In addition to the sites, the investigation identified 10 isolated finds consisting of less than five artifacts or isolated farm implements. The investigation observed no cultural districts or rural historic landscapes. Although there are similarities in the type of stone features observed in the project area, the sites are not sufficiently concentrated, and do not demonstrate sufficient linkage to indicate a shared relationship. There is no evidence for planned or designed development. Over 80 percent of the project area is cultivated and reflect rural use; however, the landscape is not associated with an important event, an important person, or share architectural elements.

The significance of the prehistoric sites is unknown. Further investigation is needed to ascertain whether the sites have sufficient materials to address pertinent archaeological questions, and can be placed within a meaningful temporal or cultural context. None of the historic sites are recommended significant. Isolated Finds are not significant.

Vantage has successfully rerouted the pipeline construction corridor to avoid 59 sites by either abandoning a route or by maintaining with a 45-ft buffer between the construction corridor and the site. Of the sites located within the construction corridor, one site (32DV0152) is determined not significant. Five sites (32DV157, 32WI1721, 32WI1724, 32WI1725, and 32WI1742) contain prehistoric stone features, and the sites' significance remains unknown.

At two sites (32DV157 and 32WI1742), a consultant archaeologist will direct the placement of fencing around the sites to limit potential impacts. In addition, the consultant archaeologist will monitor construction in the vicinity of the sites.

At three sites (32WI1721, 32WI1724 and 32WI1725) the Vantage West Spur Pipeline will be bored beneath the site, and vehicular traffic and equipment will be diverted to a shoofly that passes to the west. If conditions for boring are not sufficiently stable for hydraulic directional drilling the pipeline will be diverted to the shoofly.

To avoid secondary impacts associated with artifact collecting and vandalism from/to any of the identified sites, Vantage would limit all activities by workers to the defined temporary construction corridor. This

would provide a 45-foot buffer to the identified sites and would minimize the visibility of all but the standing structures and buildings. Although two cemeteries (32WI1694 and 32WI1698) are not significant, the Vantage West Spur Pipeline has routed the pipeline to maintain a 100-ft buffer between the construction corridor and the edge of the cemetery boundaries. This will minimize the temporary visual effects of construction.

It is unlikely that disturbance activities associated with the construction of the Vantage West Spur Pipeline will cause impacts to deposits capable of containing paleontological resources because the bedrock of the region is covered by varying thickness of Quaternary deposit, chiefly glacial drift, which rarely contains fossils.

B.4.2.b Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands

No designated or registered state wild, scenic or recreational rivers, game refuges, game management areas, forests, or forest management areas were identified within the survey corridor. However, 0.5 miles of North Dakota State Trust Lands are crossed by the route.

B.4.3 Selection Criteria

A summary of the miles crossed by each land use, and anticipated temporary workspace disturbance impacts by land use is presented in Table 5.

Table 4. Miles crossed and temporary workspace acres by land use.

Land Use Category	Preferred Route		
	Miles Crossed	Workspace Acres	Percent Pipeline
Row Crops	38.32	464.16	82%
Haylands	1.32	15.94	3%
Rural residences and farmsteads (windrows)	0.02	0.28	0%
Pasturelands and Rangelands	5.57	67.47	12%
Native Grassland	0.92	11.21	2%
Public, commercial, and institutional use (ROW)	0.57	6.97	1%
Total	**46.72**	**566.03**	**100%**

Permanent impacts to land use will occur in the locations of the two new block valves and a block valve and trap constructed at either end of the pipeline at existing facilities (Table 6). Specifically, approximately 0.38 acres will be removed from crop production permanently to accommodate the block valve locations.

Table 5. Block valve locations within Land Use.

BLOCK VALVE NUMBER	MILEPOST	LAND COVER	AREA (acres)
BV-1	0	Hayland	0.14
BV-2	24.50	Row Crop	0.08
BV-3	33.72	Row Crop	0.08
BV-4	46.73 (end)	Pasture and Rangelands	0.08
		TOTAL AREA	**0.38**

B.4.3.a Agricultural Production / Family Farms and Ranches

Lands primarily used for row and non-row haylands is the primary land use crossed and temporary disturbances along the Vantage West Spur Lateral Pipeline route (Table 5). Row crops account for 82% with 464.16acres of workspace disturbance on the revised route.

Prime farmland

The revised route (46.7 miles) of the Vantage West Spur Lateral Pipeline route cross prime farmland and farmland of statewide importance (Table 7). Since soils consisting farmland of statewide importance represent a significant portion of the Project area, total avoidance of this soil type was not practicable.

Table 6. Farmland classification.

FARM CLASSIFICATION	LENGTH (MI)	PERCENTAGE OF PIPELINE LENGTH
Prime farmland	0.16	0%
Farmland of statewide importance	34.04	72.89%
Prime farmland if drained	0.09	0.19%
Prime farmland if irrigated	0.15	0.32%
Non-prime or state import farmland	12.29	26.32%
Totals	**46.7 miles**	**100%**

B.4.3.c Surface drainage patterns and groundwater flow patterns

The pipeline preferred route will cross 7 wetlands, 7 intermittent or ephemeral streams, and 1 pond. Areas with high densities of waterbody (streams, wetlands, seeps, springs, etc.) crossings were avoided during route planning. As indicated in the EPP (Exhibit J), Vantage will obtain a construction storm water permit (NDR10-0000) from the NDDH and prepare a Storm Water Pollution Prevention Plan (SWPPP) to minimize surface water runoff and erosion.

B.4.3.g Wetlands

Vantage conducted a conservative and approximate inventory of wetland boundaries along the initial 46.7-mile long, 500-foot wide Vantage West Spur Lateral Pipeline survey corridor based upon visible hydrology and vegetation indicators. The wetland investigation resulted in the identification and mapping of 69 wetlands within the 500-foot Vantage West Spur Lateral Pipeline revised survey corridor. Exhibit F provides a summary of the wetlands and waterbodies encountered and classifies each by wetland and stream type.

B.4.3.h Woodlands and wooded areas

The *rural residences and farmsteads* land use category includes planted shelterbelts and windbreaks. These areas are the only wooded areas in the survey corridor. The wooded areas are small in size (0.02 miles) and account for a minor portion of the Project route (Table 5). Only two windbreaks are crossed by the revised route.

B.4.3.l Plant life

Pasturelands and rangelands account for 5.57 miles of the Project revised route and include lands the may have been plowed at some time in the past and re-planted to grasses suitable for livestock grazing. *Native grasslands* are uncommon in the revised route (0.92 miles). Lands classified as *public, commercial, and institutional use* are exclusively road right-of-ways including vegetated barrow ditches. These areas are generally small in size (0.02 miles each) but occur frequently because of the section line road system in North Dakota. The revised route has 0.57 miles of right-of-ways (Table 5).

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VANTAGE WEST SPUR LATERAL PIPELINE
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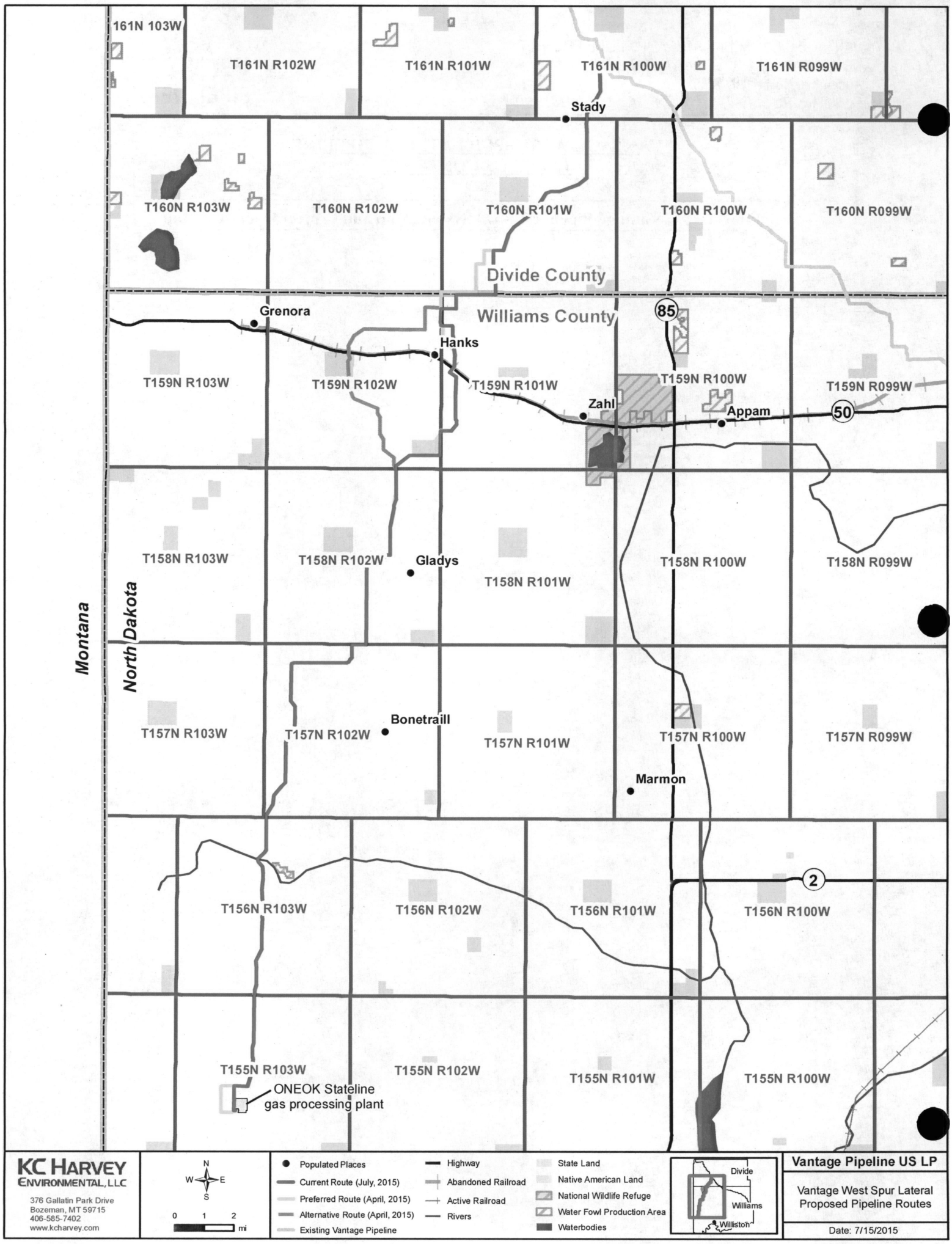
Exhibit A	**Vantage Pipeline US LP System Map and Project Overview Map**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T155N R101W
T155N R100W
ONEOK Stateline
gas processing plant
KC HARVEY
ENVIRONMENTAL, LLC
376 Gallatin Park Drive
Bozeman, MT 59715
406-585-7402
www.kcharvey.com
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Populated Places
Current Route (July, 2015)
Preferred Route (April, 2015)
Alternative Route (April, 2015)
Existing Vantage Pipeline
Highway
Abandoned Railroad
Active Railroad
Rivers
State Land
Native American Land
National Wildlife Refuge
Water Fowl Production Area
Waterbodies
Divide
Williams
Williston
Vantage Pipeline US LP
Vantage West Spur Lateral
Proposed Pipeline Routes
Date: 7/15/2015

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR LATERAL PIPELINE
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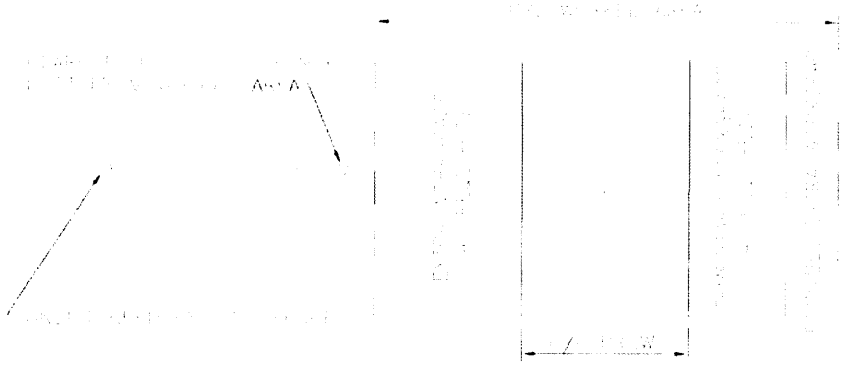
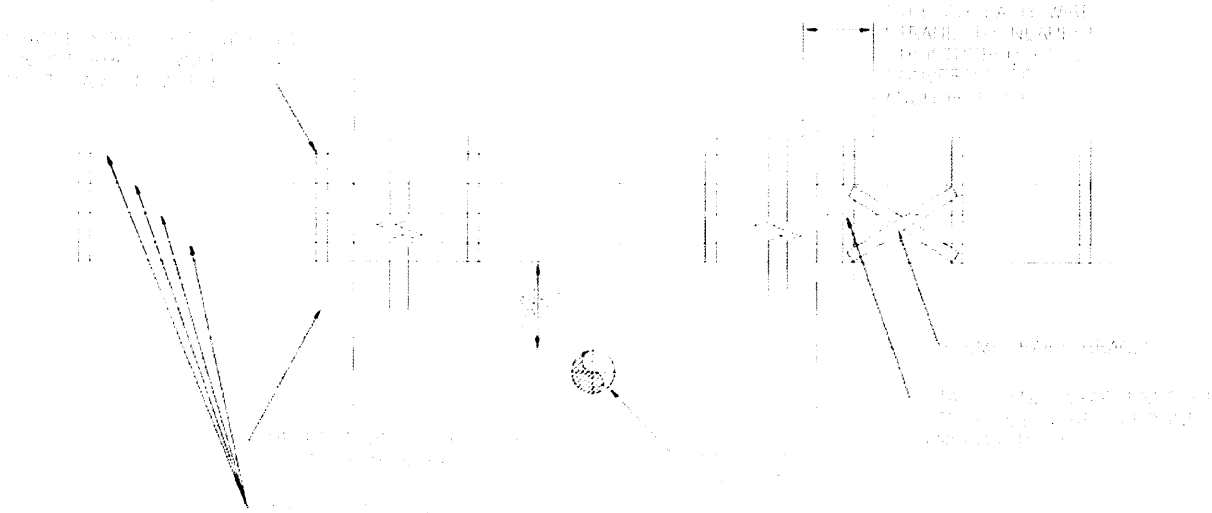
Exhibit B	**ROW Construction Details**



PLAN



ELEVATION

NOTES:

Pembina Pipeline Corporation	A			

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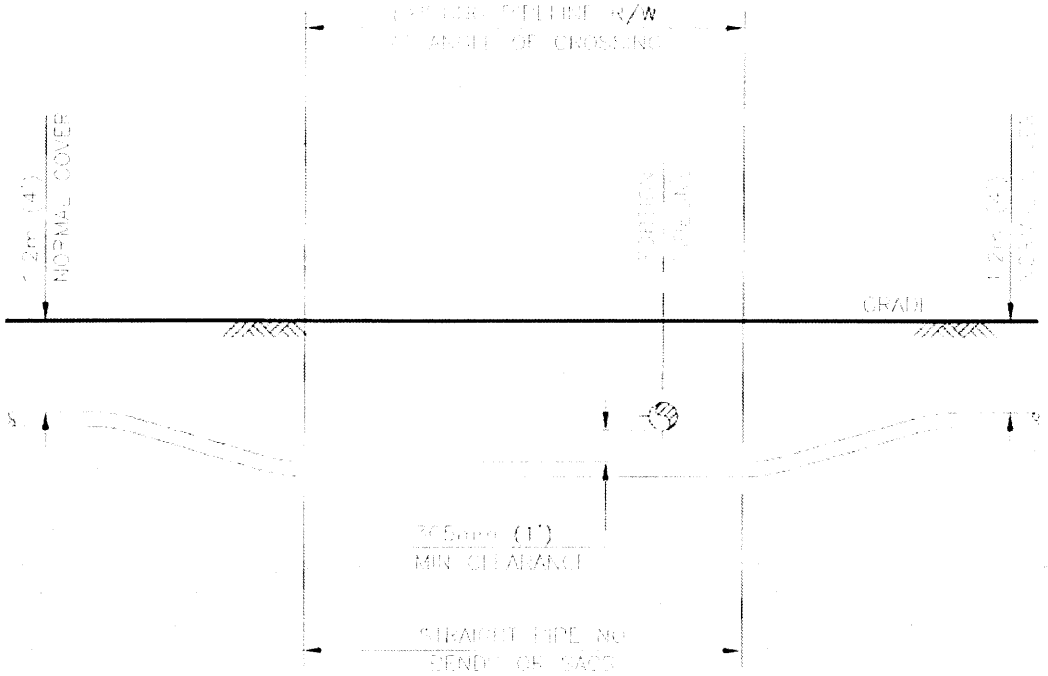

PROFILE OF PIPELINE

NOTES:

1. FOREIGN PIPELINE LOCATIONS AND [illegible] TO BE DETERMINED BY ELECTRICAL MEANS IN ADVANCE OF PIPELINE OPERATION AND CONFIRMED BY [illegible] EXPOSING [illegible] OR "HYDRO VAC"
2. OWNER OF FOREIGN PIPELINE [illegible] AT LEAST [illegible] ADVANCE OF EXCAVATION OF CROSSING OR AS REQUIRED BY THE CROSSING [illegible] THE OWNER OR HIS REPRESENTATIVE SHALL BE PRESENT ON [illegible] APPROVED IN WRITING [illegible]
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Pembina Pipeline Corporation	B			

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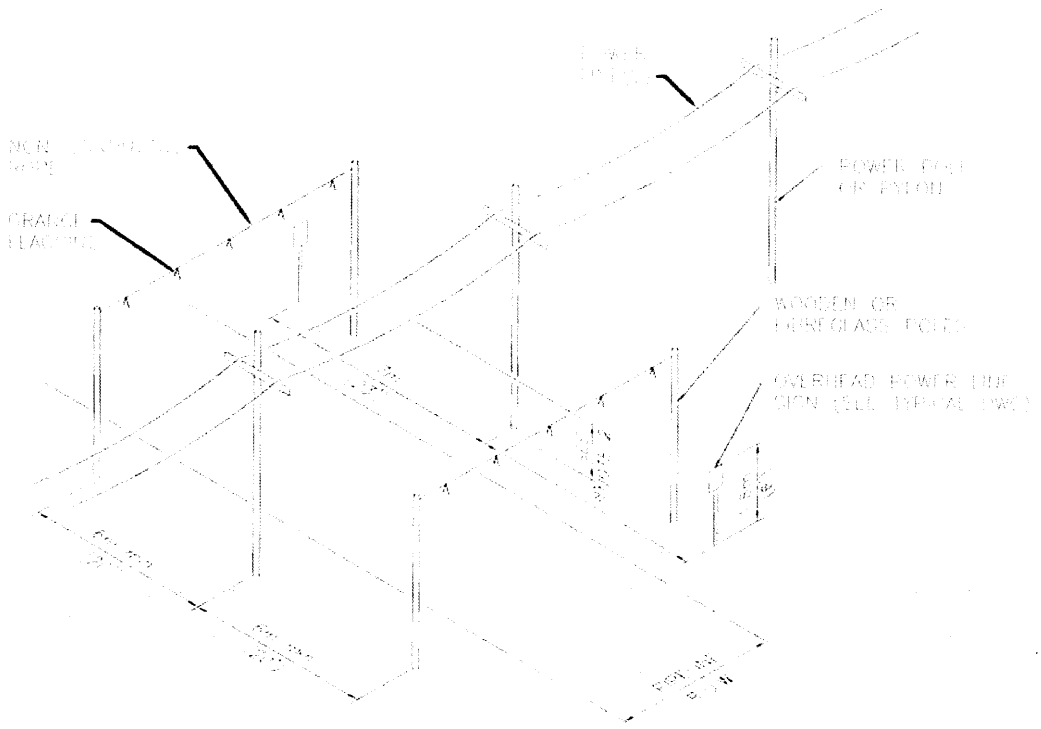

NOTES:

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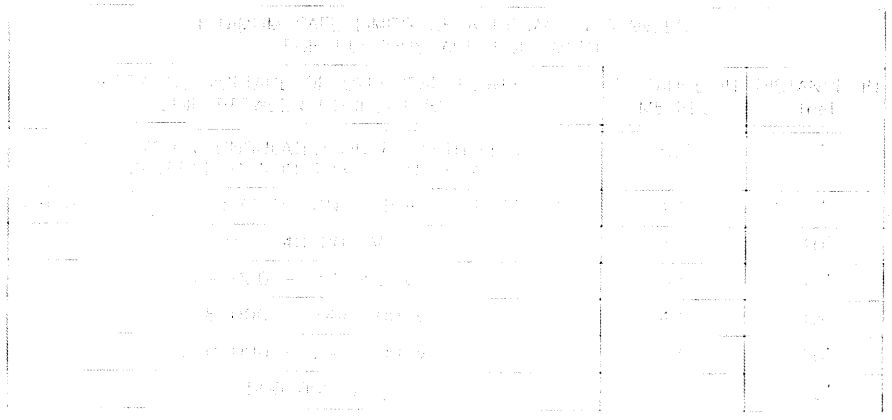
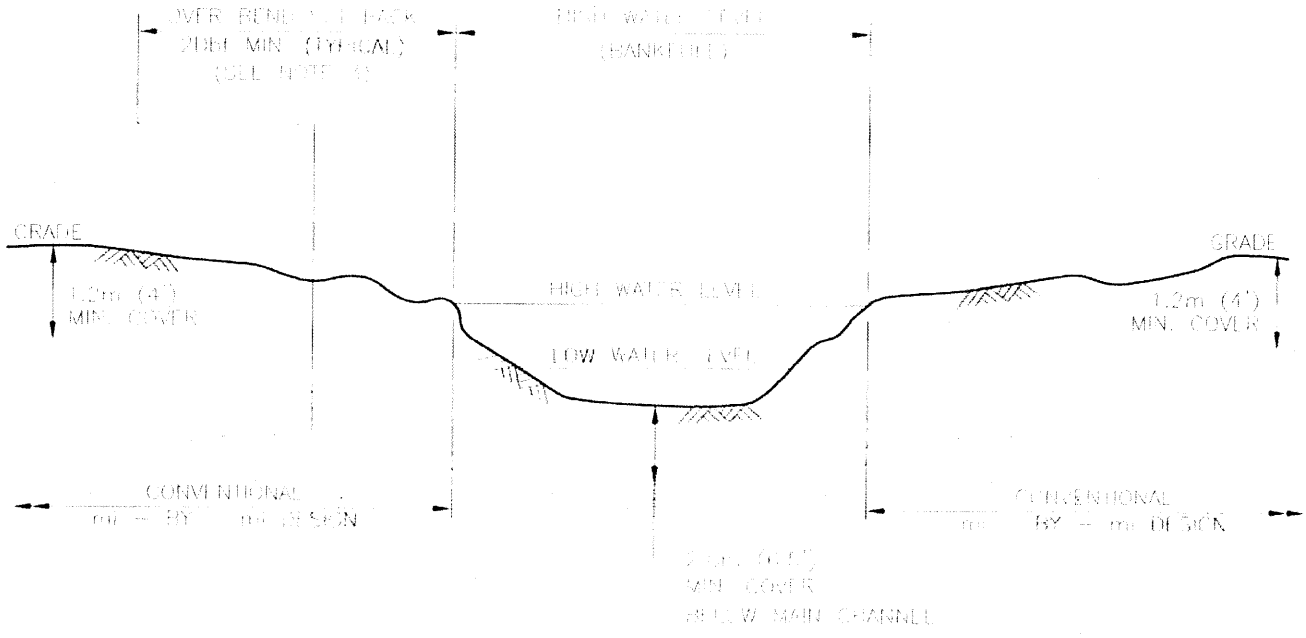
2. [illegible]
3. [illegible]



Pembina Pipeline Corporation	C				

INFORMATION ISSUE 2015.06.08



TYPICAL SINGLE SAG CROSSING

NOTES:

Pembina Pipeline Corporation	D		

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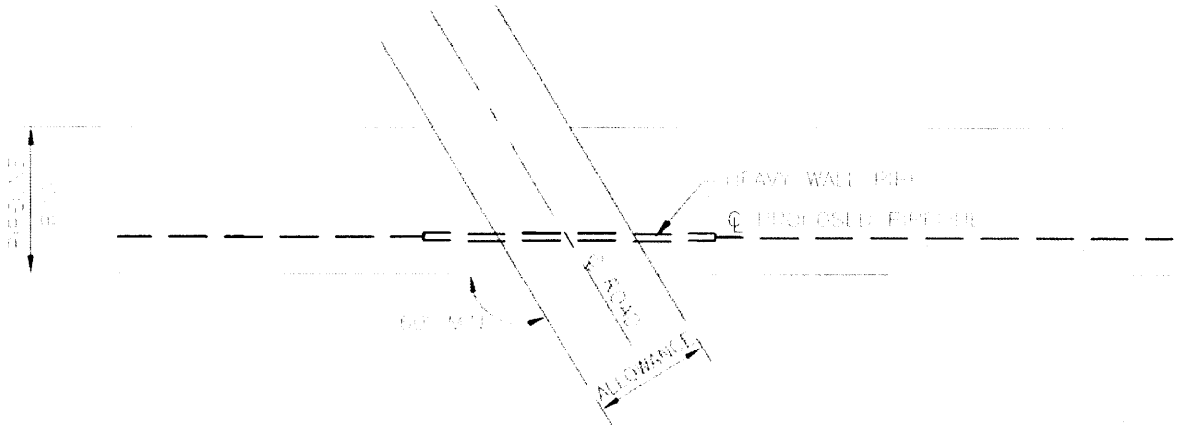

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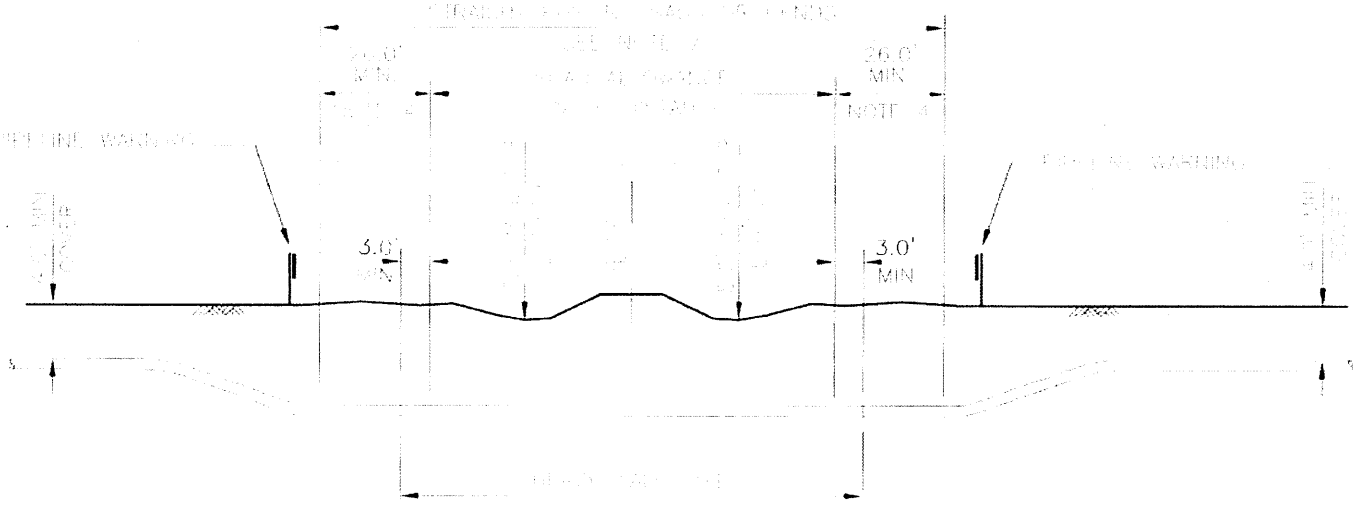

PROFILE ALONG ℄ OF PIPELINE

NOTES:

Pembina Pipeline Corporation	E			

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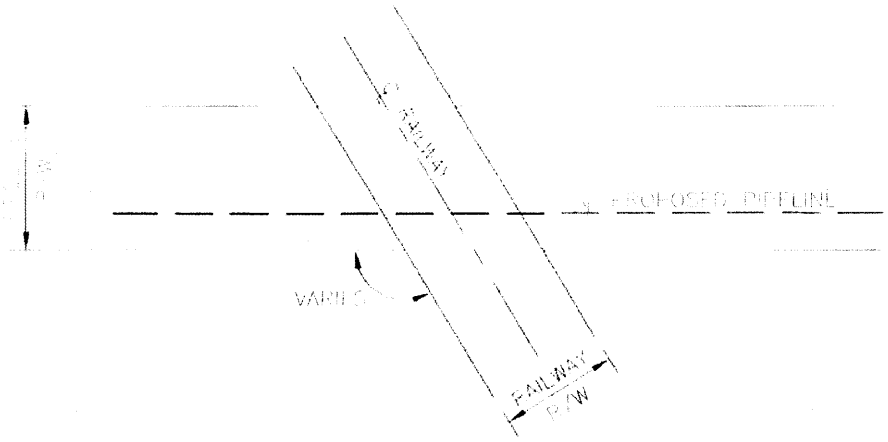

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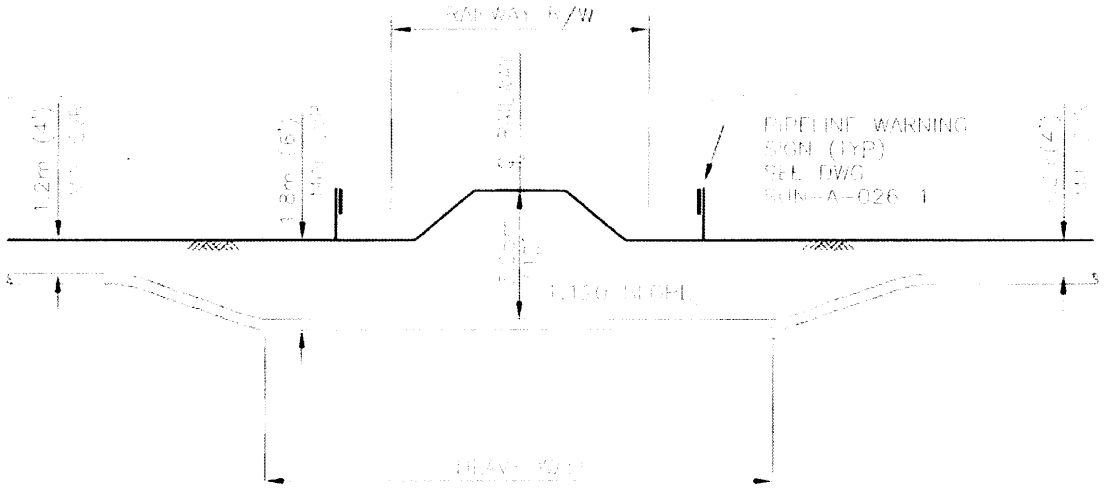

PROFILE ALONG ℄ OF PIPELINE

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Pembina Pipeline Corporation		F			
			A.F.E. NO.		

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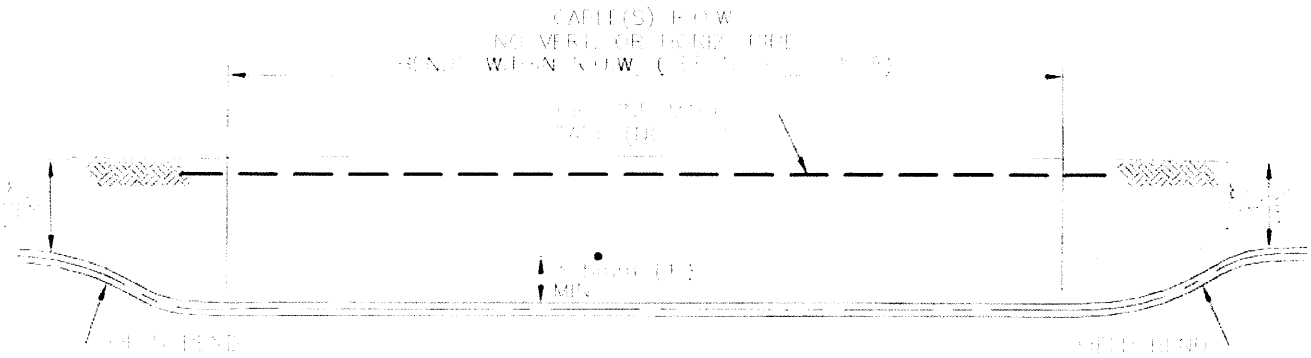

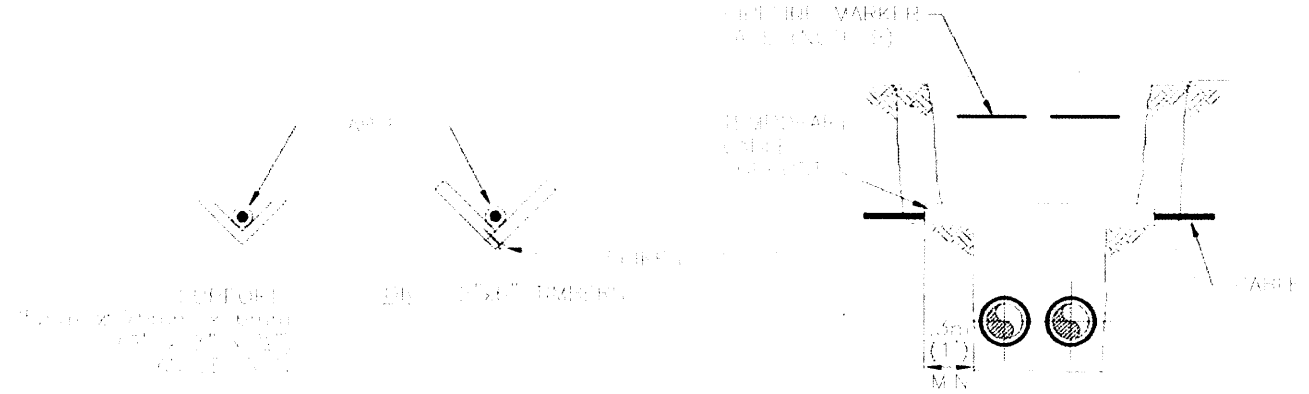

SECTION THROUGH
TEMPORARY CABLE SUPPORT

SECTION THROUGH
PIPELINE TRENCH

NOTES:

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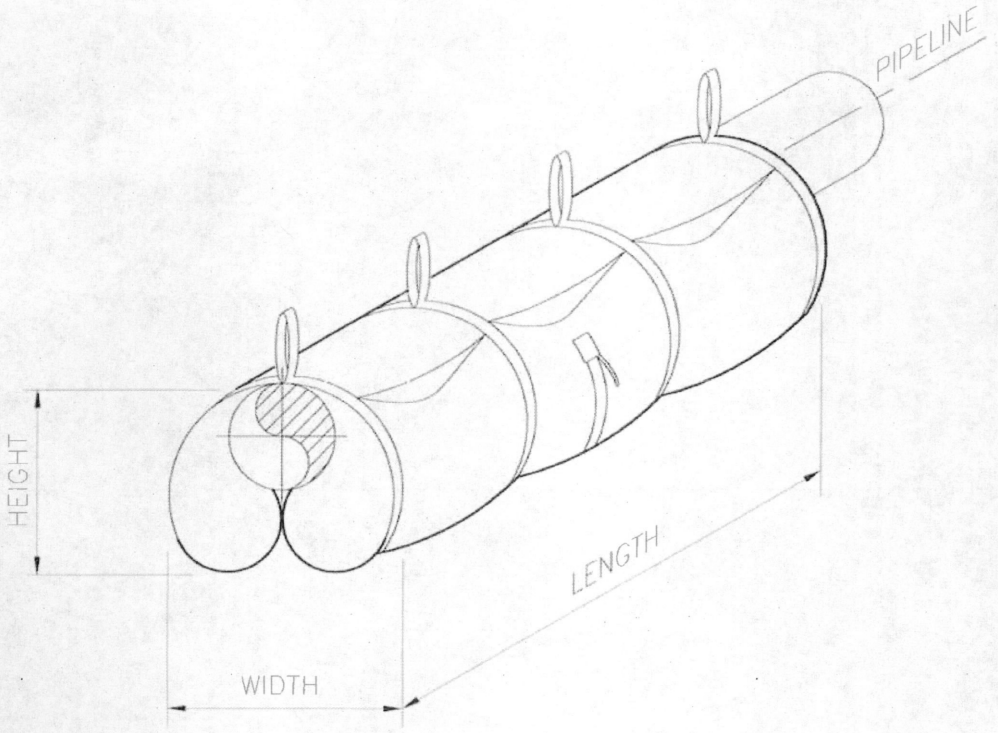


TYPICAL STRAP-ON WEIGHT

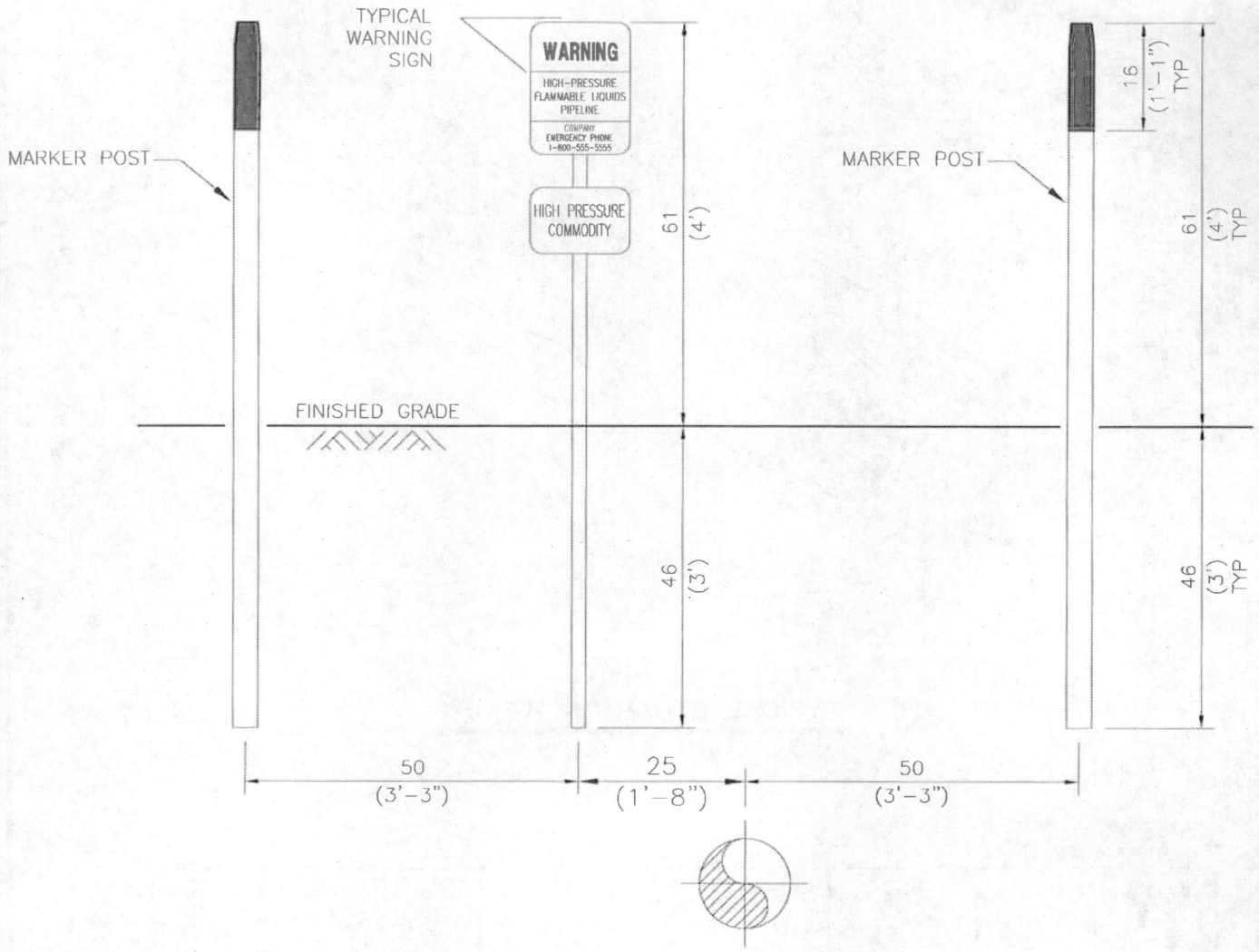
PIPE SIZE NOMINAL	NPS 2 (60.3)	NPS 3-4 (88.9-114.3)	NPS 6 (168.3)	NPS 8 (219.1)	NPS 10 (273.1)	NPS 12 (323.9)	NPS 16 (406.4)	NPS 24 (604)
WEIGHT	50 Lbs (23 kg)	220 Lbs (100 kg)	440 Lbs (200 kg)	660 Lbs (300 kg)	1100 Lbs (500 kg)	1600 Lbs (725 kg)	2500 Lbs (1135 kg)	700 Lbs (2300 kg)
LENGTH	21 (533.4)	42 (1006.8)	52 (1320.8)	56 (1422.4)	64 (1625.6)	90/70 (2286/1778)	80 (2032)	96 (2438)
WIDTH	10 (254)	14 (355.6)	17 (431.8)	20 (508)	32 (812.8)	32/38 (812.8/965.2)	40 (1016)	58 (1475)
HEIGHT	6 (152.4)	9 (228.6)	11 (279.4)	12 (304.8)	14 (355.6)	14/16 (355.6/406.4)	36 (914.4)	50 (1270)

NOTES:

1. ALL DIMENSION AND SIZES ARE SHOWN IN INCHES AND MILLIMETERS IN BRACKETS.

Pembina Pipeline Corporation	H	TYPICAL SWAMP WEIGHT STRAP-ON TYPE (WB)			
DR. BY C. GRAY	DATE 2015.06.08	FILE NO. A	A.F.E. NO.	DWG. NO. B8000.01-16A-0009	REV. NO.
CHK BY C. SCHROETER					
APPR. BY C. VINCENT	SCALE	PRINT ISSUED		SHEET NO. —	0

INFORMATION ISSUE 2015.06.08

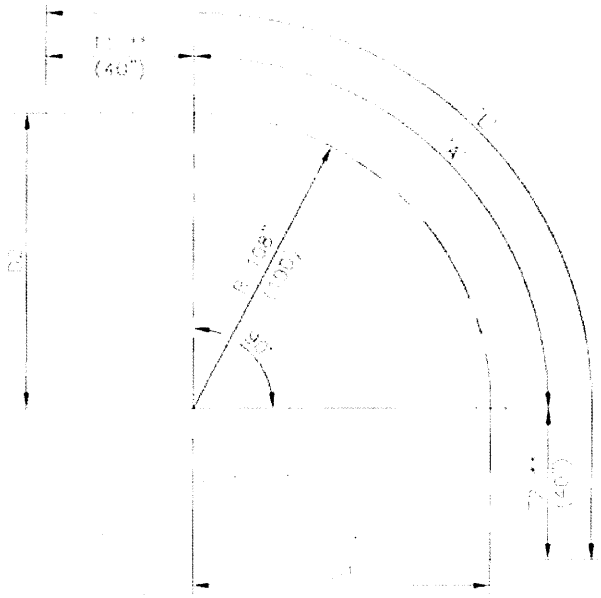


NOTES:

1. ELECTRONICALLY LOCATE & MARK PIPELINE.
2. INSTALL SIGN POST ON CENTERLINE OF PIPELINE, TO A DEPTH OF 914mm.
3. AUGER 152mmø (6") MAX. TO 914mmø (3') FOR WARNING SIGN POSTS. INSTALL AND LEVEL POSTS. TAMP SOIL AROUND BASE OF POSTS TO FULL DEPTH OF HOLE.
4. MARKER POSTS AND WARNING SIGNS TO BE INSTALLED ON EXISTING FENCE LINE (IF PRESENT). IF NO EXISTING FENCE, INSTALL ON ROAD RIGHT-OF-WAY BOUNDARY.
5. DIMENSIONS ARE IN METRIC UNITS mm's & IMPERIAL UNITS ARE IN BRACKETS.

Pembina Pipeline Corporation		WARNING SIGN POST INSTALLATION DETAILS			
DR. BY C. GRAY	DATE 2015.06.08	FILE NO. A	A.F.E. NO.	DWG. NO. B8000.01-16A-0010	REV. NO.
CHK BY C. SCHROETER					
APPR. BY C. VINCENT	SCALE	PRINT ISSUED		SHEET NO. —	0

INFORMATION ISSUE 2015.06.08



90 DEGREE BEND

NOTES:

Pembina Pipeline Corporation	J				

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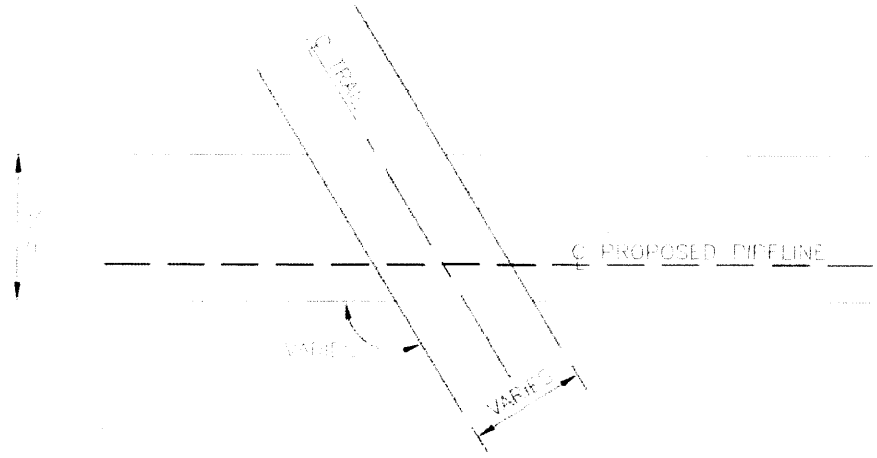

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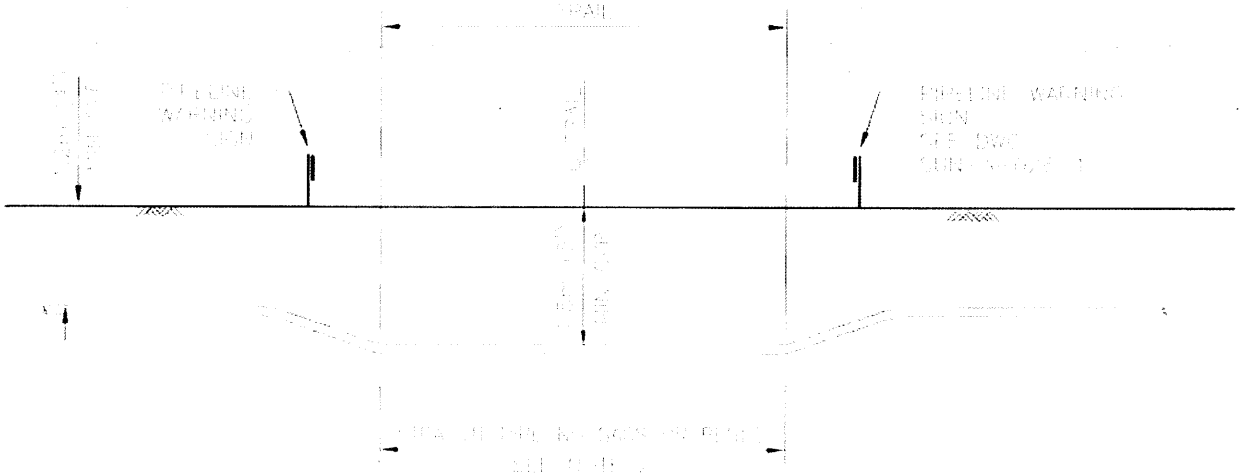

PROFILE ALONG ℄ OF PIPELINE

NOTES:

Pembina Pipeline Corporation	K

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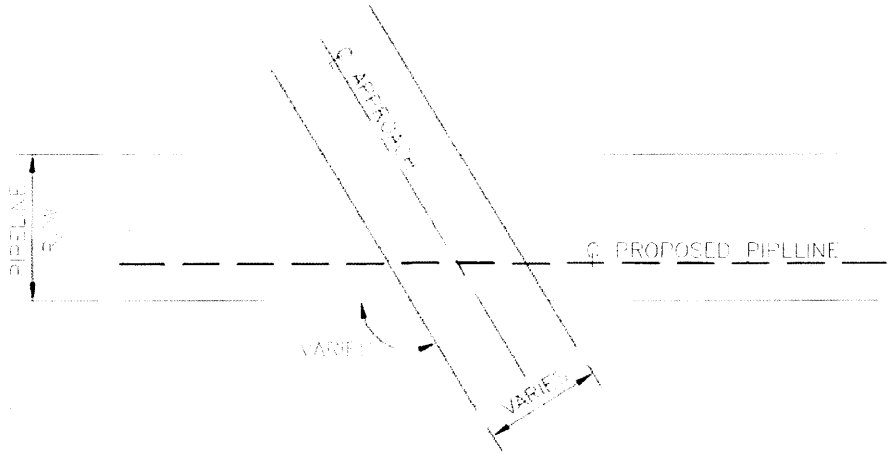

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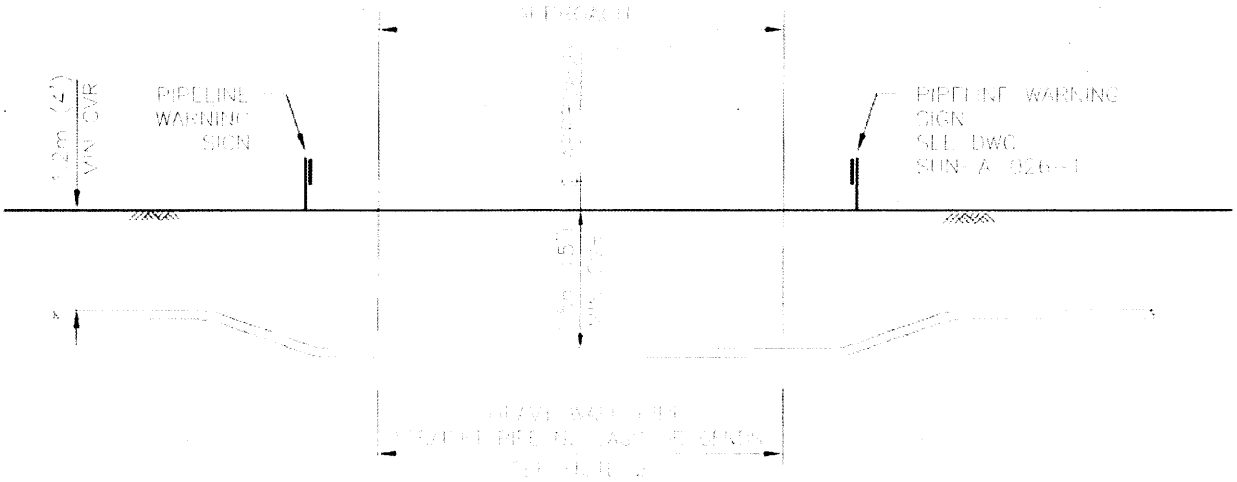
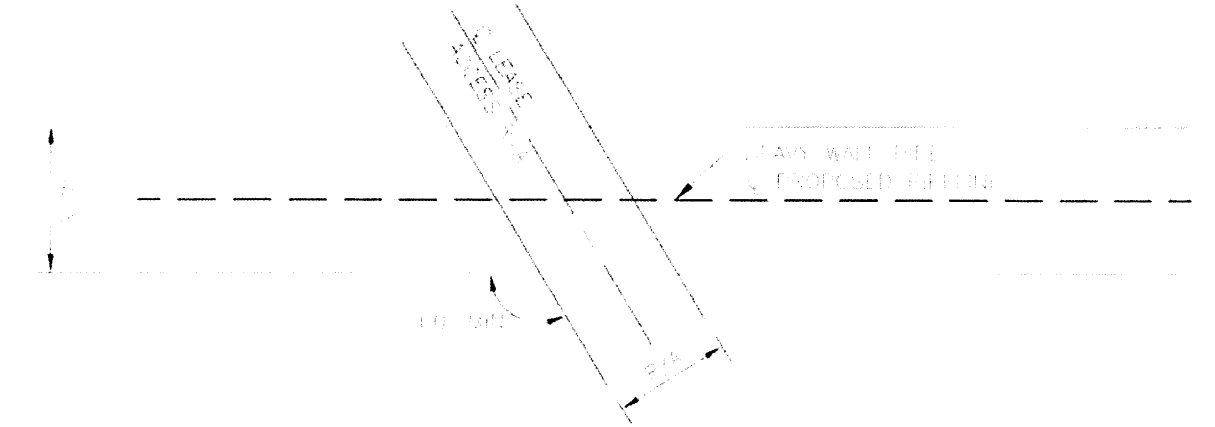


PROFILE ALONG ℄ OF PIPELINE

NOTES:

Pembina Pipeline Corporation	L				
				DWG	REV

INFORMATION ISSUE 2016.06.08



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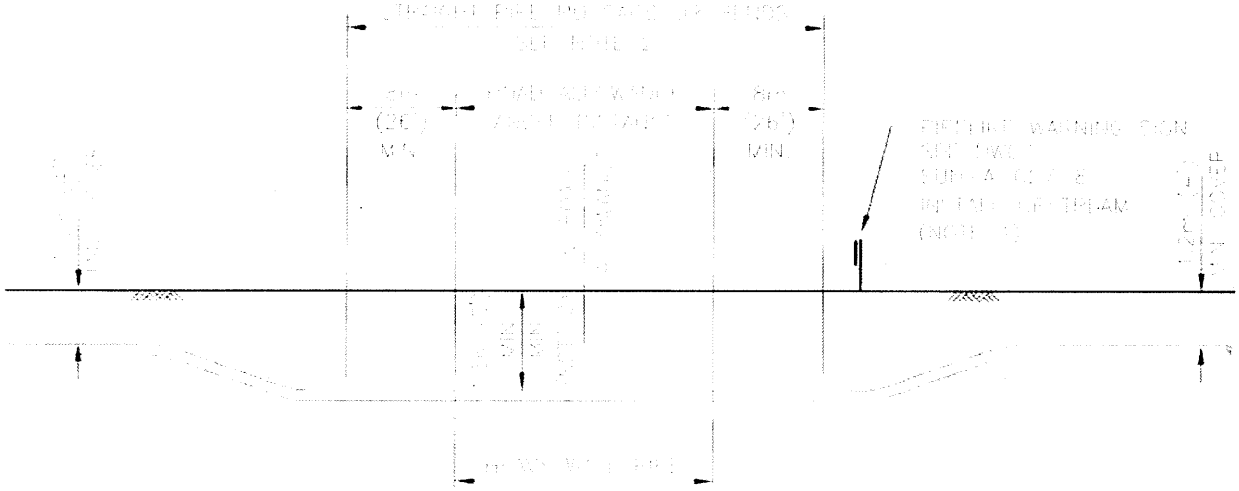

PROFILE ALONG ℄ OF PIPELINE

NOTES:

Pembina Pipeline Corporation	M				

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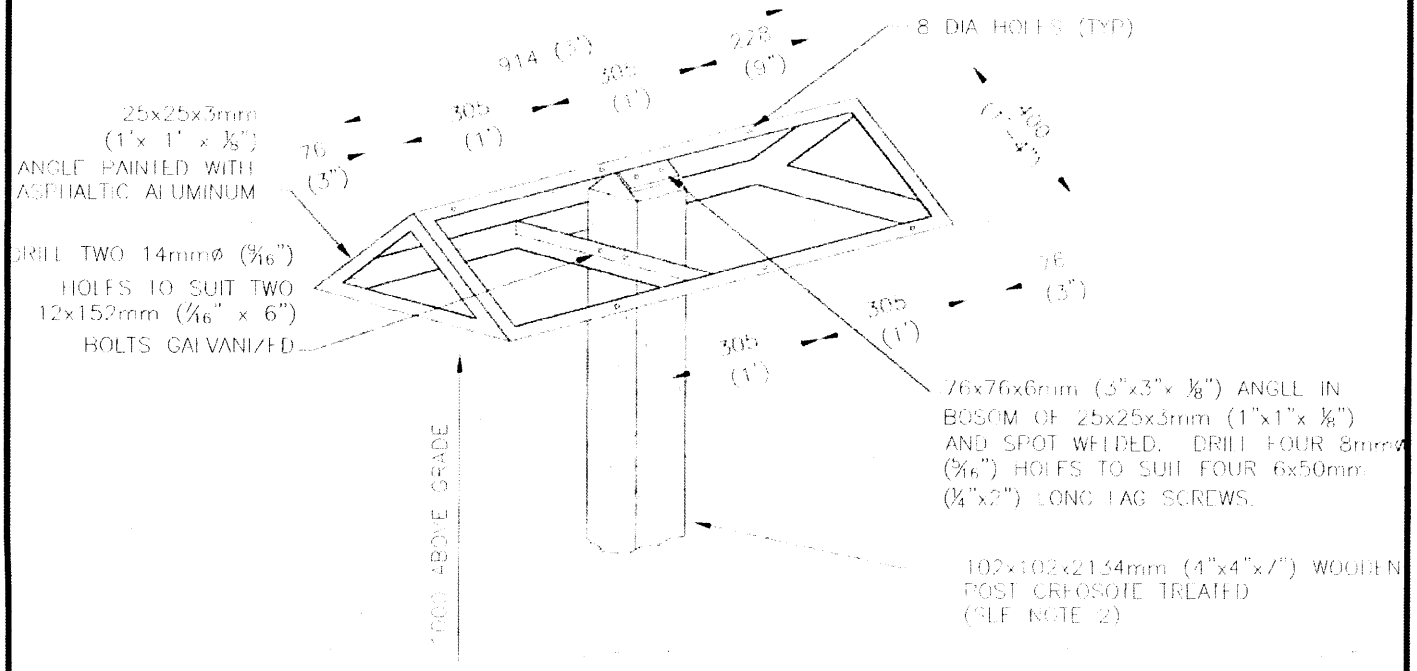

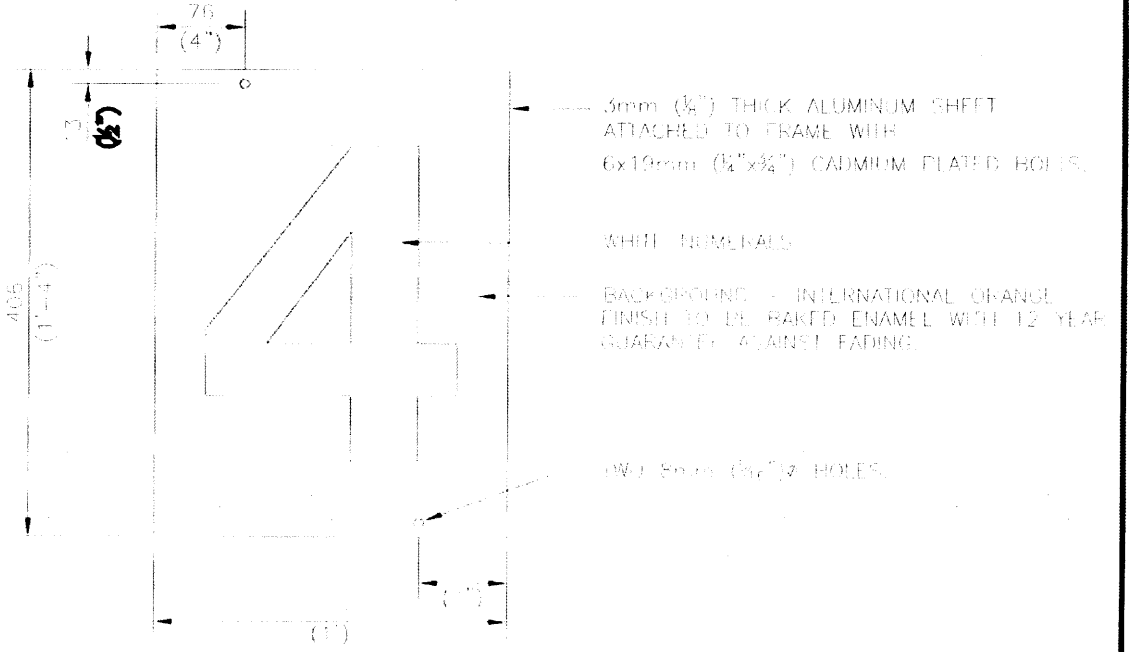

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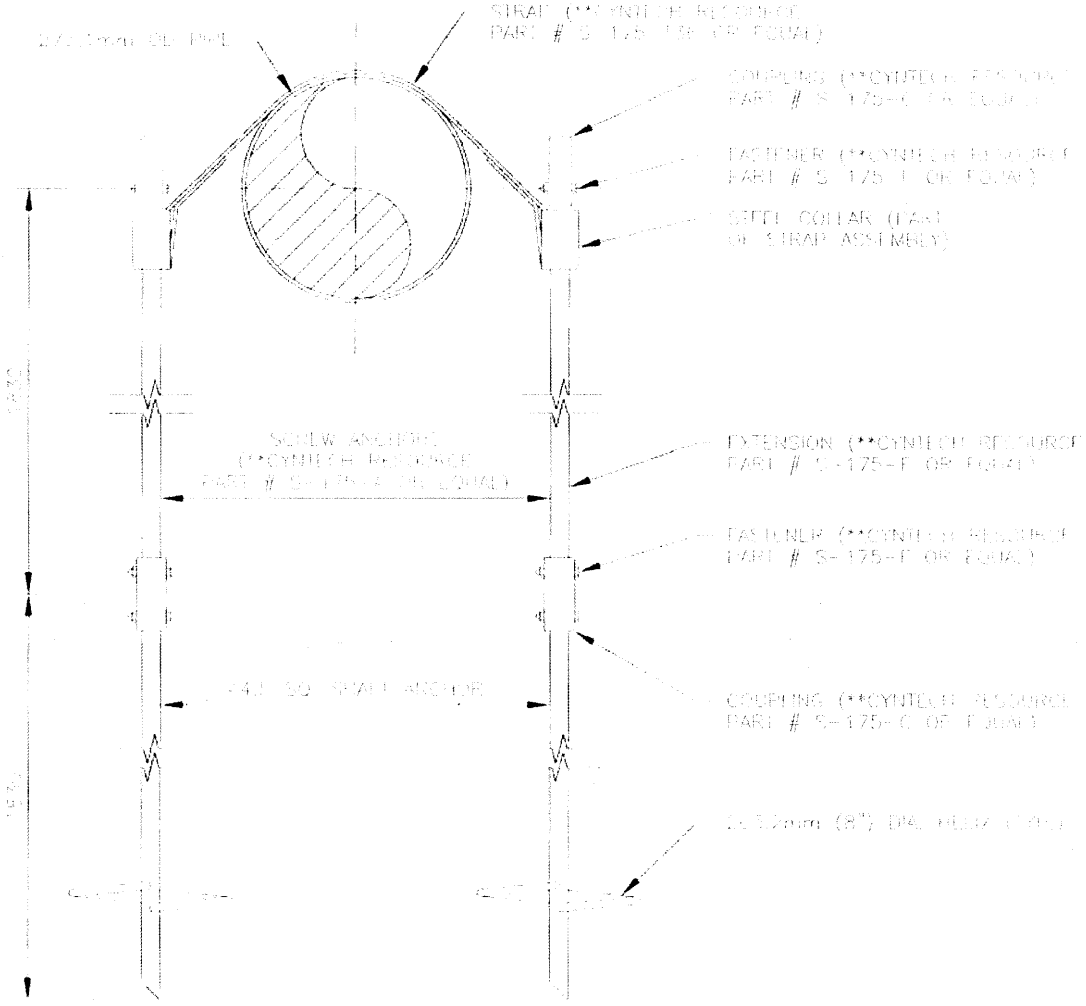

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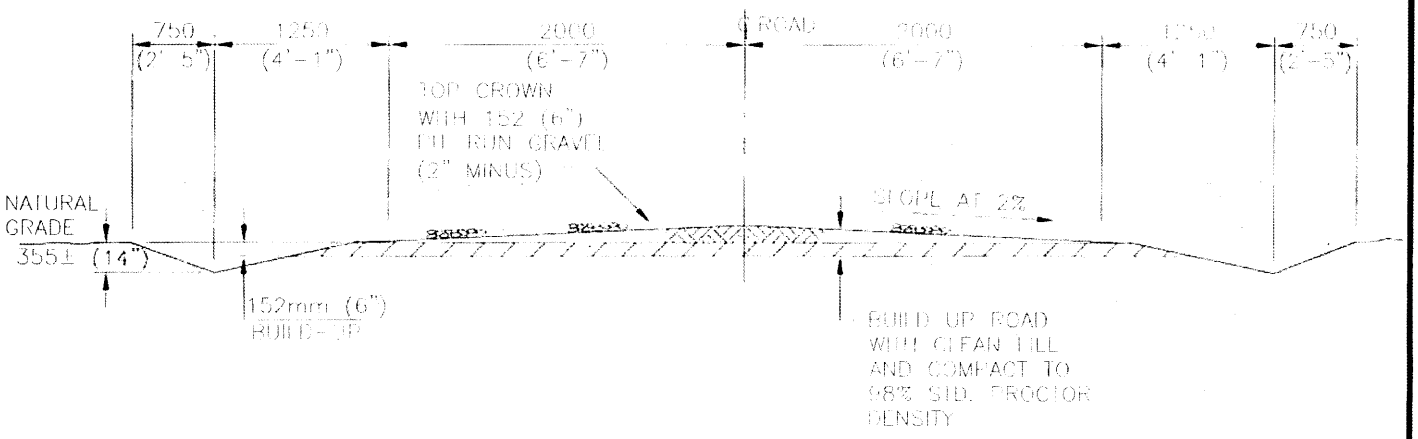

CROSS SECTION

NOTES:

1. TOPSOIL TO BE REMOVED PRIOR TO BUILD UP OF CLEAN FILL
2. ALL DIMENSIONS IN mm WITH IMPERIAL MEASURES IN PARAMETERS

Pembina Pipeline Corporation		P	TYPICAL ROAD ACCESS		
[illegible]	DATE [illegible]	[illegible]	[illegible]	[illegible]	REV NO.
[illegible]	SCALE	[illegible]	[illegible]	—	[illegible]

INFORMATION ISSUE 2015.06.08

VANTAGE
PIPELINE US LP

VANTAGE WEST SPUR LATERAL PIPELINE
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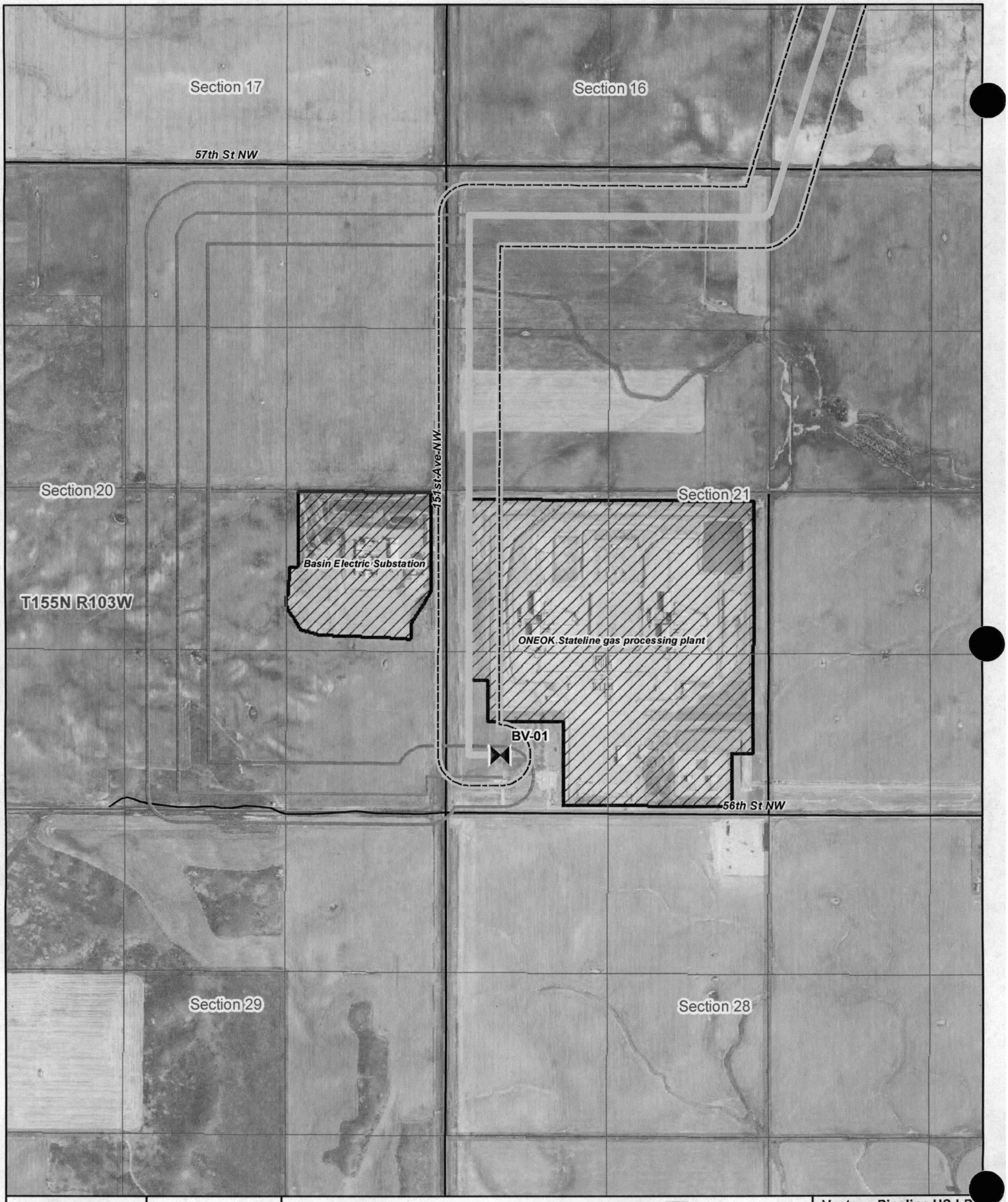
Exhibit D	**Route Maps**

The Route Maps have the April 2015 route in grey and the revised pipeline route in orange.



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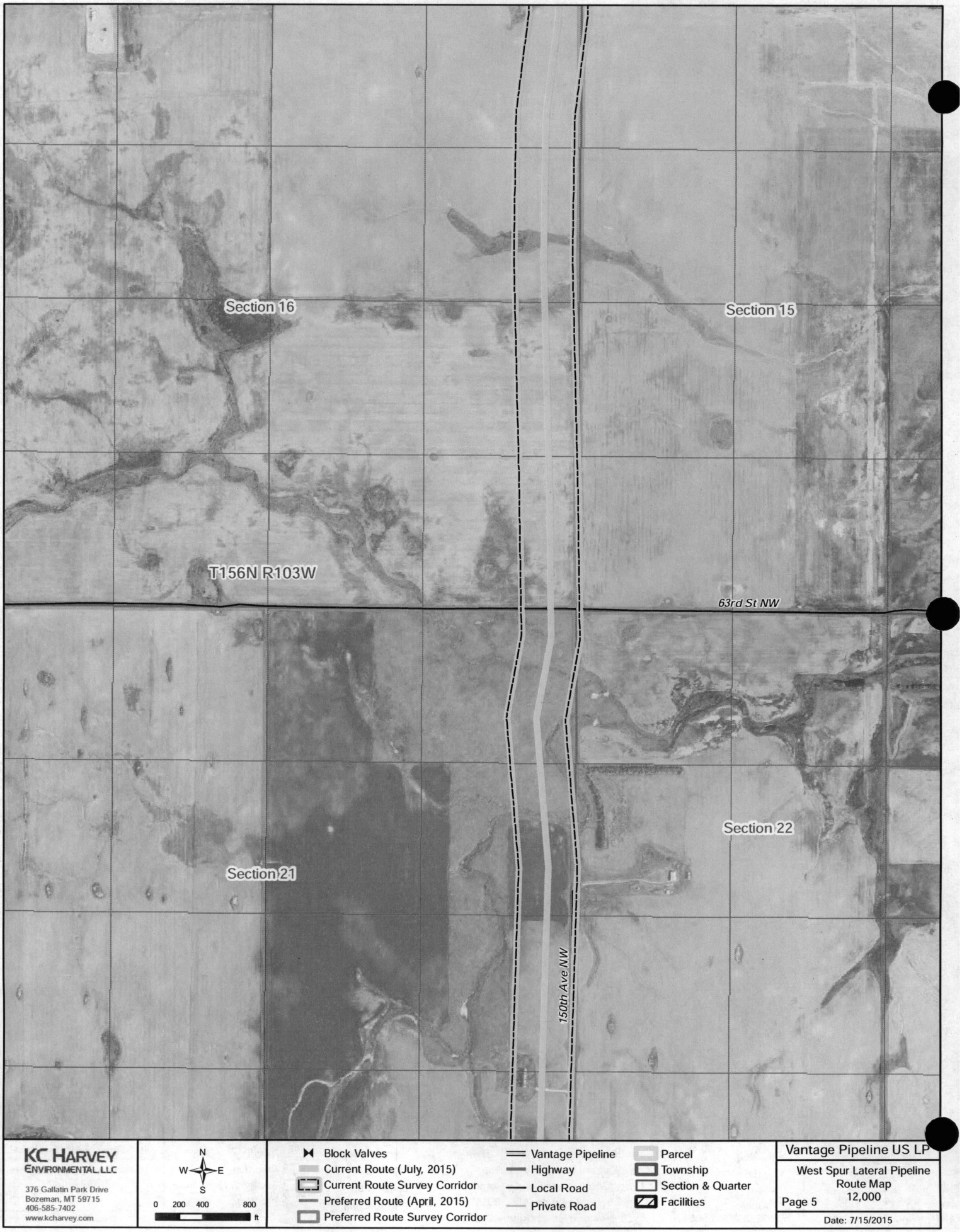

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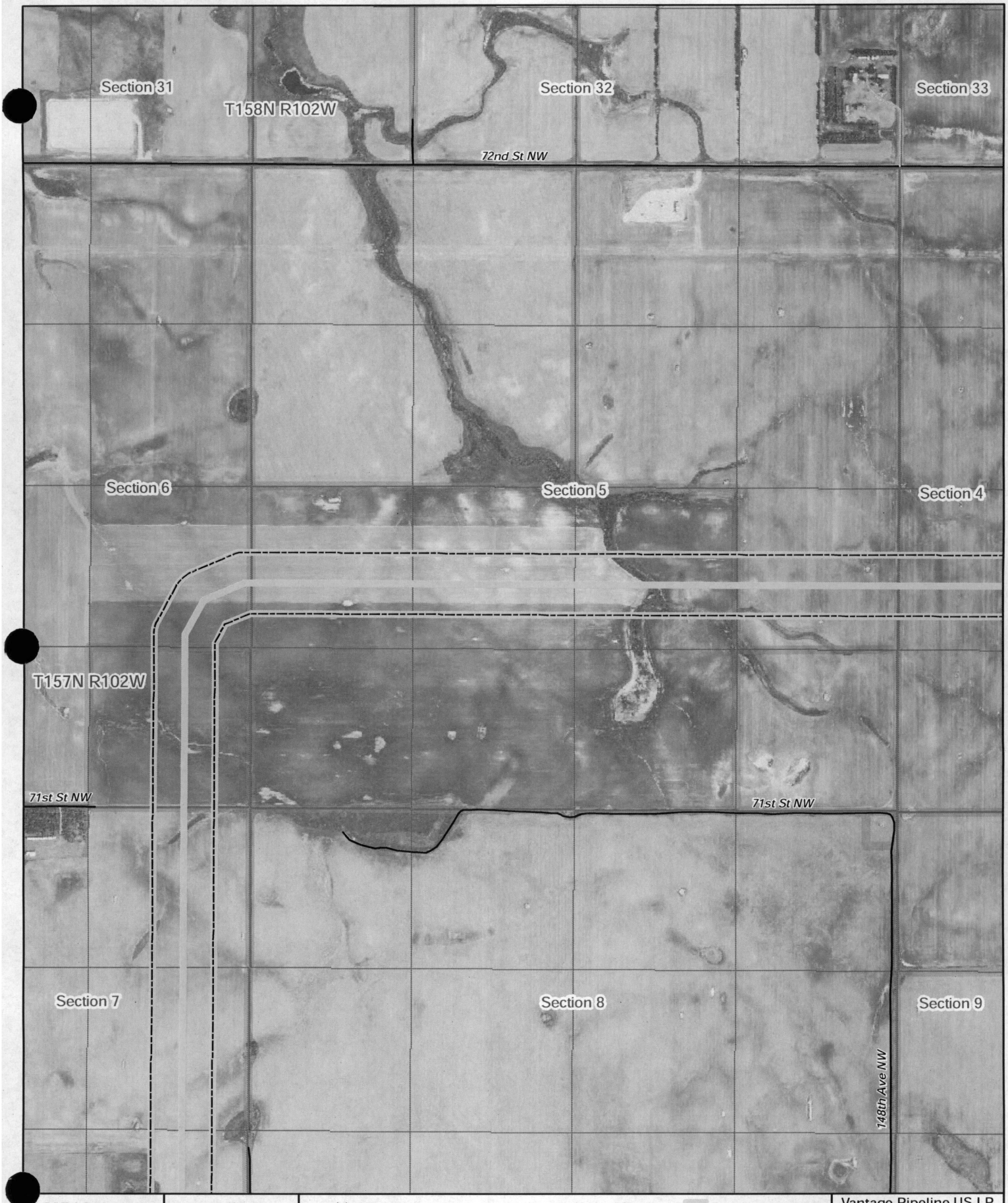

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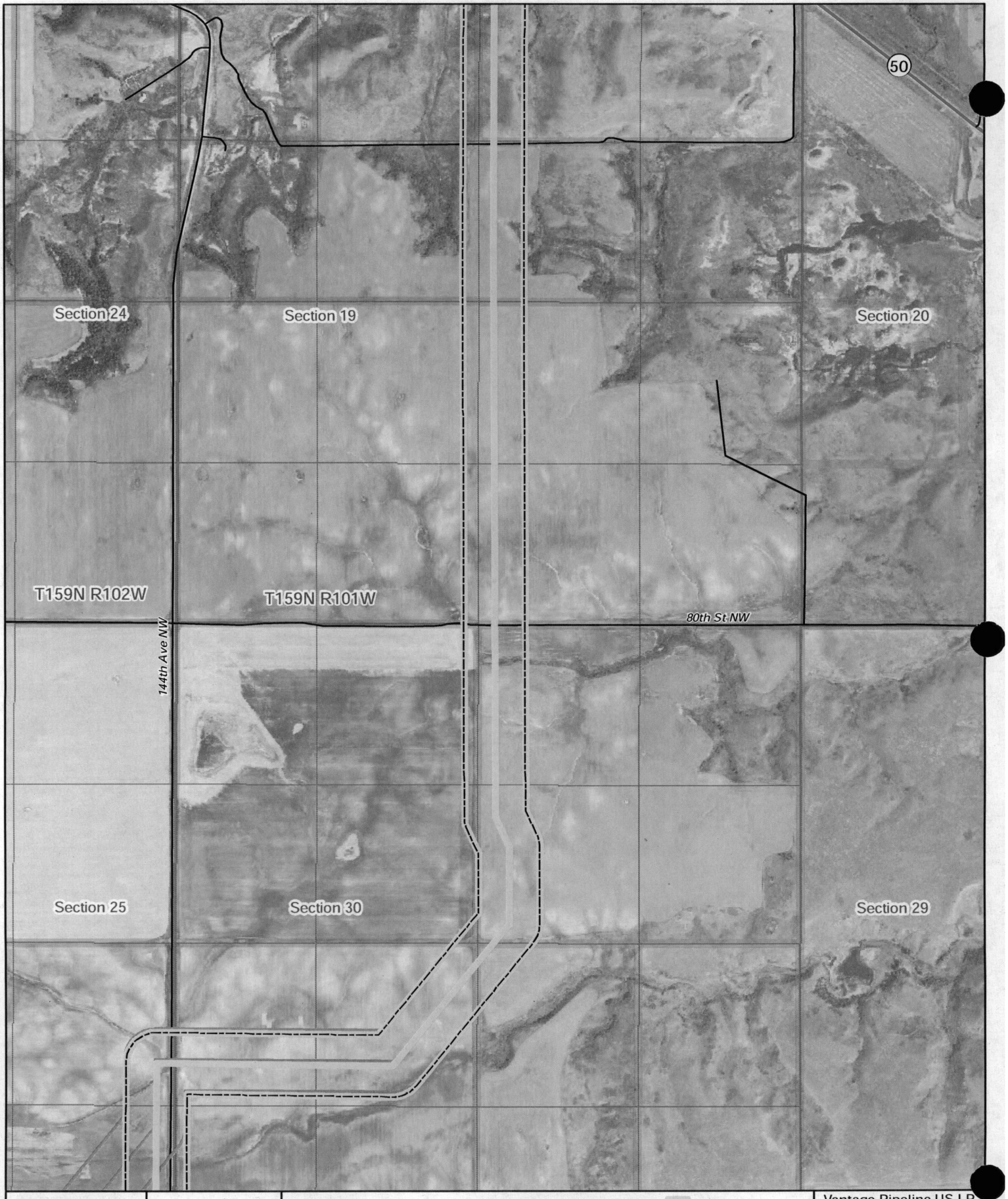

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KC HARVEY ENVIRONMENTAL LLC
376 Gallatin Park Drive
Bozeman, MT 59715
406-585-7402
www.kcharvey.com

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- Block Valves
- Current Route (July, 2015)
- Current Route Survey Corridor
- Preferred Route (April, 2015)
- Preferred Route Survey Corridor
- Vantage Pipeline
- Highway
- Local Road
- Private Road
- Parcel
- Township
- Section & Quarter
- Facilities

Vantage Pipeline US LP

West Spur Lateral Pipeline
Route Map
12,000

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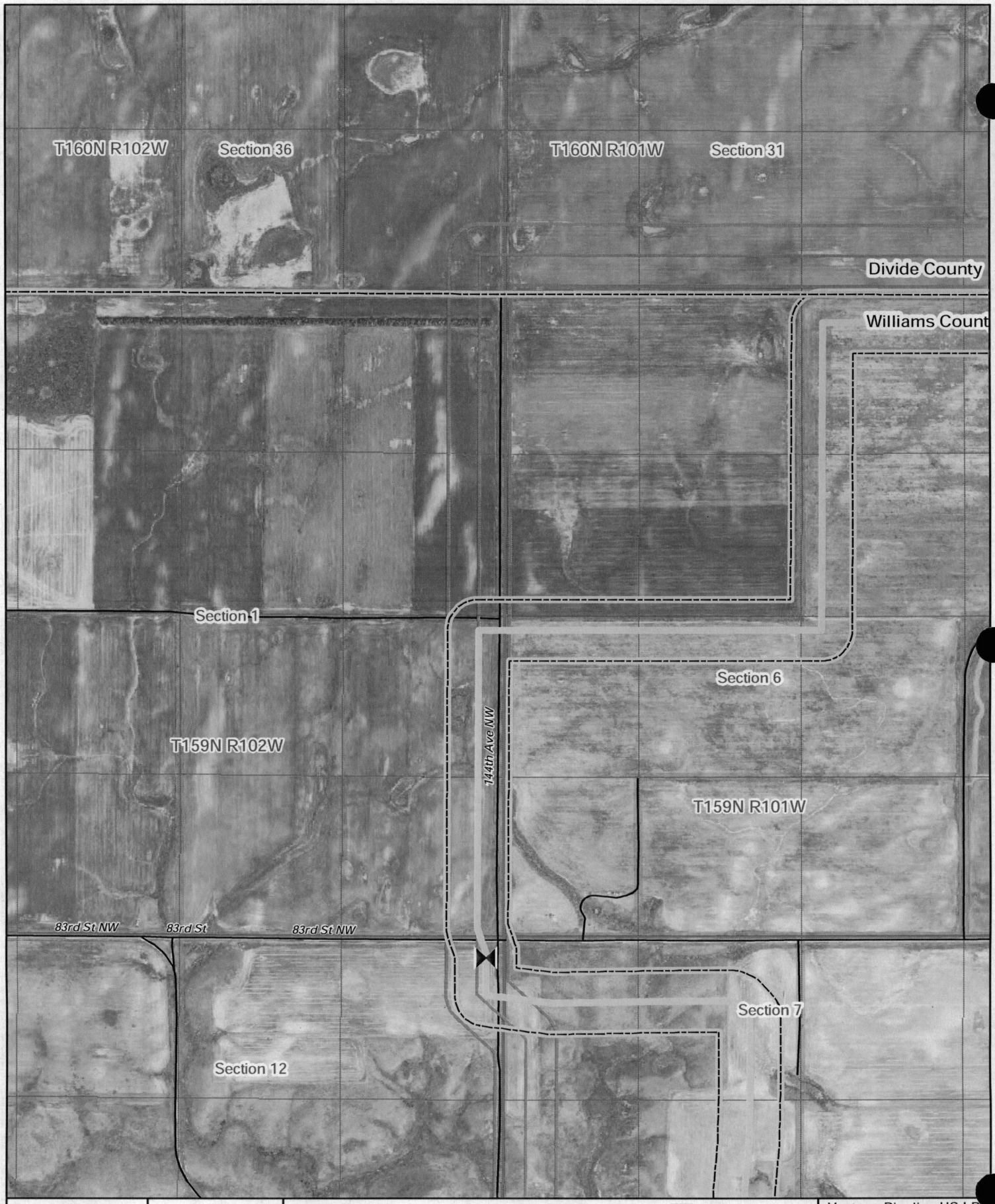

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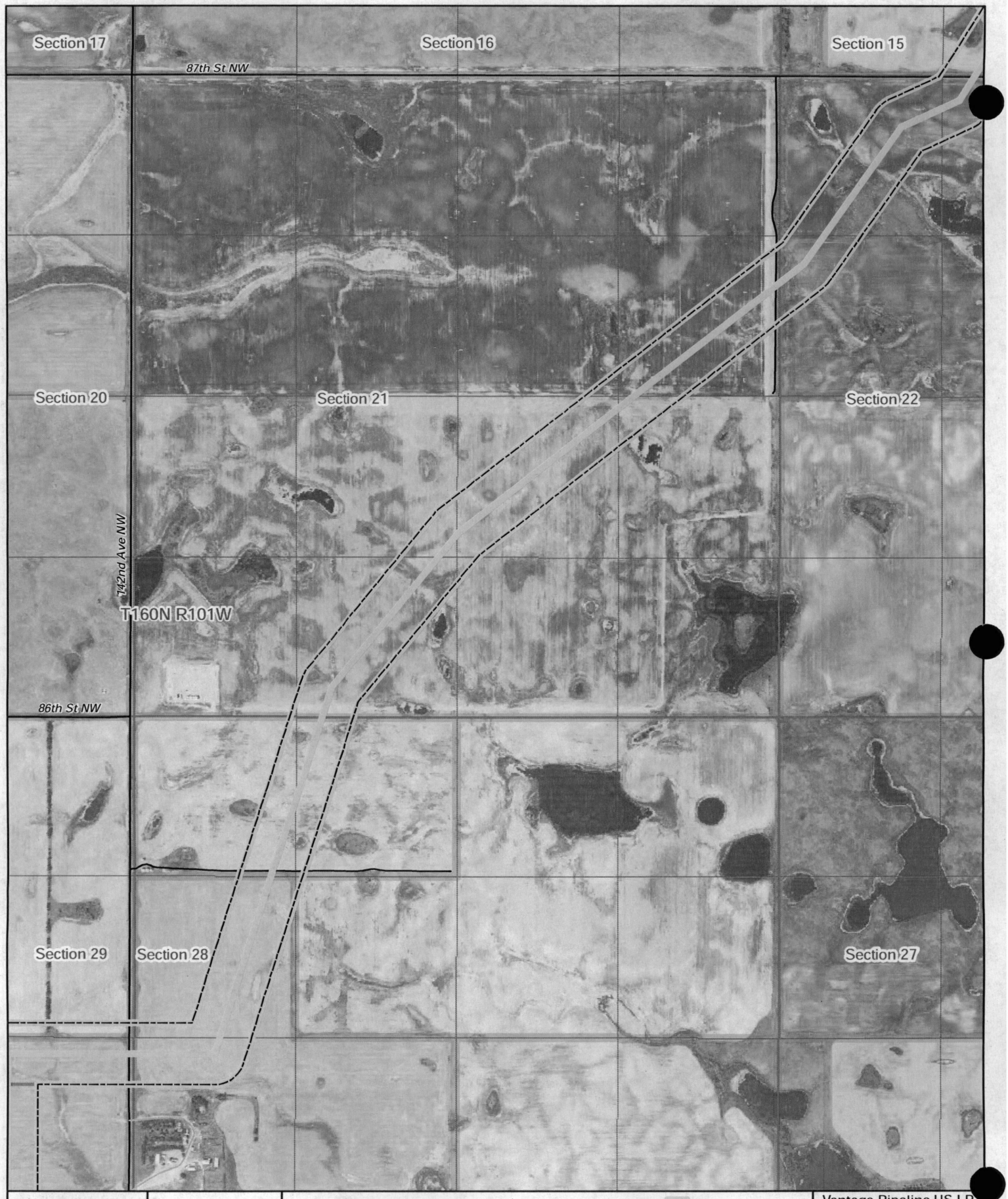

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VANTAGE
PIPELINE US LP

VANTAGE WEST SPUR LATERAL PIPELINE
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Exhibit E	Cultural Resource Investigations
Exhibit E.1	State Historical Society of North Dakota Consultation
Exhibit E.2	Cultural Resources Investigation Report – NOT FOR PUBLIC DISTRIBUTION Addendum – May 2015 – NOT FOR PUBLIC DISTRIBUTION Addendum II – July 2015 – NOT FOR PUBLIC DISTRIBUTION

Exhibit E.1 – State Historical Society of North Dakota Consultation

State Historical Society of North Dakota Consultation Log

Date	Person initiating	Person Receiving	Affiliation	Type of contact	Message
11/15/2014	Lynelle Peterson	Paul Picha	SHSND	Phone Call	I discussed Vantage, and that we had completed a survey, but there are several reroutes that we could not survey because of snow. Would this affect permit. Paul asked if there was any federal involvement. I said no. He said, he does not care that the entire route is complete at this time, as long as the survey and review is conducted before construction. However, he is not the person to talk to. He gave number for Pat Fahn at PSC
11/15/2014	Lynelle Peterson	Pat Fahn	PSC	Phone Call	Left Message.
11/15/2014	Pat Fahn	Lynelle Peterson	PSC	Phone Call	I discussed Vantage and the issue of reroutes with no survey before submission of application. He indicated that the application needs to show the areas of avoidance. He does not know how that can be done without the survey. He said that he cannot tell businesses what to do, but it would likely lead PSC to comment.
12/2/2014	Lynelle Peterson	Paul Picha	SHSND	Phone Call	Told him that one of the reroutes has a cemetery nearby. How far does construction need to be from it? Paul said that he would like the pipeline to be 100 ft from the cemetery, if possible.
7/13/2015	Lynelle Peterson	Paul Picha	SHSND	Phone Call / email	Addendum II sent to the SHSND.

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Exhibit E.2 Cultural Resources Investigation Report

NOT FOR PUBLIC DISTRIBUTION

The Cultural Resources Investigation Report, Addendum, and Addendum II are complete and provided to PSC in electronic version only. Hard copies are not provided because the cultural location information is not for public distribution.

A summary of the Cultural Resources Report finding are provided in Addendum No. 1 of the Certificate for Corridor Compatibility section B.1.2 and the Route Permit section B.2.9.a.

VANTAGE
PIPELINE US LP

VANTAGE WEST SPUR LATERAL PIPELINE
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Exhibit F	Wetland and Waterbody Assessment Report
Exhibit F.1	US Army Corp of Engineers Correspondence
Exhibit F.2	Summary of Surveyed Wetlands
Exhibit F.3	Summary of Surveyed Waterbodies
Exhibit F.4	Wetland and Waterbodies Maps
Exhibit F.5	Delineation Data Sheets

The addendum has been prepared to address eight minor revisions in the route alignment that have occurred since the April 13, 2015 submittal. This addendum updates only the sections of the original application where information has changed due to the route revision.

4.0 Results

The wetland investigation resulted in the identification and mapping of wetlands within the 500 foot survey corridor of the revised route. A total of 70 wetlands are located within the 500-foot Vantage West Spur Lateral Pipeline survey corridor. Type 1 PEM and PFO wetlands, and one Type 6 PSS wetland were observed in the survey corridor. No Type 2, 3, 4 or 5 wetlands occur in the study corridor. Table 3 summarizes the identified wetlands within the 500 foot corridor by wetland type. Not all wetlands within the 500 foot corridor will be impacted, see Exhibit F.2.

Table 1. Wetlands by Type within the project 500-ft Corridor.[1]

CLASSIFICATION		WETLANDS OBSERVED		
		Revised Route		
Circular 39[2]	Cowardin[3]	Number	Area (acres) in 500 ft corridor	Area (acres) in workspace
1	PEM	68	24.96	1.53
1	PFO	1	0.5	0.07
6	PSS	1	0.6	0.0
Totals		70	26.06	1.6

[1] Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated. Not all the wetlands within the 500 foot corridor will be impacted, see Exhibit F.2.
[2] Wetlands of the United States, Circular 39. (Shaw and Fredine, 1956)
[3] Classification of Wetlands and Deepwater Habitats of the United States. (Cowardin et al.1979)

4.1 Type 1 (Palustrine Emergent Wetland; Palustrine Forest Wetland): Seasonally Flooded Basins

A total of 69 Type 1 wetlands totaling 24.96 acres were identified in the revised route survey corridor. One Type 1 wetland was a PFO surrounding a PEM wetland, and the remaining Type 1 wetlands were PEM.

4.2 Waterbodies

A total of 12 waterbodies are within the route 500 foot survey corridor. However, 4 waterbodies on the route are avoided by routing within the 500 ft corridor ; therefore only 8 will be crossed (Exhibits F.3 and F.4). Of the eight waterbodies crossed by the route workspace, four are ephemeral drainages, three are intermittent drainages, and one is a perennial streams. Ephemeral drainages flow only in response to snowmelt or precipitation events. Intermittent streams flow seasonally and may or may not be flowing during the construction season. (Exhibit F.3)

5.0 Wetland and Waterbody Impacts

For the field investigation, a 500-foot corridor was surveyed for wetlands and waterbodies on the revised route (Exhibits F.2 through F.4). The field investigation resulted in the identification and mapping of 70 wetlands and 12 waterbodies are present within the preferred 500-foot corridor. Fifty-nine (59) wetlands and four (4) waterbodies would be avoided during construction by routing around the wetland or waterbody within the 500-ft corridor. Eleven (11) wetlands and 8 waterbodies would be within or on the

edge of the 30-foot permanent right-of-way. Overall, 1.6 acres of wetlands will be temporarily impacted on the revised route.

Eleven waterbodies are classified as ephemeral or intermittent waterways on the revised route, and 69 wetlands on the route are Type 1 (seasonally flooded) wetlands. Impacts to these areas will be minimized by constructing the pipeline during the dry season and implementing best management practices (BMP) as outlined in the Environmental Protection Plan (EPP).

Exhibit F.1: US Army Corp of Engineers Correspondence

The following jurisdictional determination letter was received from the USACE on June 24, 2015.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

June 24, 2015

North Dakota Regulatory Office [NWO-2015-0635-BIS]

Vantage West Spur Pipeline c/o KC Harvey Environmental, LLC
Attn: Monica Pokorny
376 Gallatin Park Drive
Bozeman, Montana 59715

Dear Ms. Pokorny:

We have reviewed your request for a Department of the Army, Corps of Engineers jurisdictional determination (JD), on behalf of Vantage Pipelines US LP, for the proposed 8-inch diameter ethane pipeline system. The wetland delineation report identified 62 wetlands and 11 waterbodies within the 500-foot project corridor review area. Majority of these identified wetland features would be avoided during construction, based on the information that was submitted to this office. The project area is located in several Sections, Townships and Ranges, Divide and Williams Counties, North Dakota.

Based on the information that you provided, we have determined that the wetland areas you identified as (#9) W_KC1_DV_63, (#13) W_KC3_WM_6, (#14) W_KC3_WM_7 and (#15) W_KC3_WM_25 are **not** jurisdictional waters of the United States.

An approved JD has been completed for the wetlands identified and is enclosed for your information. The JD may also be viewed at our website located at: http://www.nwo.usace.army.mil /Missions/RegulatoryProgram/NorthDakota.aspx. The JD will be available on the website within 30 days. You may also request copies of the supporting materials the Corps used in determining this JD. If you are not in agreement with the JD, you may request an administrative appeal under Corps regulations found at 33 CFR 331. The request for appeal must be received within 60 days from the date of this correspondence (August 23, 2015). Enclosed you will find a Request for Appeal form. If you would like more information on the jurisdictional appeal process, contact this office. It is not necessary to submit a Request for Appeal if you do not object to the JD. The JD will be valid for a period of 5 years from the date of this letter.

In addition, we have prepared a preliminary JD for the 11remaining wetland sites (#1 thru #8 and #10, #11and #12) within the project corridor which is a written indication that the identified wetlands within the project area may be a jurisdictional Waters of the United States. Such waters have been treated as jurisdictional Waters of the US for

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purposes of computation of impacts and compensatory mitigation requirements. If you concur with the findings of the enclosed preliminary JD, please sign it and return it to the letterhead address.

If you believe the preliminary JD is inaccurate, you may request this office complete an approved JD prior to the commencement of any work in a Water of the U.S. An approved JD is an official determination regarding the presence or absence of Waters of the US. Completion of an approved JD may require coordination with the US Environmental Protection Agency.

This determination was conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenants are USDA program participants, or anticipate participation in the USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

The Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/ NorthDakota.aspx. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax.

If you have any questions concerning this determination or jurisdiction, please feel free to contact Mr. Jason Renschler of this office at (701) 255-0015 ext. 2010 and reference project number **NWO-2015-0635-BIS**.

Sincerely,

Daniel E. Cimarosti

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosures
- Approved JD
- Preliminary JD
- Appeal form

APPROVED JURISDICTIONAL DETERMINATION FORM

U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 3 June 2015

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Omaha District; KC Harvey / Vantage Pipeline W.; NWO-2015-0635-BIS.

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: North Dakota. County/parish/borough: Divide and Williams. City: Hanks.

Center coordinates of site (lat/long in degree decimal format): Lat. 48.7462 Long. -103.6801 - #9 (W_KC1_DV_63);
Lat. 48.2696 Long. -103.9361 - #13 (W_KC3_WM_6);
Lat. 48.3371 Long. -103.9302 - #14 (W_KC3_WM_7);
Lat. 48.4242 Long. -103.9059 - #15 (W_KC3_WM_25);

Name of nearest waterbody: None.

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: None.

Name of watershed or Hydrologic Unit Code (HUC): Little Muddy - 10110102.

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: May 5, 2015.

☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are no "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply): [1]

☐ TNWs, including territorial seas
☐ Wetlands adjacent to TNWs
☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
☐ Non-RPWs that flow directly or indirectly into TNWs
☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐ Impoundments of jurisdictional waters
☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:
Non-wetland waters: linear feet: width (ft) and/or
Wetlands:

c. Limits (boundaries) of jurisdiction based on: Pick List
Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable): [3]

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain: **These are 4 isolated wetlands identified within the proposed ethane pipeline project area. The wetlands identified are not jurisdictional; are not used for recreation or industrial purposes. There is no nexus to interstate**

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

commerce. The wetlands lack a discernible surface connection to WoUS. The wetlands also lack sufficient evidence of hydrologic and ecological interaction with a WoUS.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: Pick List
Drainage area:
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through tributary before entering TNW.

Project waters are from TNW.
Project waters are miles from RPW.
Project waters are aerial (straight) miles from TNW.
Project waters are aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain:

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Identify flow route to TNW[3]:
Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain:
☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes:

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry:
Tributary gradient (approximate average slope): %

(c) Flow.
Tributary provides for:
Estimate average number of flow events in review area/year:
Describe flow regime:
Other information on duration and volume:

Surface flow is: Characteristics:

Subsurface flow: Explain findings:
☐ Dye (or other) test performed:

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[4] (check all indicators that apply):
☐ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☐ sediment sorting
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community
☐ Discontinuous OHWM.[5] Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gauges
☐ other (list):
☐ Mean High Water Mark indicated by:
☐ survey to available datum;
☐ physical markings;
☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain:

---

[3] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[4] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[5] Ibid.

Identify specific pollutants, if known:

(iv) **Biological Characteristics. Channel supports (check all that apply):**
- ☐ Riparian corridor. Characteristics (type, average width):
- ☐ Wetland fringe. Characteristics:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:
Properties:
Wetland size:
Wetland type. Explain:
Wetland quality. Explain:
Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:
Flow is: Explain:

Surface flow is:
Characteristics:

Subsurface flow: Explain findings:
- ☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:
- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain:
  - ☐ Ecological connection. Explain:
  - ☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are miles from TNW.
Project waters are aerial (straight) miles from TNW.
Flow is from:
Estimate approximate location of wetland as within the floodplain.

(ii) **Chemical Characteristics:**
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:
Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**
- ☐ Riparian buffer. Characteristics (type, average width):
- ☐ Vegetation type/percent cover. Explain:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**
All wetland(s) being considered in the cumulative analysis:
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters:

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   ☐ Tributary waters: linear feet width (ft).
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area:

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. **ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]**
   ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
   ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
   ☐ which are or could be used for industrial purposes by industries in interstate commerce.
   ☐ Interstate isolated waters. Explain:
   ☐ Other factors. Explain: .

   Identify water body and summarize rationale supporting determination: .
   Provide estimates for jurisdictional waters in the review area (check all that apply):
   ☐ Tributary waters: linear feet width (ft).
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters: .
   ☐ Wetlands: acres.

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

F. **NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .

☐ Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).

☐ Lakes/ponds: acres.

☐ Other non-wetland waters: acres. List type of aquatic resource:

☒ Wetlands: **4 wetlands. Range in size .02 – 23-acres.**

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).

☐ Lakes/ponds: acres.

☐ Other non-wetland waters: acres. List type of aquatic resource: .

☐ Wetlands:

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

☐ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: **Several USGS along the +/-48-mile route.**

☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .

☒ National wetlands inventory map(s). Cite name: **Several NWI maps along the +/- 48-mile route.**

☐ State/Local wetland inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date):

or ☐ Other (Name & Date):

☐ Previous determination(s). File no. and date of response letter:

☐ Applicable/supporting case law:

☐ Applicable/supporting scientific literature:

☒ Other information (please specify): **Google Earth Pro.**

B. ADDITIONAL COMMENTS TO SUPPORT JD: **See attached maps (x4).**

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: **KC Harvey / Vantage West Spur Pipeline**	File Number: **2015-0635-BIS**	Date: **6/24/15**
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found in Corps regulations at 33 CFR Part 331, or at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/FederalRegulation.aspx

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Daniel.E.Cimarosti@usace.army.mil US Army Corps of Engineers, Omaha District North Dakota Regulatory Office Attn: Daniel Cimarosti, Regulatory Program Manager 1513 South 12th Street Telephone (701) 255-0015 Bismarck, North Dakota 58504	US Army Corps of Engineers, Northwestern Division Attn: Mary Hoffman, Regulatory Appeals Review Officer P.O. Box 2870 Portland, OR 97208-2870 Telephone (503) 808-3888 Mary.J.Hoffman@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
Signature of appellant or agent.		

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

A. Report Completion Date for Preliminary Jurisdictional Determination (JD):

June 24, 2015

B. Name and Address of Person Requesting Preliminary JD:

Vantage West Spur Pipeline c/p KC Harvey Environmental, LLC.
Attn: Monica Pokorny
376 Gallatin Park Drive
Bozeman, MT 59715

C. District Office, File Name, and Number:

Omaha District; KC Harvey / Vantage Pipeline West Spur; NWO-2015-0635-BIS

D. PROJECT LOCATION(S), BACKGROUND INFORMATION, AND WATERS:

State: **North Dakota**
City: **Hanks**
County: **Divide and Williams**
Name of nearest waterbody: **Cow Creek, Cottonwood Creek, Scori Creek, Pats Coulee.**

Identify amount of waters in the review area: **+/- 10-acres.**

Name of any water bodies on the site that have been identified as Section 10 waters: N/A.
Tidal:
Non-Tidal:

Table 1 - Waters of the U.S.

Site #	Latitude	Longitude	Stream Flow	Cowardin Class	Estimated amount of aquatic resources in review area	Estimated amount of aquatic resource impact	Class of aquatic resource
1-S_KC1_WM2	48.5109	-103.8336	Permanent	Palustrine	.05-acres	.001-acres	Non-tidal
2-S_KC1_WM3	48.5097	-103.8348	Permanent	Palustrine	.01-acres	.001-acres	Non-tidal
3-S_KC1_WM4	48.3268	-103.9288	Permanent	Palustrine	.05-acres	.001-acres	Non-tidal
4-S_KC1_WM7	48.5750	-103.7870	Permanent	Palustrine	.03-acres	.01-acres	Non-tidal
5-S_KC1_WM8	48.4998	-103.8417	Permanent	Palustrine	.02-acres	.001-acres	Non-tidal
6-S_KC2_WM3	48.4190	-103.9060	Permanent	Palustrine	.01-acres	.001-acres	Non-tidal

7-S_KC3_WM3	48.3234	-103.9291	Permanent	Palustrine	.02-acres	.001-acres	Non-tidal
8-S_KC3_WM6	48.6127	-103.7966	Permanent	Palustrine	.01-acres	.01-acres	Non-tidal
10_KC1_WM46	48.5446	-103.8308	Permanent	Palustrine	.25-acres	.17-acres	Non-tidal
11_KC1_WM48	48.2770	-103.9353	Permanent	Palustrine	.25-acres	.03-acres	Non-tidal
12_KC2_WM1	48.4504	-103.8933	Permanent	Palustrine	.25-acres	.14-acres	Non-tidal

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: **May 5, 2015**
☐ Field Determination. Date(s):

F. SUPPORTING DATA:

Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  ☐ Office concurs with data sheets/delineation report.
  ☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study:
☐ U.S. Geological Survey Hydrologic Atlas:
  ☐ USGS NHD data.
  ☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite quad name: Several along the +/-48-mile route.
☐ USDA Natural Resources Conservation Service Soil Survey.
☒ National wetlands inventory map(s). Cite name: Several along the +/-48-mile route.
☐ State/Local wetland inventory map(s):
☐ FEMA/FIRM maps:
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☐ Photographs: ☐ Aerial (Name & Date):
  or ☐ Other (Name & Date):
☐ Previous determination(s). File no. and date of response letter:
☒ Other information (please specify): Google Earth Pro.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.



Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the
signature is impracticable)

G. EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

Exhibit F.2: Summary of Surveyed Wetlands

Wetland ID	Circular 39 Classification	Cowardin Classification	Hydrologic Water Type	Potential Impacts	Acres of Impact[1]
W_KC1_DV_20	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_26	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_35	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_36	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_37	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_38	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_39	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_40	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_42	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_55	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_56	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_57	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_58	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_59	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_60	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_61	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_65	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_66	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_67	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_68	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_69	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_DV_70	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_4	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_5	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_7	1	PEM	ISOLATE	Avoided by routing within corridor	0

VANTAGE
PIPELINE US LP

Wetland ID	Circular 39 Classification	Cowardin Classification	Hydrologic Water Type	Potential Impacts	Acres of Impact[1]
W_KC1_WM_16	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_45	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_46	1	PEM	ISOLATE	Short term impacts through wetland	0.17
W_KC1_WM_47	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_48	1	PEM	ISOLATE	Short term impacts through wetland	0.03
W_KC1_WM_50	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_54	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC1_WM_75	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC2_WM_1	1	PEM	ISOLATE	Short term impacts through wetland	0.14
W_KC2_WM_24	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_11	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_12	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_13	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_14	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_15	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_16	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_20	6	PSS	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_41	1	PEM	ISOLATE	Short term impacts on edge of wetland	0.05
W_KC3_DV_42	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_43	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_44	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_45	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_DV_46	1	PEM	ISOLATE	Short term impacts on edge of wetland	0.06
W_KC3_WM_6	1	PEM	ISOLATE	Short term impacts on edge of wetland	0.02
W_KC3_WM_7	1	PFO	ISOLATE	Short term impacts, missing treed area	0.07
W_KC3_WM_25	1	PEM	ISOLATE	Short term impacts on edge of wetland	0.23
W_KC3_WM_26	1	PEM	ISOLATE	Avoided by routing within corridor	0



Wetland ID	Circular 39 Classification	Cowardin Classification	Hydrologic Water Type	Potential Impacts	Acres of Impact[1]
W_KC3_WM_27	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_28	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_29	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_30	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_31	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_37	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_38	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_47	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_48	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_49	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_50	1	PEM	ISOLATE	Short term impacts through wetland	0.46
W_KC3_WM_51	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_52	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC3_WM_53	1	PEM	ISOLATE	Short term impacts on edge of wetland	0.06
W_KC4_WM_1	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC4_WM_2	1	PEM	ISOLATE	Short term impacts through wetland	0.31
W_KC4_WM_3	1	PEM	ISOLATE	Avoided by routing within corridor	0
W_KC4_WM_4	1	PEM	ISOLATE	Avoided by routing within corridor	0

[1]Acres of impact is the wetland land area within the workspace.

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Exhibit F.3: Summary of Surveyed Waterbodies

Waterbody ID	Classification (Flow Regime)[1]	Waterbody Name	AWD* at Centerline (ft)	OHWMW* at Centerline (ft)	Stream Bank Vegetation	Potential Impacts
S_KC1_WM_2	ED 1	Blacktail Creek	0.0	30.0	Reed canarygrass, smooth brome, Canada thistle, snowberry	Short term impacts
S_KC1_WM_3	ED 3	N Tributary Cow Creek	0.0	1.0	Smooth brome, prairie cordgrass	Short term impacts
S_KC1_WM_4	PS2	na	5.0	50.0	Reed canarygrass, cattail, prairie cordgrass	Short term impacts
S_KC1_WM_6	ED 1	na	1.0	10.0	Smooth brome, chokecherry, green ash, prairie cordgrass	Avoided by routing
S_KC1_WM_7	ED 1	na	0.0	20.0	Smooth brome, crested wheatgrass, Kentucky bluegrass, snowberry	Avoided by routing
S_KC1_WM_8	IS 2	na	1.0	25.0	Reed canarygrass, cattail, smooth brome, prairie cordgrass	Short term impacts
S_KC2_WM_3	IS 3	na	0.0	2.0	Foxtail barley	Short term impacts
S_KC2_WM_6	ED 1	na	0.0	40.0	Reed canarygrass,	Avoided by routing
S_KC2_WM_7	ED 3	na	0.5	2.0	Agricultural	Avoided by routing
S_KC3_WM_3	IS 3	Cow Creek	0.0	3.0	Prairie cordgrass	Short term impacts
S_KC4_WM_1	ED 2	na	0.0	9.0	Prairie cordgrass, Foxtail barley, Kentucky bluegrass, snowberry	Short term impacts
S_KC4_WM_2	ED 1	na	0.0	2.0	Prairie cordgrass, Foxtail barley	Short term impacts

[1]ED1: Ephemeral >10 ft wide; ED2: Ephemeral 3 – 10 ft wide; ED3: Ephemeral <3 ft wide IS2: Intermittent 10 – 100 feet wide; IS3: Intermittent <10 feet wide; PS2: Perennial 10 - 100 ft wide.
Note: OHWMW: Ordinary High Water Mark Width; AWD - Average Water Depth

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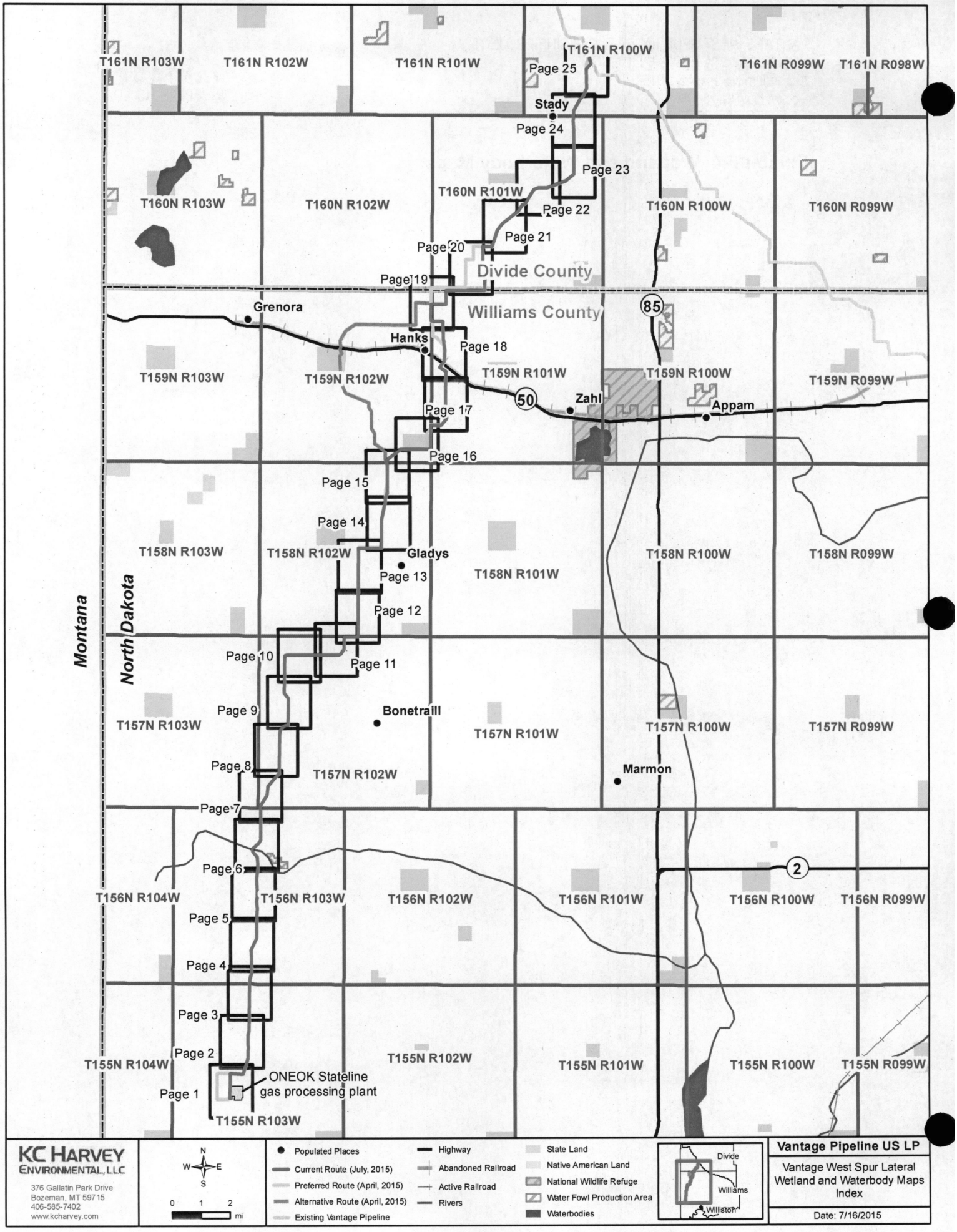
Exhibit F.4: Wetland and Waterbody Maps



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- Populated Places
- Current Route (July, 2015)
- Preferred Route (April, 2015)
- Alternative Route (April, 2015)
- Existing Vantage Pipeline
- Highway
- Abandoned Railroad
- Active Railroad
- Rivers
- State Land
- Native American Land
- National Wildlife Refuge
- Water Fowl Production Area
- Waterbodies

Divide
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Williston

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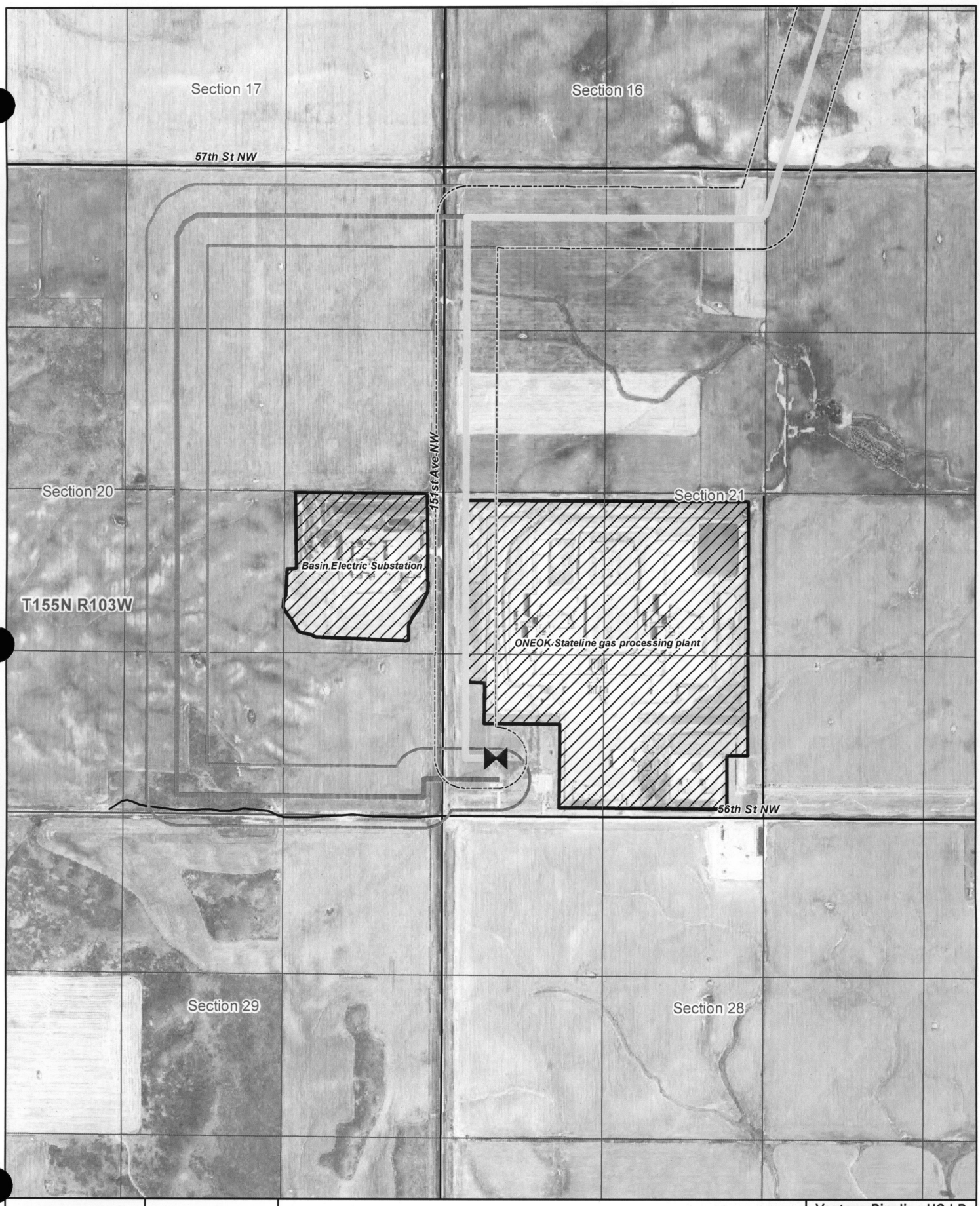

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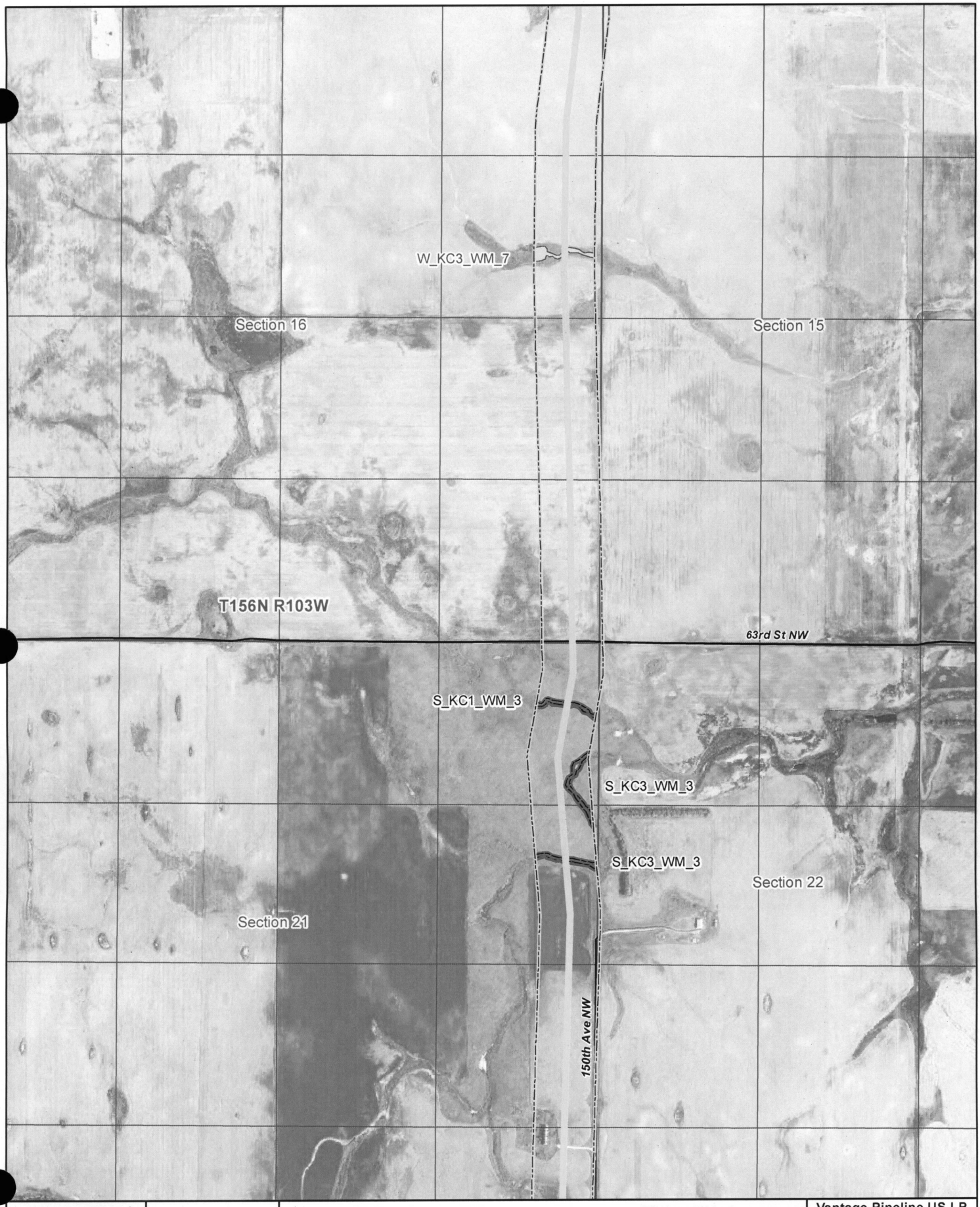

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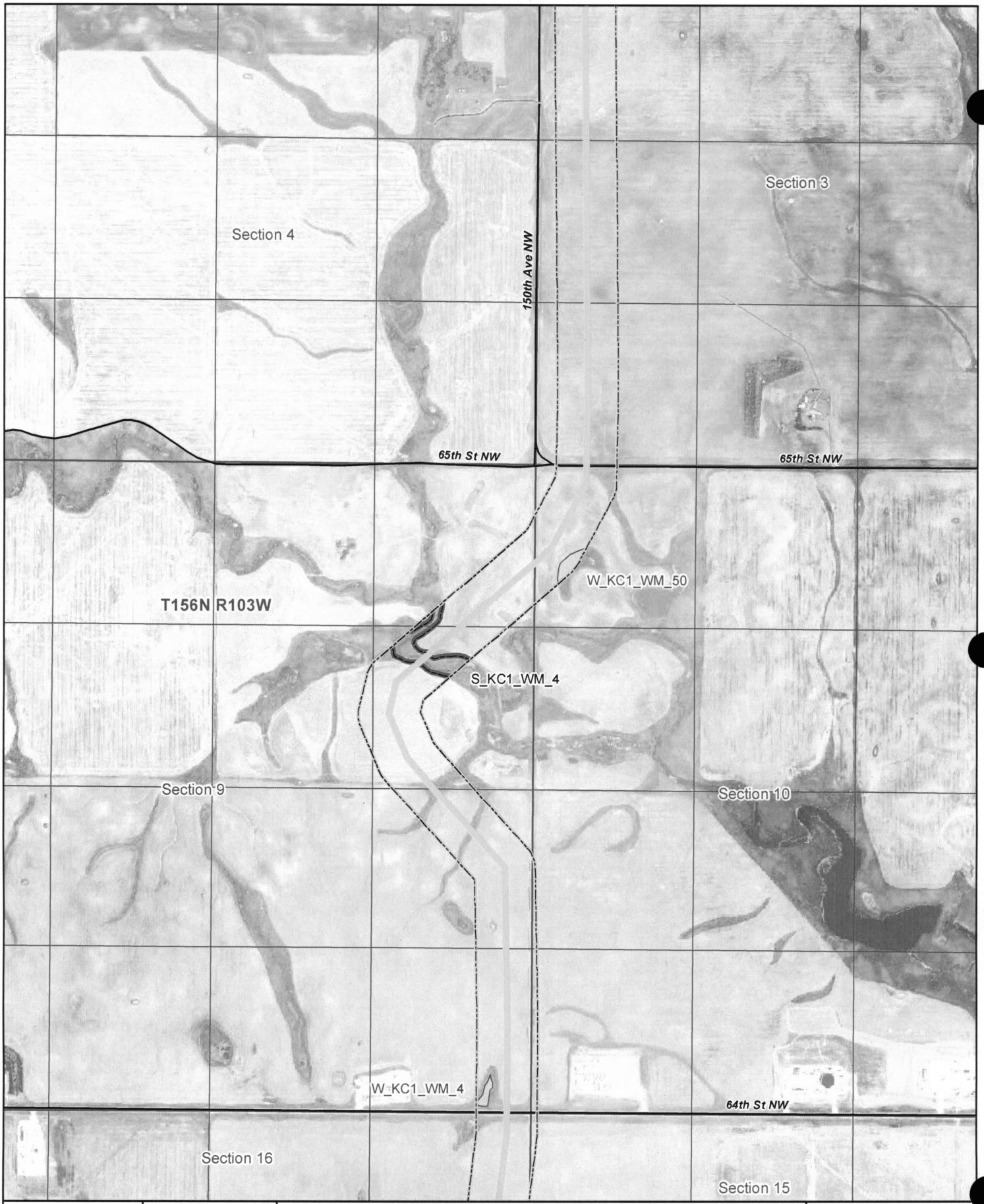

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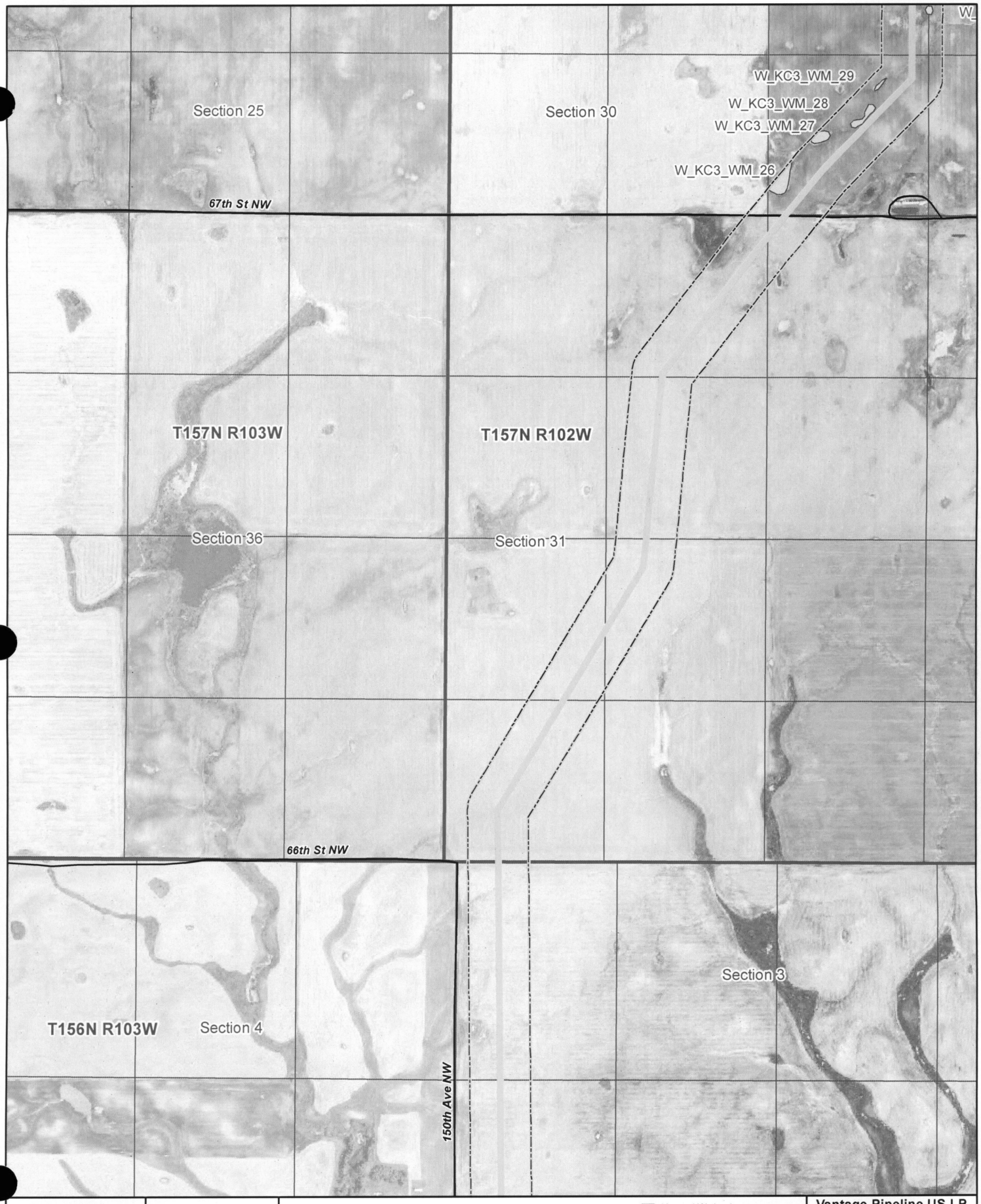

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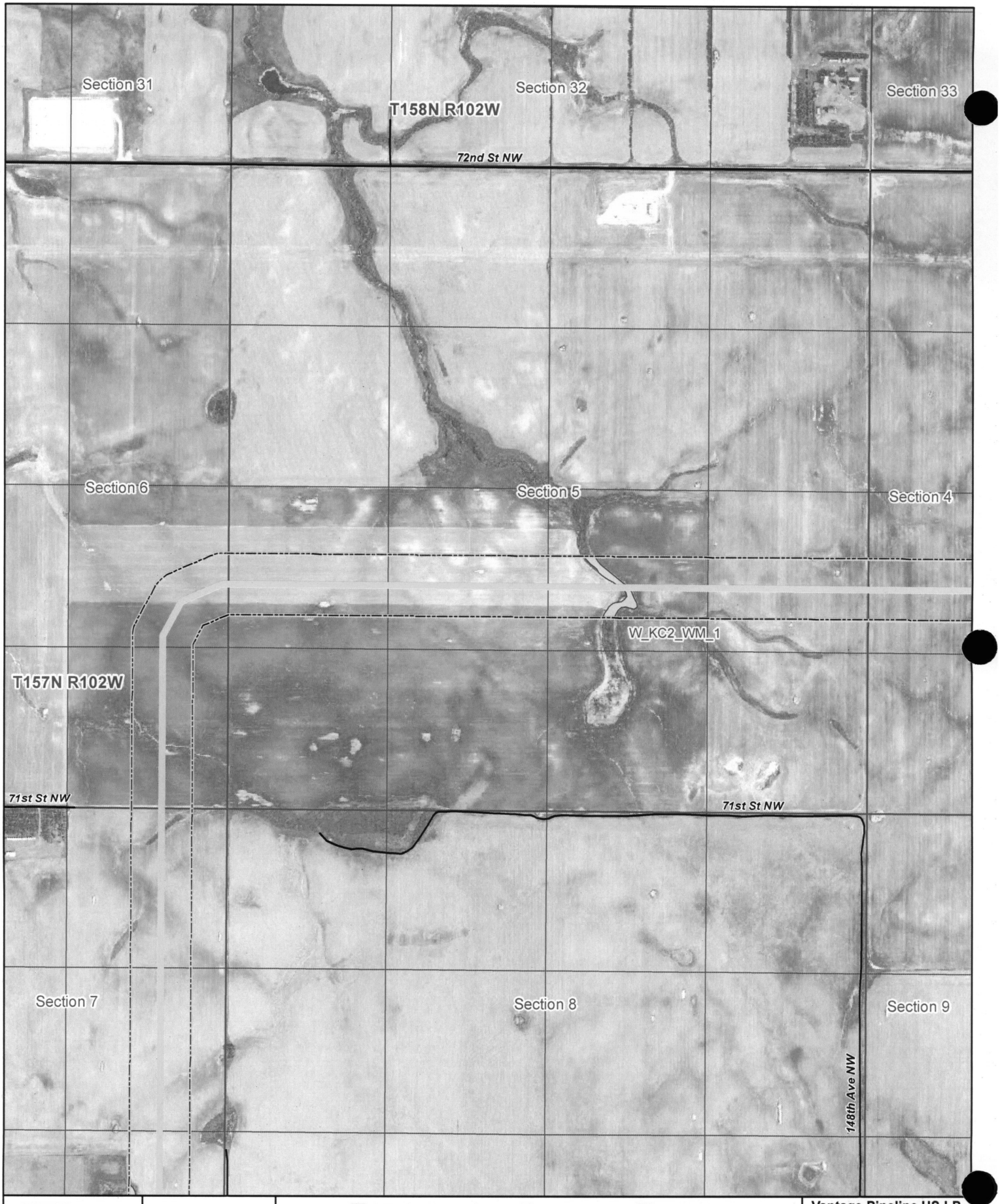

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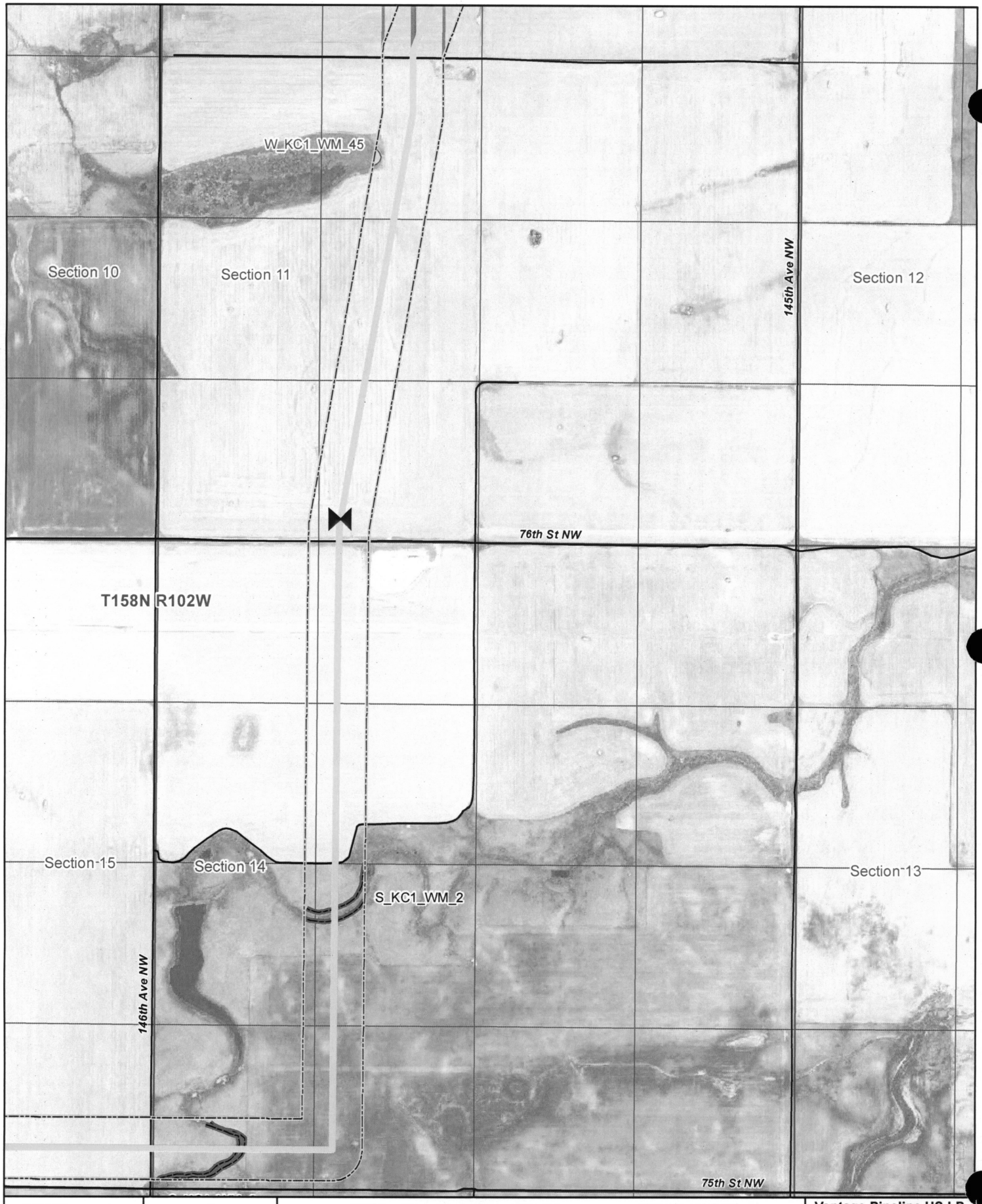

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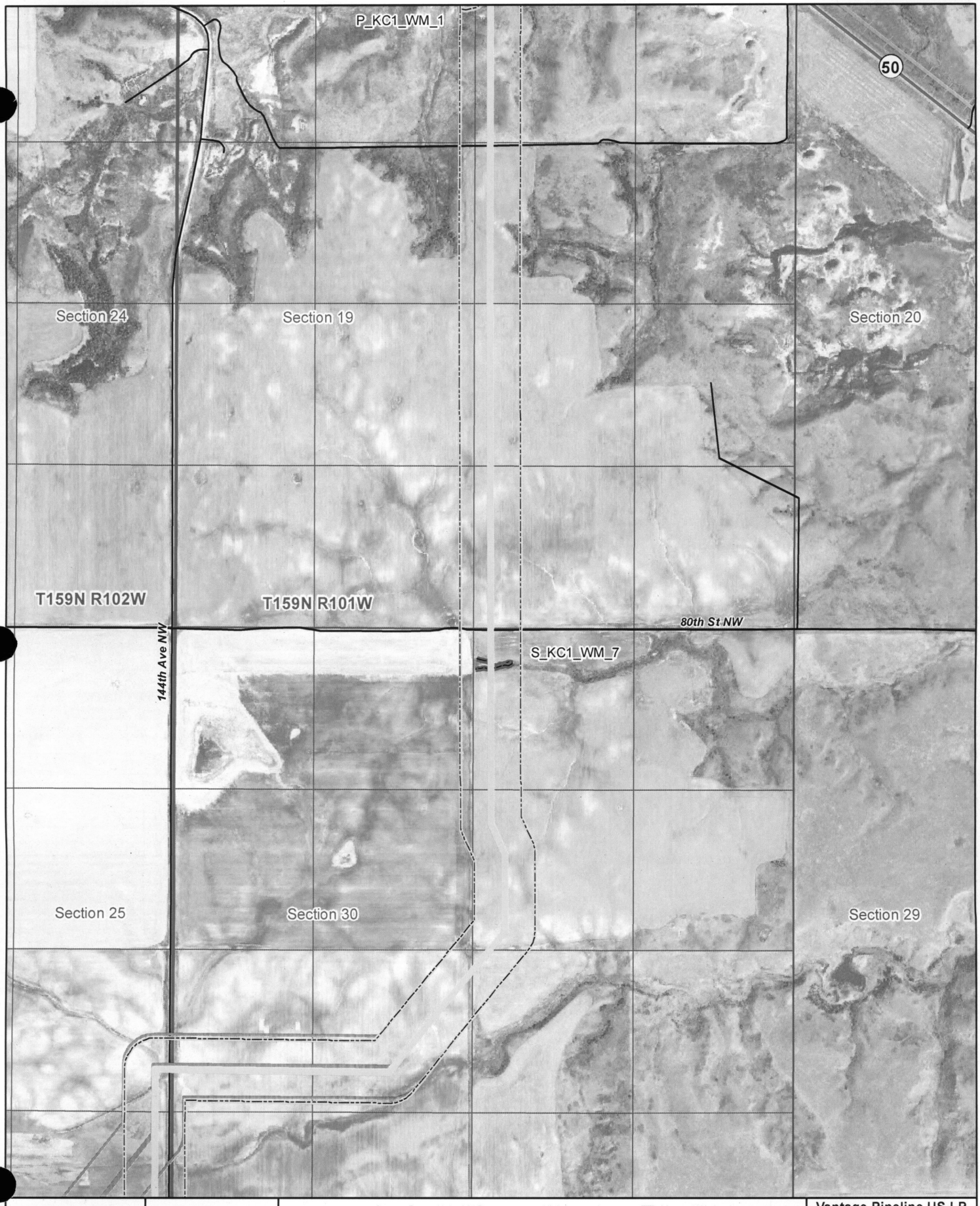

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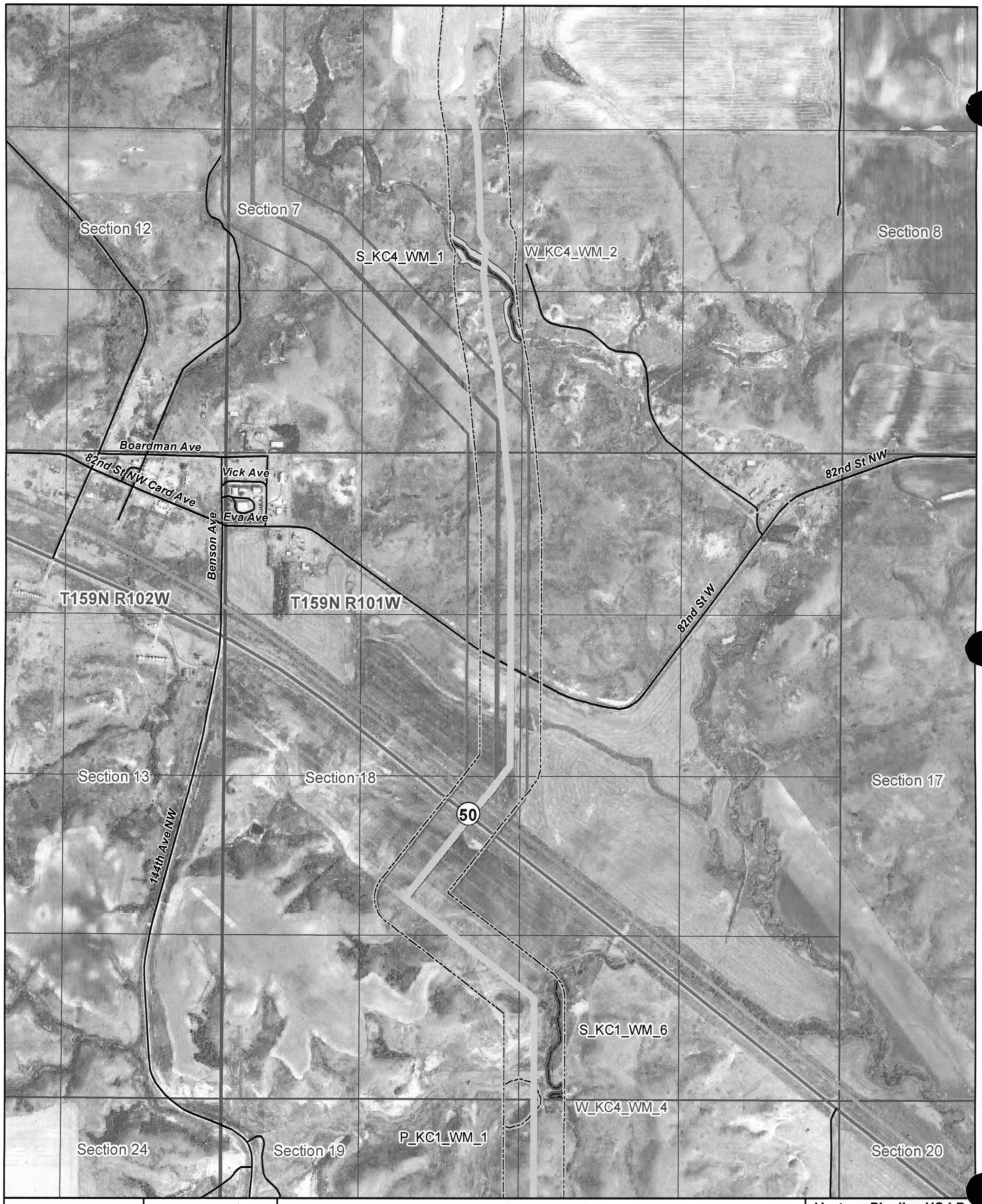

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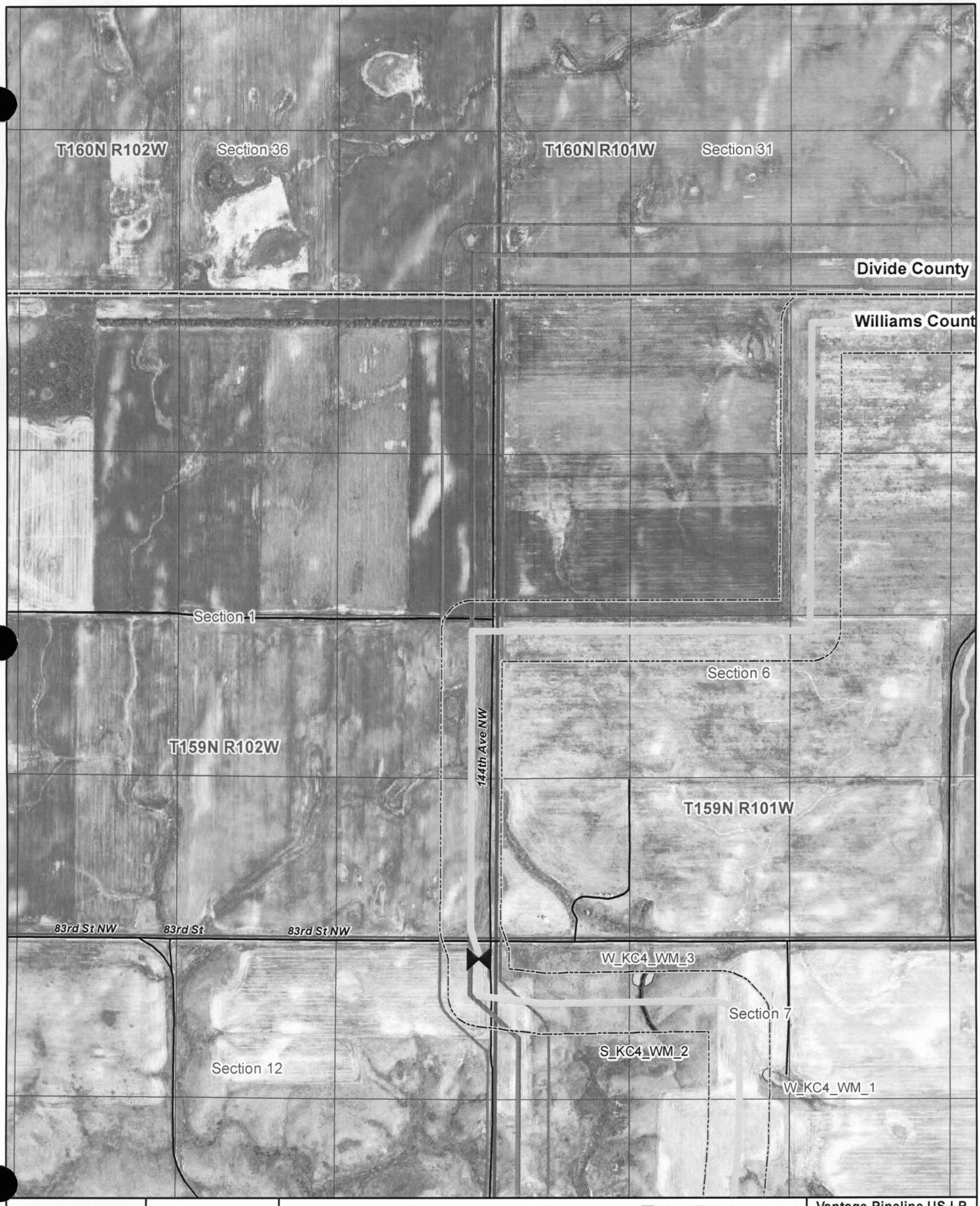

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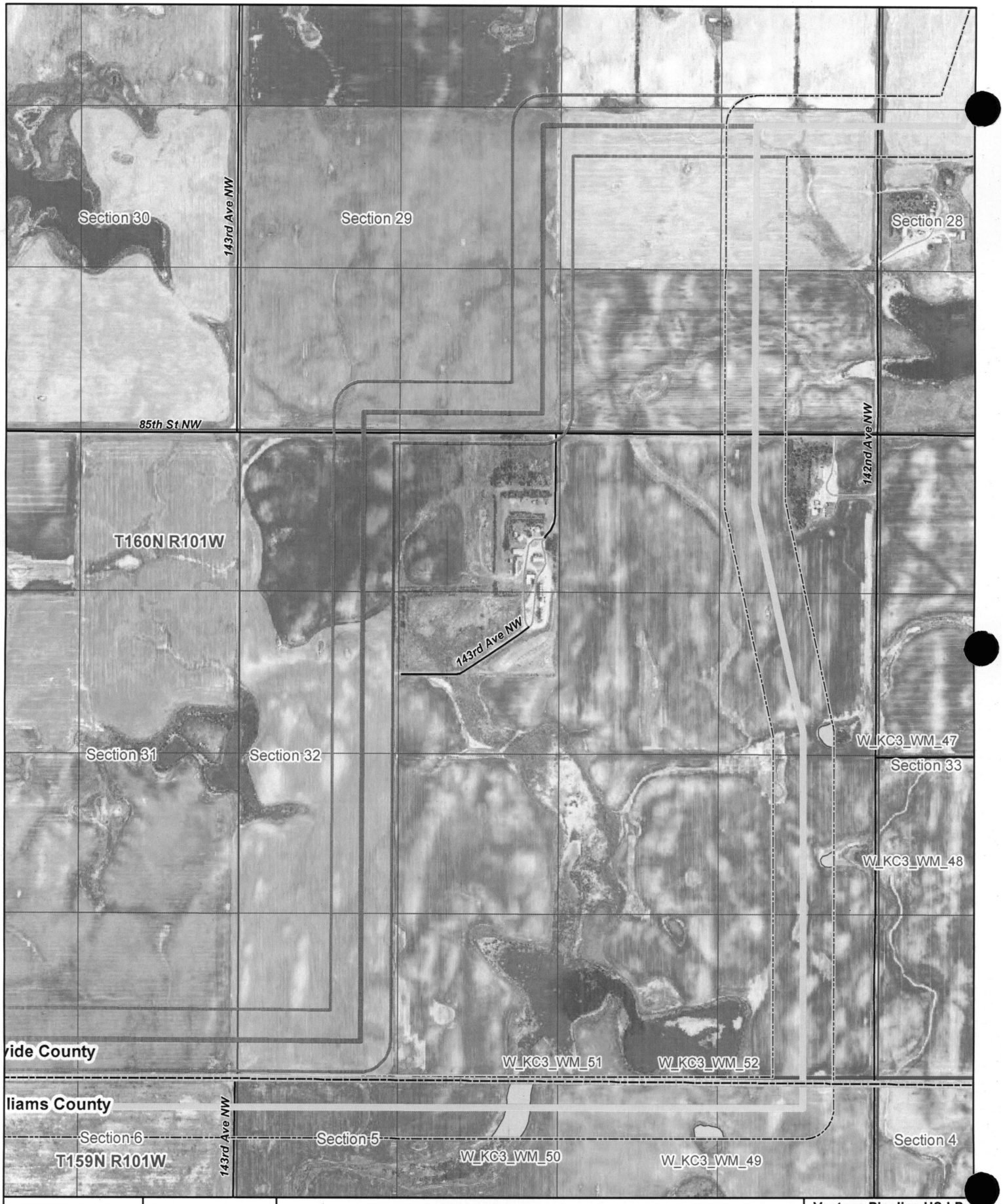

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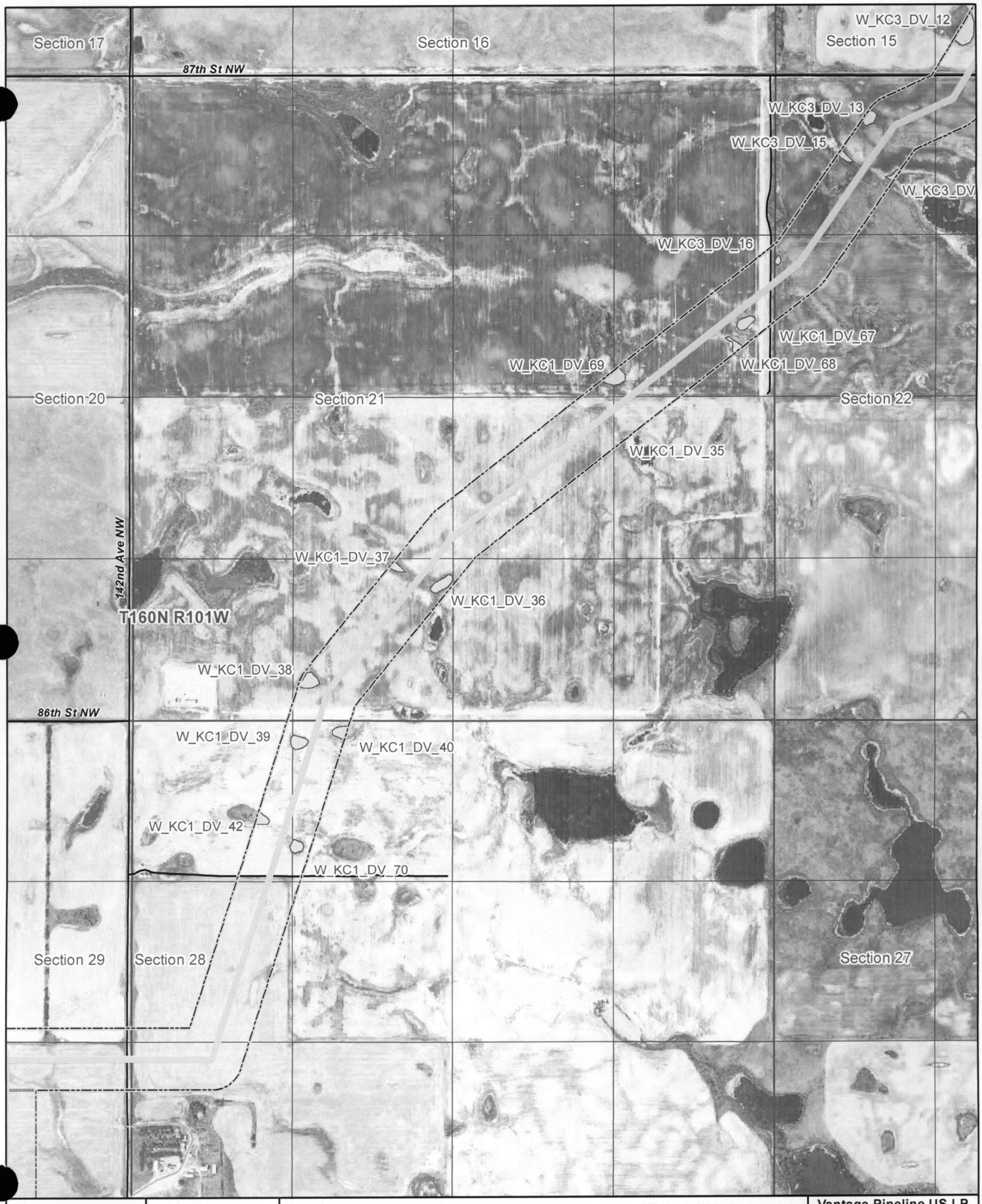

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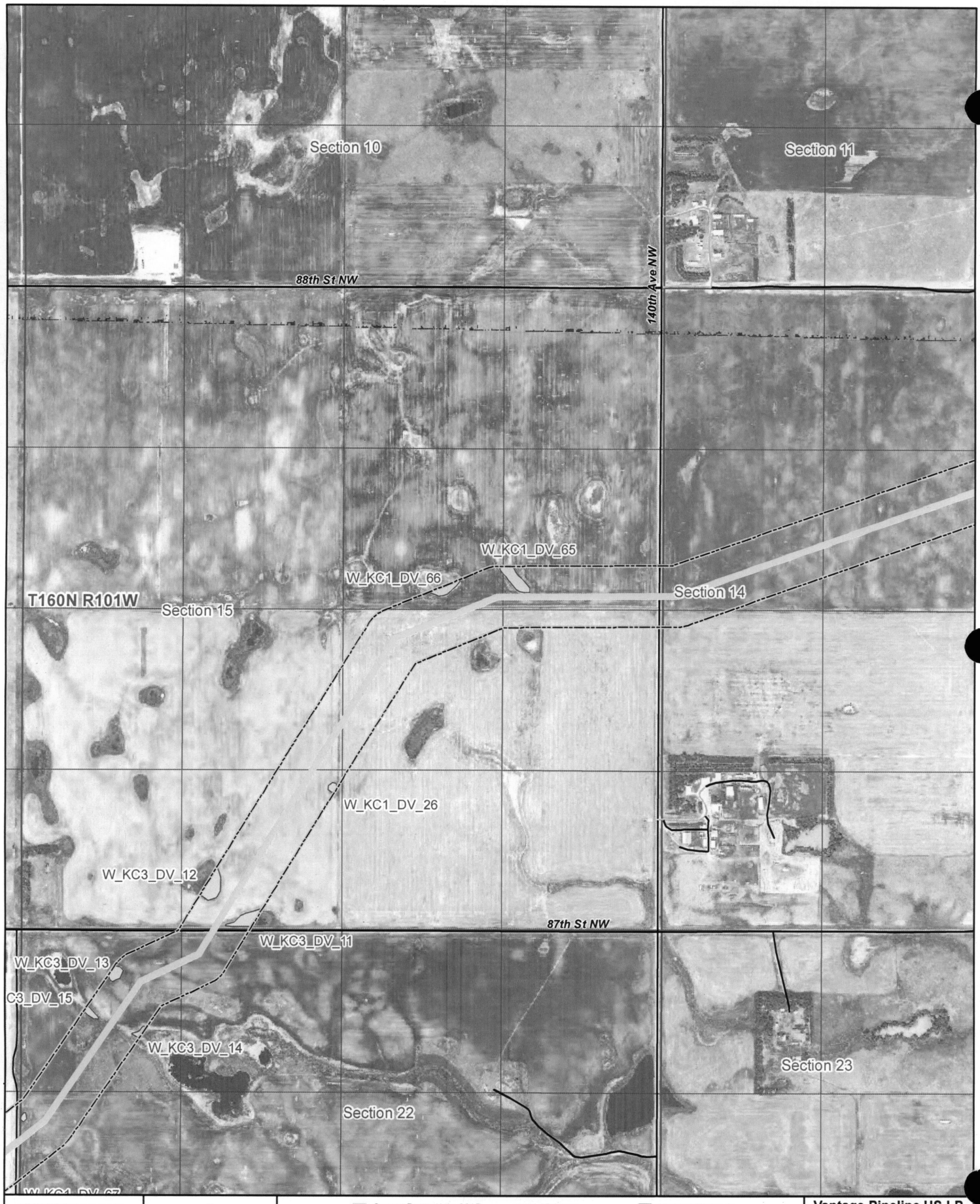

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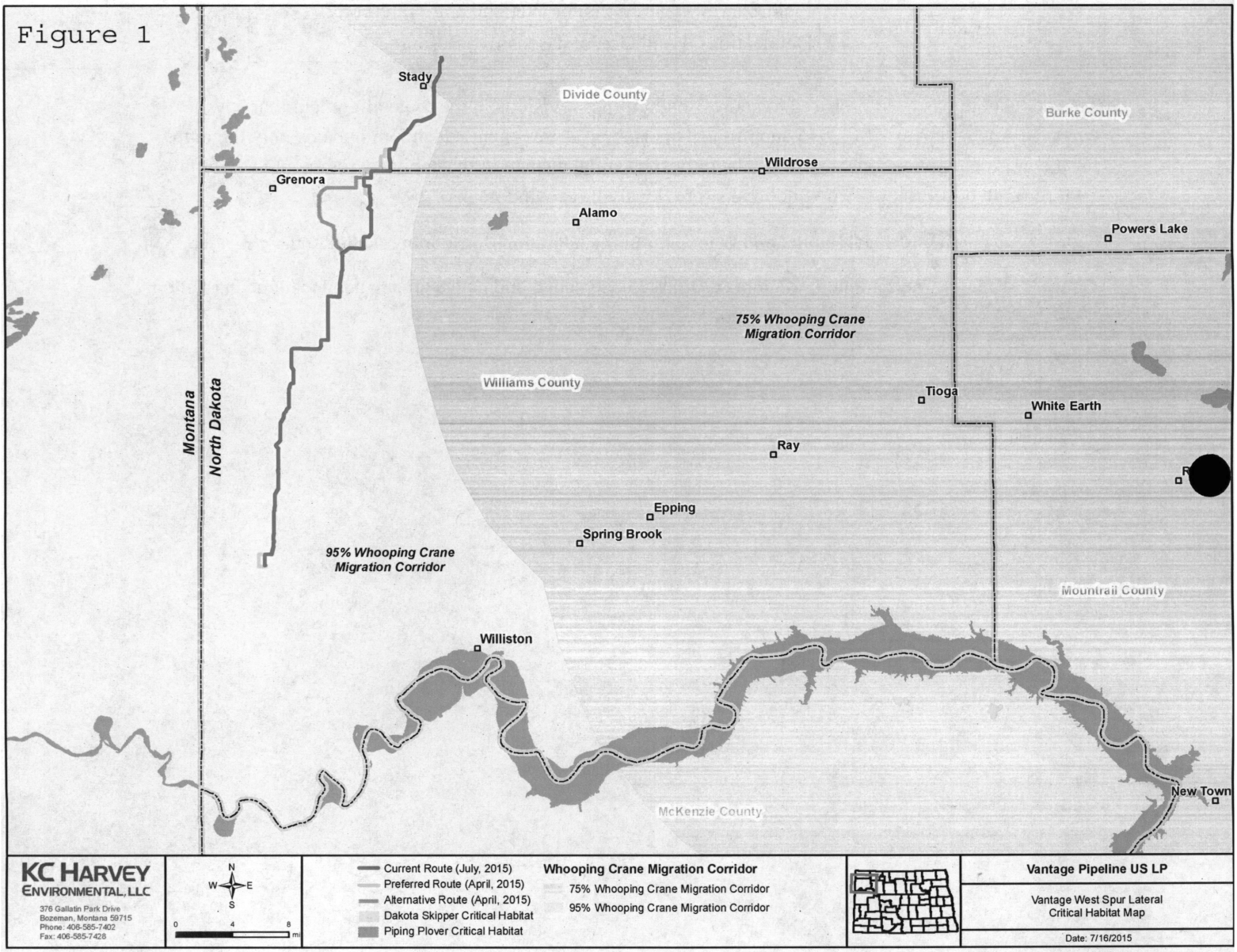
Exhibit G.1	Field Survey Data Forms for Wetland and Waterbody Delineations, Land Use, and Sensitive Resources

This addendum has been prepared to address eight minor revisions in the route alignment that have occurred since the April 13, 2015 submittal. This Habitat Assessment addendum updates only the maps for the original application submittal. The only substantial change in the habitat assessment is that the revised route now crosses two windbreaks (previously three windbreaks).

Figure 1: Location of Critical Habitat and Whooping Crane Migration Corridor in relation to the pipeline.

Figure 2: Wetlands, raptor siting, windbreak, USFWS easements, and native grasslands locations in relation to the pipeline.

Figure 1



KC HARVEY ENVIRONMENTAL, LLC
376 Gallatin Park Drive
Bozeman, Montana 59715
Phone: 406-585-7402
Fax: 406-585-7426

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0 4 8 mi

Current Route (July, 2015)
Preferred Route (April, 2015)
Alternative Route (April, 2015)
Dakota Skipper Critical Habitat
Piping Plover Critical Habitat

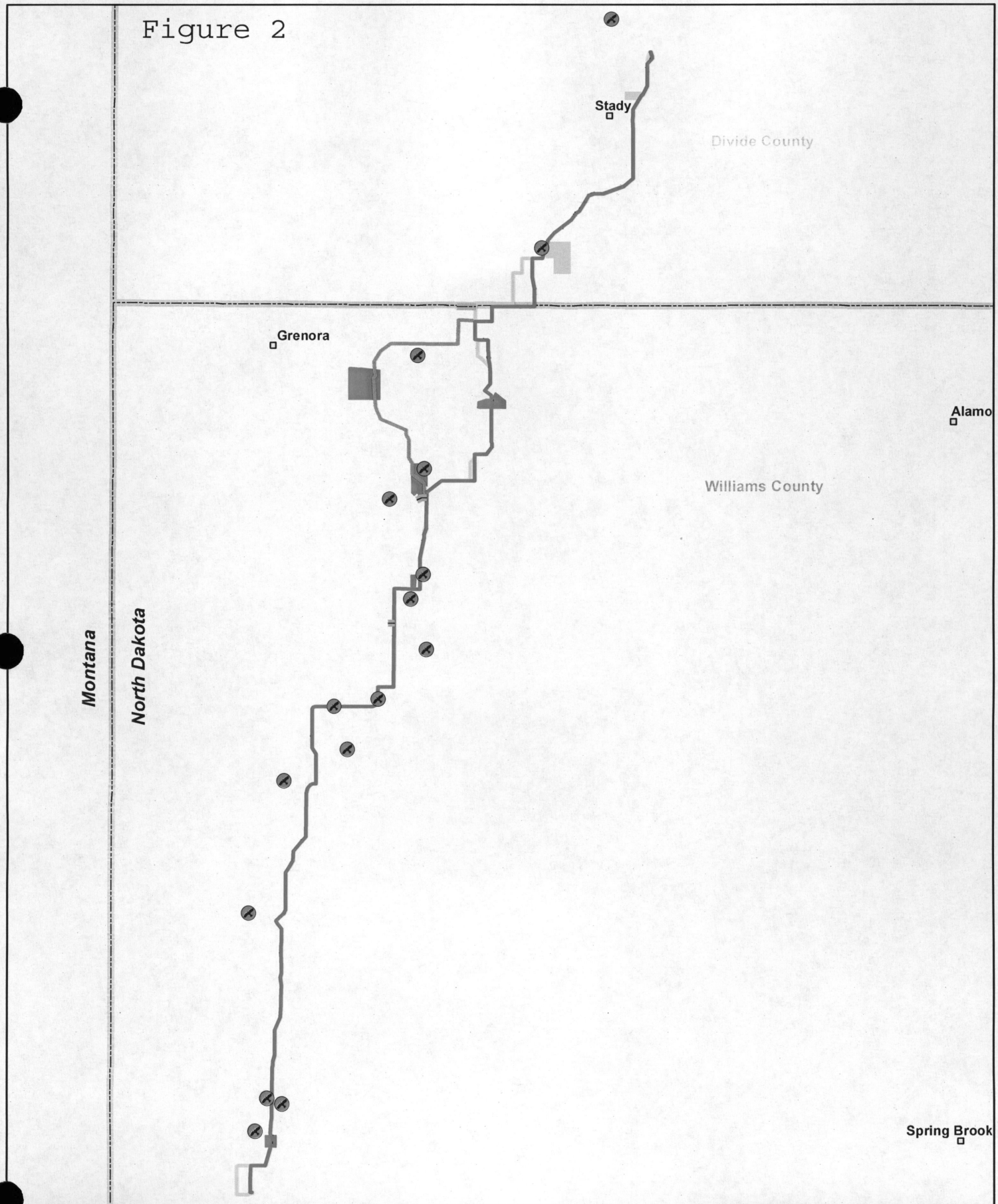
Whooping Crane Migration Corridor
75% Whooping Crane Migration Corridor
95% Whooping Crane Migration Corridor

Vantage Pipeline US LP

Vantage West Spur Lateral
Critical Habitat Map

Date: 7/16/2015

Figure 2



KC HARVEY ENVIRONMENTAL, LLC
376 Gallatin Park Drive
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406-585-7402
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Raptor Sightings
Wind Break
Current Route (July, 2015)
Preferred Route (April, 2015)
Alternative Route (April, 2015)

Wetlands
Wetland Easements
Native Grassland

Vantage Pipeline US LP

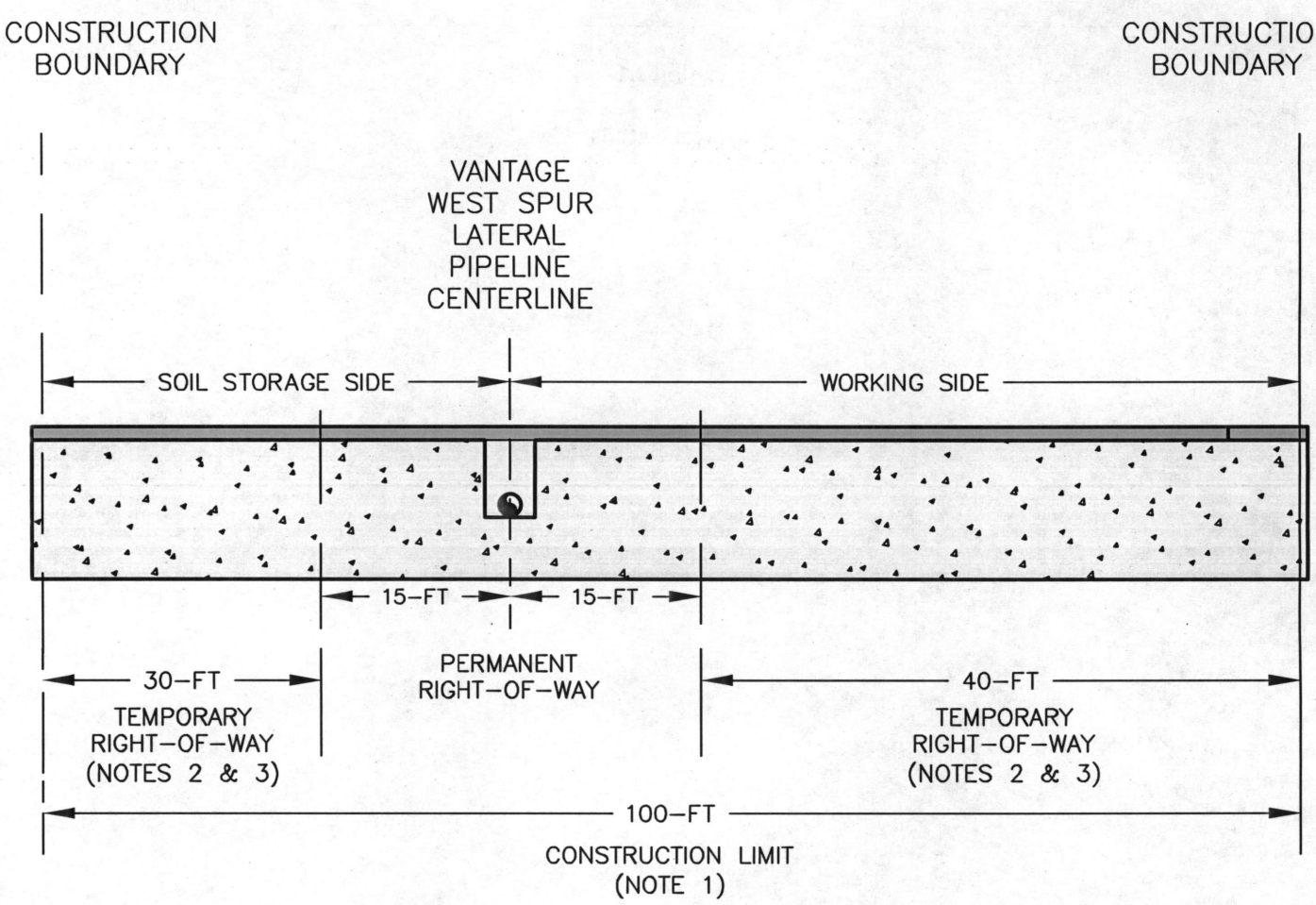
Vantage West Spur Lateral
Wildlife Habitat Map

Date: 7/16/2015

VANTAGE
PIPELINE US LP

Exhibit J.1

Typical Details



NOTES:

1. THE TYPICAL CONSTRUCTION LIMIT WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE MAY BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE OWNER.
2. TEMPORARY RIGHT–OF–WAY WOULD BE LOCATED ON THE RIGHT SIDE OF THE ALIGNMENT UNLESS OTHERWISE NOTED ON THE PLANS.
3. ADDITIONAL TEMPORARY WORK SPACE MAY BE REQUIRED AT ROAD CROSSING LOCATIONS OR OTHER LOCATIONS IDENTIFIED ON THE CONSTRUCTION PLANS.
4. RIGHT–OF–WAY TYPICAL DRAWN WITH DIRECTION OF CONSTRUCTION NORTH OR EAST.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

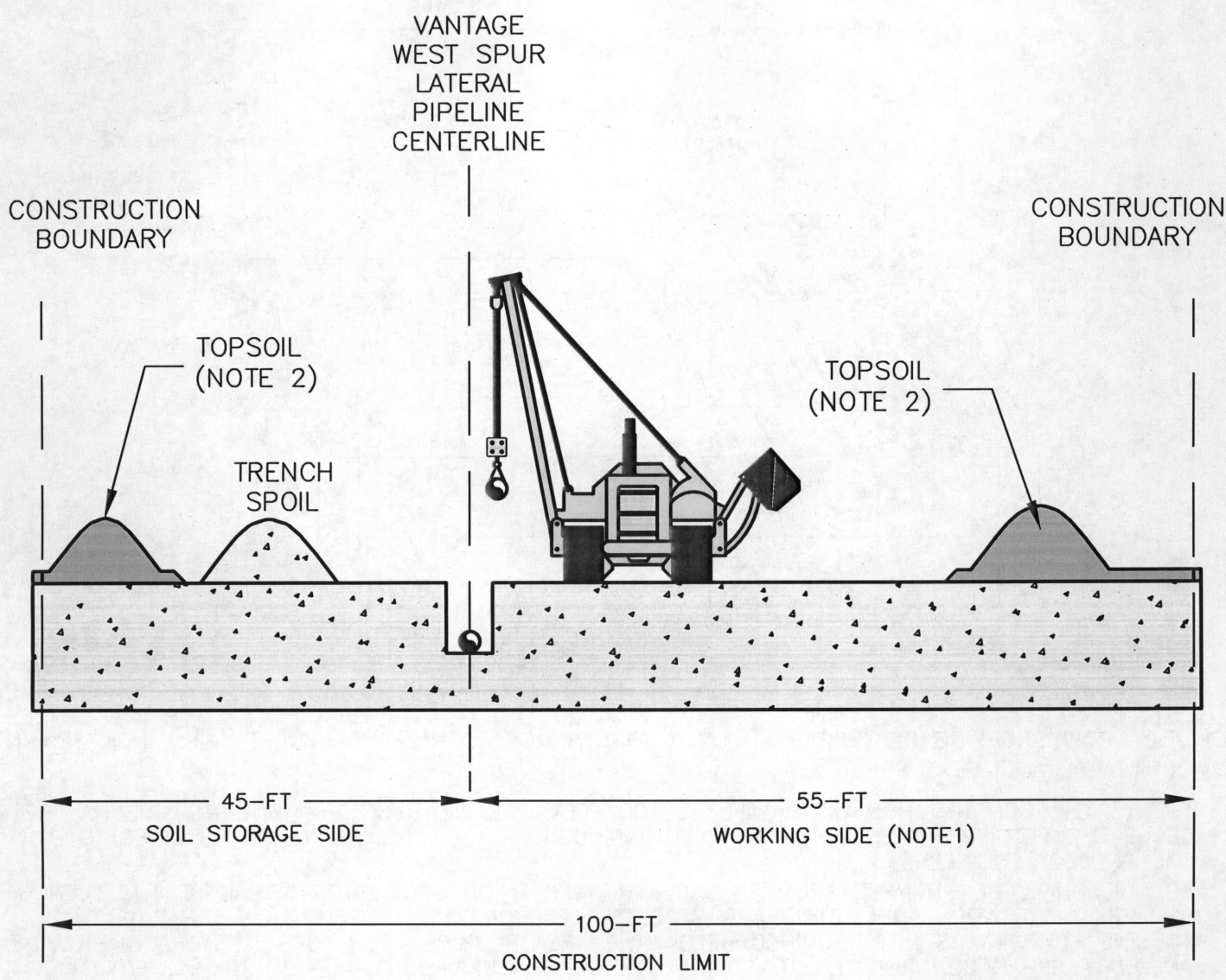
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 1 - CONSTRUCTED ROW CROSS-SECT

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

1. THE TYPICAL CONSTRUCTION LIMIT WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE WOULD BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
2. STOCKPILE TOPSOIL AND TRENCH SPOIL SEPARATELY. TOPSOIL MAY BE PLACED IN A SINGLE STOCK PILE OR SPLIT INTO TWO LOCATIONS. REFER TO SOIL HANDLING DETAILS 3 THROUGH 7.
3. ENSURE ADEQUATE SEPARATION BUFFER BETWEEN TOPSOIL AND SPOIL STOCKPILES TO PREVENT ADMIXING.
4. TYPICAL DRAWN WITH DIRECTION OF CONSTRUCTION NORTH OR EAST.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

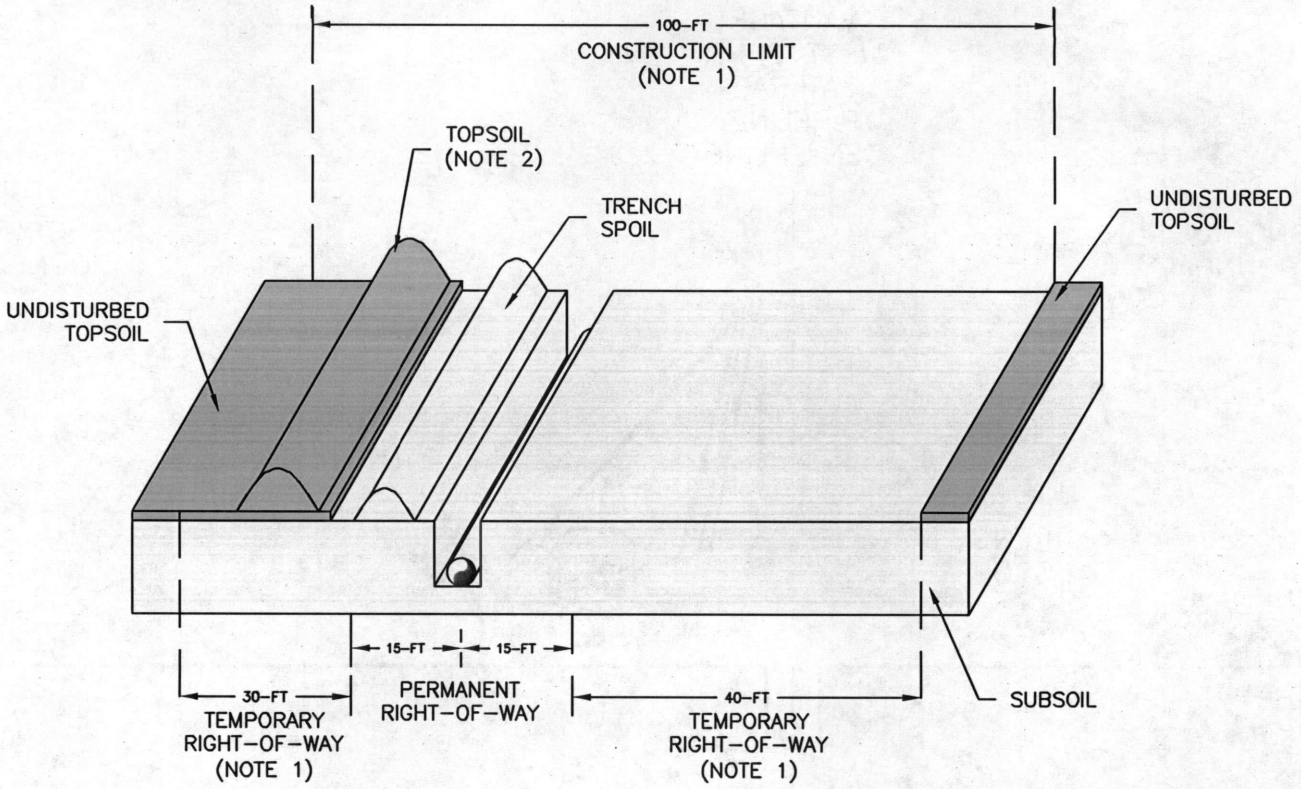
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 2 - CONSTRUCTION DETAIL

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

USE FULL ROW STRIPPING ON CULTIVATED LAND, AND IN MOST CONDITIONS EXCEPT WHEN INDICATED IN ENVIRONMENTAL ALIGNMENT SHEETS.

1. THE TYPICAL CONSTRUCTION WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE MAY BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
2. TOPSOIL SHALL BE STRIPPED FROM THE AREA REQUIRED FOR SPOIL STORAGE, ABOVE THE TRENCH AND FROM THE WORK AREA. STRIP AND STOCKPILE TOPSOIL AND TRENCH SPOIL SEPARATELY. TOPSOIL STRIPPING IS NOT REQUIRED BELOW THE AREA REQUIRED FOR TOPSOIL STORAGE. PROVIDE ADEQUATE SEPARATION BETWEEN TOPSOIL AND SPOIL STOCKPILES TO PREVENT MIXING. TYPICAL A HORIZON DEPTH (TOPSOIL) FROM THE NRCS SOIL SURVEY IS INDICATED ON THE ALIGNMENT SHEETS AND IS INTEND AS A GUIDELINE. THE ACTUAL TOPSOIL SALVAGE DEPTH WILL VARY LOCALLY AND ADJUSTMENT OF DEPTH WILL BE REQUIRED TO SALVAGE ALL AVAILABLE TOPSOIL. SEVERAL PASSES USING A GRADER OR OTHER EQUIPMENT MAY BE REQUIRED. STRIPPING WIDTH SHALL FOLLOW ENVIRONMENTAL ALIGNMENT SHEETS.
3. SOIL SALVAGE ACTIVITIES SHOULD NOT BE CONDUCTED IN WET CONDITIONS OR DURING HIGH WINDS IF SOIL IS PRONE TO WIND EROSION. DISCONTINUE STRIPPING IN LOCATIONS WHERE BUFFERS ARE REQUIRED AT WATERWAYS, WETLANDS, OR OTHER SENSITIVE AREAS. SOIL ADMIXING NOT PERMITTED.
4. BACKFILL TRENCH WITH SPOIL AND COMPACT IN ACCORDANCE WITH PROJECT SPECIFICATIONS. PROVIDE CROWN OVER TRENCH USING AVAILABLE SPOIL TO ACCOMMODATE SETTLEMENT. CROWN SHOULD BE DISCONTINUED ACROSS DRAINAGE WAYS. DISPERSE EXCESS TOPSOIL ACROSS RIGHT-OF-WAY.
5. PROVIDE SUBSOIL COMPACTION RELIEF IF REQUIRED AND DISC TO BREAKUP LARGE CLODS IF NECESSARY. REMOVE OVERSIZED BOULDERS PRIOR TO TOPSOIL PLACEMENT.
6. PLACE TOPSOIL EVENLY ACROSS ENTIRE WORK AREA USING GRADER OR OTHER EQUIPMENT. MAINTAIN CROWN OVER TRENCH CENTERLINE. REMOVE OVERSIZED MATERIALS FROM FINAL SURFACE TO BE CONSISTENT WITH LOCAL CONDITIONS OR IN ACCORDANCE WITH ANY SPECIAL REQUIREMENTS.
7. AREAS REQUIRED STRIPPING WHEN TREES OR SHRUBS ARE PRESENT MUST COMPLY WITH THE APPROVED NDPSC TREE AND SHRUB MITIGATION PLAN.

KC HARVEY ENVIRONMENTAL, LLC

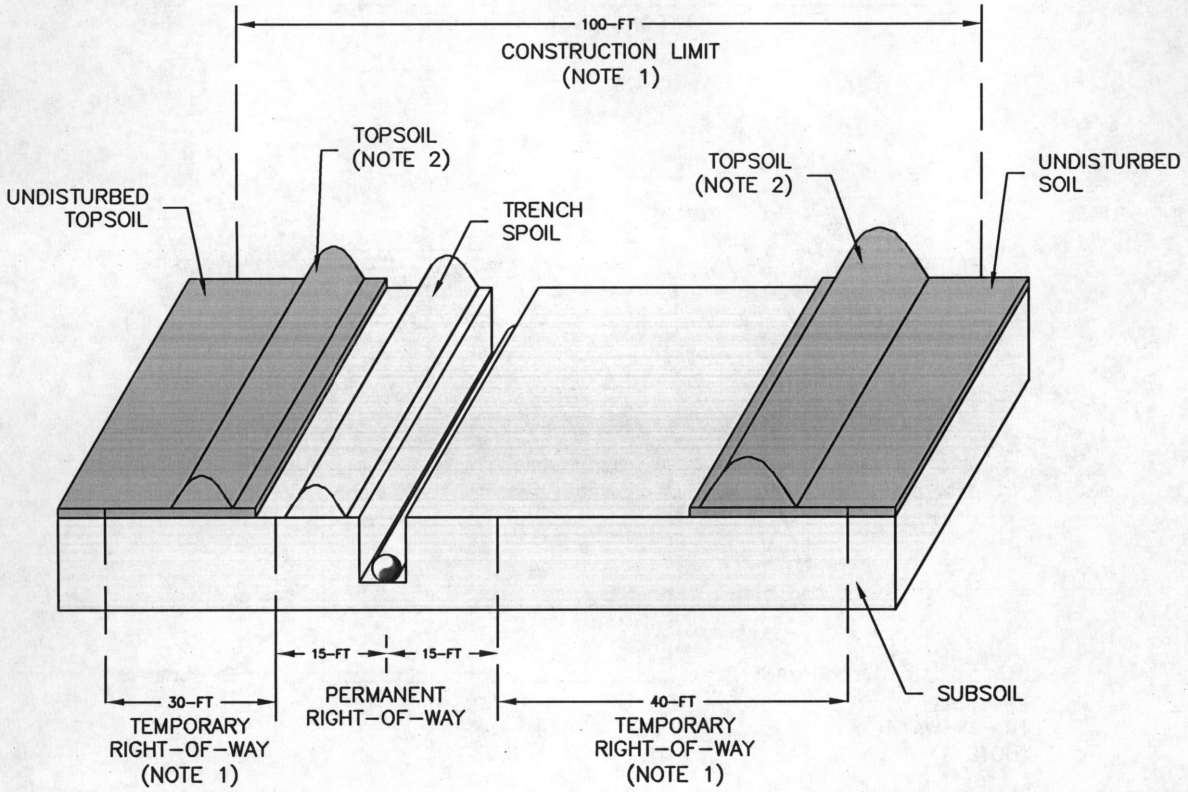
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 3 - SOIL HANDLING (OPTION 1)

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

USE FULL ROW STRIPPING ON CULTIVATED LAND, AND IN MOST CONDITIONS EXCEPT WHEN INDICATED IN ENVIRONMENTAL ALIGNMENT SHEETS. SAME AS OPTION 1 WITH ALTERNATE SOIL SALVAGE PILE LOCATIONS.

1. THE TYPICAL CONSTRUCTION WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE MAY BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
2. TOPSOIL SHALL BE STRIPPED FROM THE AREA REQUIRED FOR SPOIL STORAGE, ABOVE THE TRENCH AND FROM THE WORK AREA. STRIP AND STOCKPILE TOPSOIL AND TRENCH SPOIL SEPARATELY. TOPSOIL STRIPPING IS NOT REQUIRED BELOW THE AREA REQUIRED FOR TOPSOIL STORAGE. PROVIDE ADEQUATE SEPARATION BETWEEN TOPSOIL AND SPOIL STOCKPILES TO PREVENT MIXING. TYPICAL A HORIZON DEPTH (TOPSOIL) FROM THE NRCS SOIL SURVEY IS INDICATED ON THE ALIGNMENT SHEETS AND IS INTEND AS A GUIDELINE. THE ACTUAL TOPSOIL SALVAGE DEPTH WILL VARY LOCALLY AND ADJUSTMENT OF DEPTH WILL BE REQUIRED TO SALVAGE ALL AVAILABLE TOPSOIL. SEVERAL PASSES USING A GRADER OR OTHER EQUIPMENT MAY BE REQUIRED. STRIPPING WIDTH SHALL FOLLOW ENVIRONMENTAL ALIGNMENT SHEETS.
3. SOIL SALVAGE ACTIVITIES SHOULD NOT BE CONDUCTED IN WET CONDITIONS OR DURING HIGH WINDS IF SOIL IS PRONE TO WIND EROSION. DISCONTINUE STRIPPING IN LOCATIONS WHERE BUFFERS ARE REQUIRED AT WATERWAYS, WETLANDS, OR OTHER SENSITIVE AREAS. SOIL ADMIXING NOT PERMITTED.
4. BACKFILL TRENCH WITH SPOIL AND COMPACT IN ACCORDANCE WITH PROJECT SPECIFICATIONS. PROVIDE CROWN OVER TRENCH USING AVAILABLE SPOIL TO ACCOMMODATE SETTLEMENT. CROWN SHOULD BE DISCONTINUED ACROSS DRAINAGE WAYS. DISPERSE EXCESS TOPSOIL ACROSS ROW.
5. PROVIDE SUBSOIL COMPACTION RELIEF IF REQUIRED AND DISC TO BREAKUP LARGE CLODS IF NECESSARY. REMOVE OVERSIZED BOULDERS PRIOR TO TOPSOIL PLACEMENT.
6. PLACE TOPSOIL EVENLY ACROSS ENTIRE WORK AREA USING GRADER OR OTHER EQUIPMENT. MAINTAIN CROWN OVER TRENCH CENTERLINE. REMOVE OVERSIZED MATERIALS FROM FINAL SURFACE TO BE CONSISTENT WITH LOCAL CONDITIONS OR IN ACCORDANCE WITH ANY SPECIAL REQUIREMENTS.
7. AREAS REQUIRED STRIPPING WHEN TREES OR SHRUBS ARE PRESENT MUST COMPLY WITH THE APPROVED NDPSC TREE AND SHRUB MITIGATION PLAN.

KC HARVEY ENVIRONMENTAL, LLC

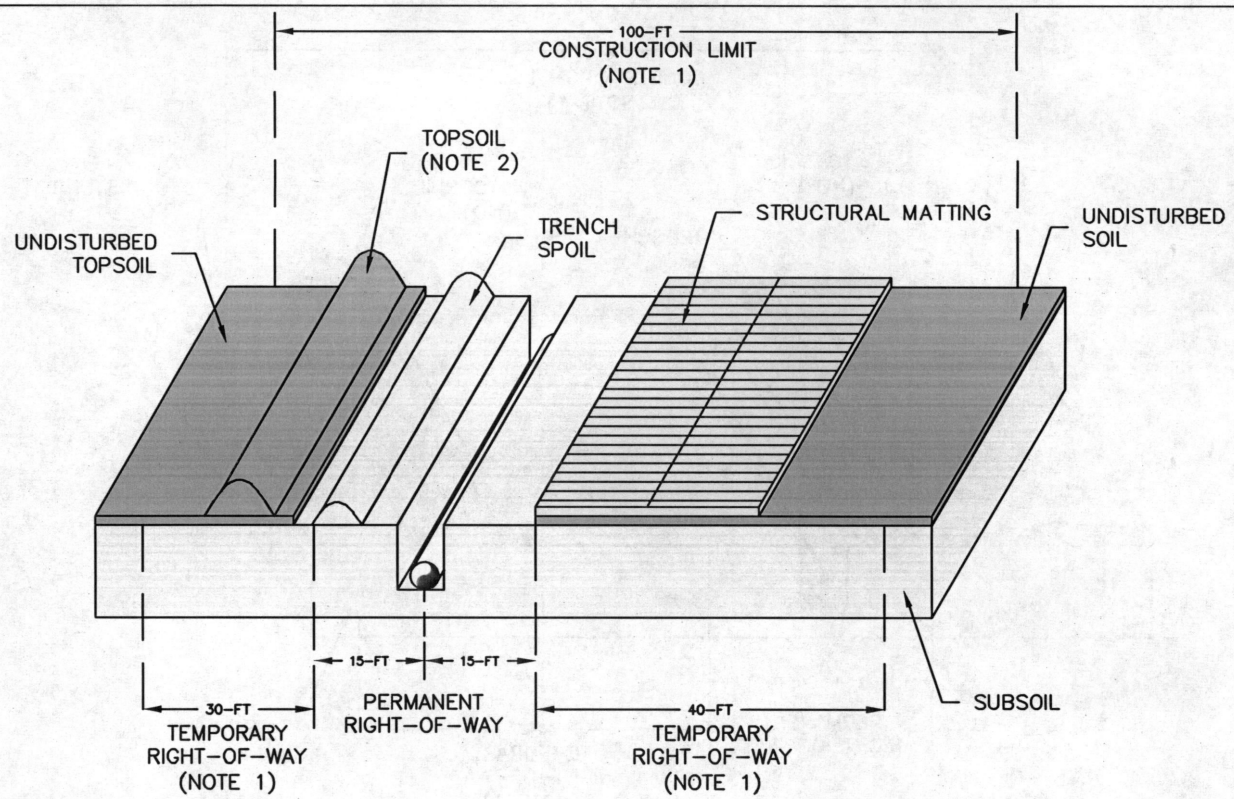
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 4 - SOIL HANDLING (OPTION 2)

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

LIMIT STRIPPING TO PERMANENT ROW ON NATIVE PRAIRIE, GRASSLAND OR IMPROVED PASTURE LAND FOR WET SOILS OR SOILS PRONE TO EXCESSIVE WIND EROSION. OPTION 3 MAY BE USED IN LOCATIONS WHERE THE WIDTH OF STRIPPING WOULD BE LIMITED.

1. THE TYPICAL CONSTRUCTION WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE WILL BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
2. TOPSOIL SHALL BE STRIPPED FROM THE AREA ABOVE THE TRENCH. STRIP AND STOCKPILE TOPSOIL AND TRENCH SPOIL SEPARATELY. TOPSOIL STRIPPING IS NOT REQUIRED BELOW THE AREA REQUIRED FOR TOPSOIL AND SPOIL STORAGE. PROVIDE ADEQUATE SEPARATION BETWEEN TOPSOIL AND SPOIL STOCKPILES TO PREVENT MIXING. TYPICAL A HORIZON DEPTH (TOPSOIL) FROM THE NRCS SOIL SURVEY IS INDICATED ON THE ALIGNMENT SHEETS AND IS INTEND AS A GUIDELINE. THE ACTUAL TOPSOIL SALVAGE DEPTH WILL VARY LOCALLY AND ADJUSTMENT OF DEPTH WILL BE REQUIRED TO SALVAGE ALL AVAILABLE TOPSOIL. STRIPPING WIDTH SHALL FOLLOW ENVIRONMENTAL ALIGNMENT SHEETS.
3. SOIL SALVAGE ACTIVITIES SHOULD NOT BE CONDUCTED IN WET CONDITIONS OR DURING HIGH WINDS IF SOIL IS PRONE TO WIND EROSION. DISCONTINUE STRIPPING IN LOCATIONS WHERE BUFFERS ARE REQUIRED AT WATERWAYS, WETLANDS, OR OTHER SENSITIVE AREAS. SOIL ADMIXING NOT PERMITTED.
4. BACKFILL TRENCH WITH SPOIL AND COMPACT IN ACCORDANCE WITH PROJECT SPECIFICATIONS. PROVIDE CROWN OVER TRENCH USING AVAILABLE SPOIL TO ACCOMMODATE SETTLEMENT. CROWN SHOULD BE DISCONTINUED ACROSS DRAINAGE WAYS. DISPERSE EXCESS TOPSOIL ACROSS ROW.
5. REMOVE OVERSIZED BOULDERS FROM SURFACE PRIOR TO TOPSOIL PLACEMENT.
6. PLACE TOPSOIL EVENLY ACROSS ENTIRE WORK AREA USING GRADER OR OTHER EQUIPMENT. MAINTAIN CROWN OVER TRENCH CENTERLINE. REMOVE OVERSIZED MATERIALS FROM FINAL SURFACE TO BE CONSISTENT WITH LOCAL CONDITIONS OR IN ACCORDANCE WITH ANY SPECIAL REQUIREMENTS.
7. AREAS REQUIRED STRIPPING WHEN TREES OR SHRUBS ARE PRESENT MUST COMPLY WITH THE APPROVED NDPSC TREE AND SHRUB MITIGATION PLAN.

KC HARVEY ENVIRONMENTAL, LLC

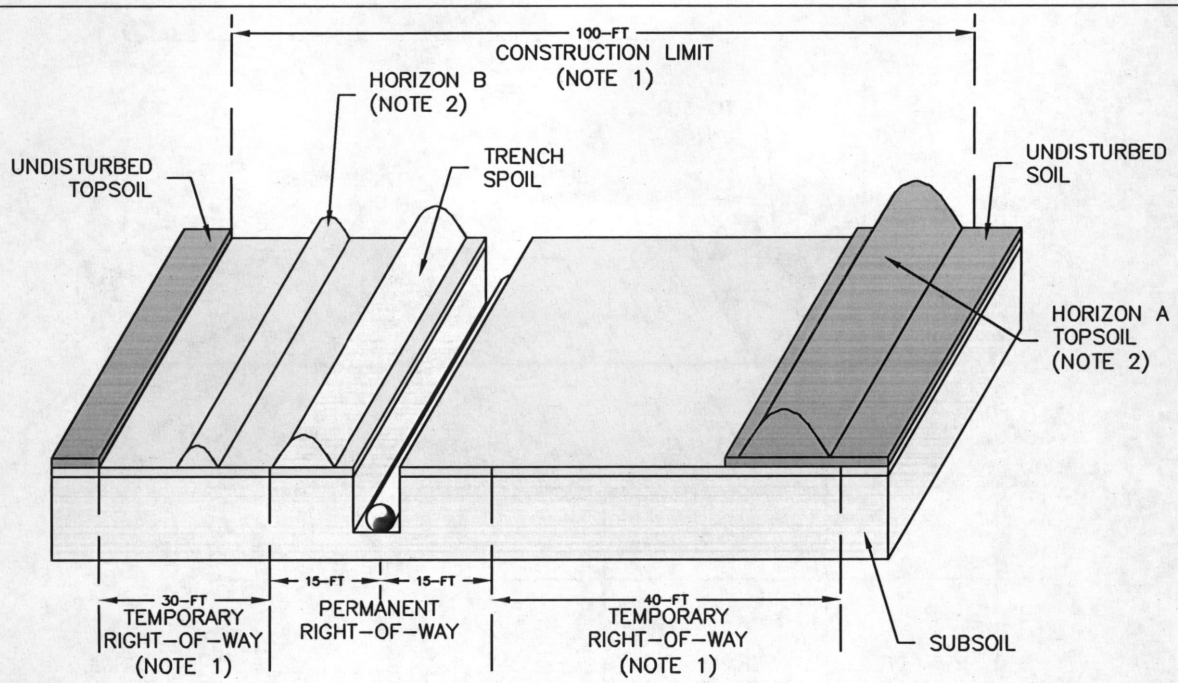
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 5 - SOIL HANDLING (OPTION 3)

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

FULL WIDTH ROW STRIPPING ON LAND DESIGNATED AS PRIME FARMLAND. THE A & B SOIL HORIZONS WILL BE SALVAGED SEPARATELY AT PRIME FARMLAND LOCATIONS IDENTIFIED ON ENVIRONMENTAL ALIGNMENT SHEETS.

1. THE TYPICAL CONSTRUCTION WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE MAY BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
2. TOPSOIL (A HORIZON SOIL) SHALL BE STRIPPED TO EXPOSE THE B HORIZON SOIL. THE A HORIZON SOIL WOULD BE STOCKPILED AT THE OUTSIDE EDGE OF THE TEMPORARY ROW. B HORIZON SOIL WOULD BE STRIPPED AND STOCKPILED WITHIN THE PERMANENT ROW. EXCAVATE TRENCH SPOIL AND STOCKPILE ADJACENT TO TRENCH. STOCKPILE B HORIZON SOIL AND TRENCH SPOIL SEPARATELY. TOPSOIL STRIPPING IS NOT REQUIRED BELOW THE AREA REQUIRED FOR TOPSOIL STORAGE. TYPICAL A AND B HORIZON DEPTHS BASED ON THE NRCS SOIL SURVEY IS INDICATED ON THE ALIGNMENT SHEETS AND IS INTEND AS A GUIDELINE. ACTUAL DEPTH OF B HORIZON TO BE DETERMINED BY THE ONSITE ENVIRONMENTAL REPRESENTATIVE. THE ACTUAL DEPTHS OF SOIL SALVAGE WILL VARY LOCALLY AND ADJUSTMENT OF DEPTH WILL BE REQUIRED TO SALVAGE AVAILABLE SOILS. SEVERAL PASSES USING A GRADER OR OTHER EQUIPMENT MAY BE REQUIRED. STRIPPING WIDTH SHALL FOLLOW ENVIRONMENTAL ALIGNMENT SHEETS.
3. SOIL SALVAGE ACTIVITIES SHOULD NOT BE CONDUCTED WHEN IN WET CONDITIONS OR DURING HIGH WINDS IF SOIL IS PRONE TO WIND EROSION. DISCONTINUE STRIPPING IN LOCATIONS WHERE BUFFERS ARE REQUIRED AT WATERWAYS, WETLANDS, OR OTHER SENSITIVE AREAS. SOIL ADMIXING NOT PERMITTED.
4. BACKFILL TRENCH WITH SPOIL AND COMPACT PRIOR TO PLACING B HORIZON SOIL. USE CARE TO ENSURE SPOILS ARE REMOVED FROM B HORIZON SOILS BELOW SPOIL PILE. REPLACE AND COMPACT B HORIZON SOIL INTO TRENCH AND COMPACT IN ACCORDANCE WITH PROJECT SPECIFICATIONS. PROVIDE CROWN OVER TRENCH TO ACCOMMODATE SETTLEMENT. CROWN SHOULD BE DISCONTINUED ACROSS DRAINAGE WAYS. DISPERSE EXCESS TOPSOIL ACROSS ROW.
5. PROVIDE COMPACTION RELIEF IF REQUIRED AND DISK IF TO BREAKUP LARGE CLODS IF NECESSARY. REMOVE OVERSIZED BOULDERS PRIOR TO TOPSOIL PLACEMENT.
6. PLACE TOPSOIL EVENLY ACROSS ENTIRE WORK AREA USING GRADER OR OTHER EQUIPMENT. MAINTAIN CROWN OVER TRENCH CENTERLINE. REMOVE OVERSIZED MATERIALS FROM FINAL SURFACE TO BE CONSISTENT WITH LOCAL CONDITIONS OR IN ACCORDANCE WITH ANY SPECIAL REQUIREMENTS.
7. AREAS REQUIRED STRIPPING WHEN TREES OR SHRUBS ARE PRESENT MUST COMPLY WITH THE APPROVED NDPSC TREE AND SHRUB MITIGATION PLAN.

KC HARVEY ENVIRONMENTAL, LLC

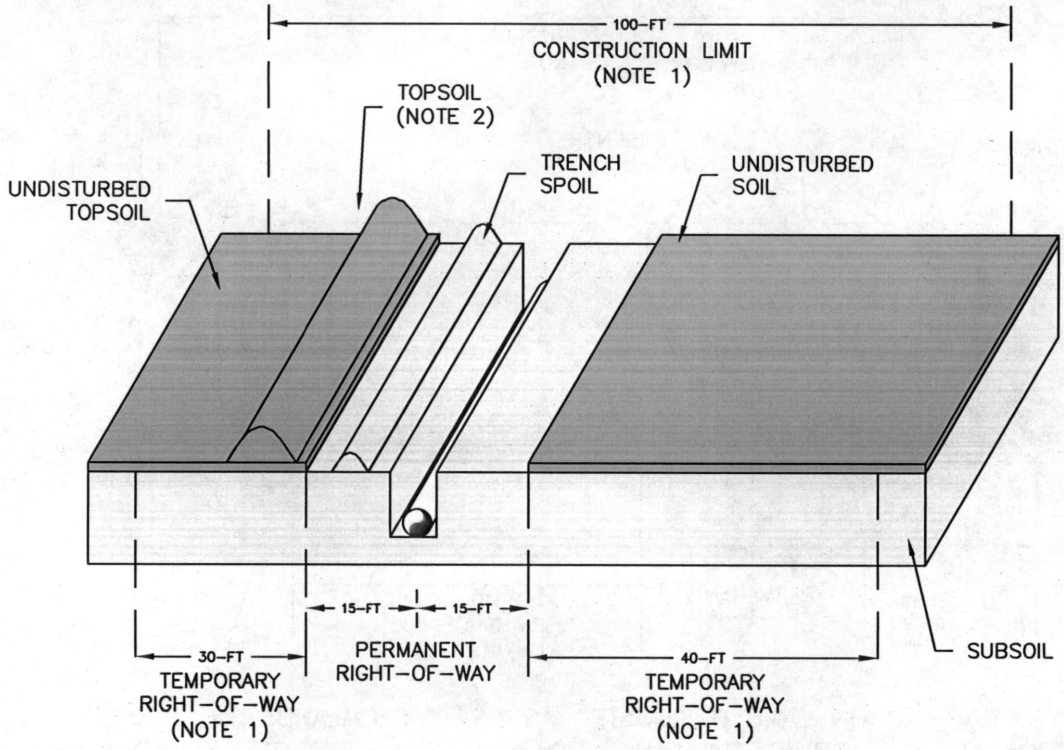
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 6 - SOIL HANDLING (OPTION 4)

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

LIMIT STRIPPING TO ABOVE THE TRENCH LINE ONLY ON NATIVE PRAIRIE, GRASSLAND, IMPROVED PASTURE LAND, OR WETLANDS. OPTION 5 MAY BE USED IN LOCATIONS WHERE THE WIDTH OF STRIPPING WOULD BE LIMITED.

1. THE TYPICAL CONSTRUCTION WIDTH WILL BE 100 FEET. THE WIDTH OF THE WORKING SIDE MAY BE DECREASED FOR SHORT DISTANCES IN LOCATIONS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE PROJECT ENGINEER.
2. TOPSOIL SHALL BE STRIPPED ONLY FROM THE AREA ABOVE THE TRENCH. STRIP AND STOCKPILE TOPSOIL AND TRENCH SPOIL SEPARATELY. PROVIDE ADEQUATE SEPARATION BETWEEN TOPSOIL AND SPOIL STOCKPILES TO PREVENT MIXING. TYPICAL A HORIZON DEPTH (TOPSOIL) FROM THE NRCS SOIL SURVEY IS INDICATED ON THE ALIGNMENT SHEETS AND IS INTEND AS A GUIDELINE. THE ACTUAL TOPSOIL SALVAGE DEPTH WILL VARY LOCALLY AND ADJUSTMENT OF DEPTH WILL BE REQUIRED TO SALVAGE ALL AVAILABLE TOPSOIL. SEVERAL PASSES USING A GRADER OR OTHER EQUIPMENT MAY BE REQUIRED. STRIPPING WIDTH SHALL FOLLOW ENVIRONMENTAL ALIGNMENT SHEETS.
3. SOIL SALVAGE ACTIVITIES SHOULD NOT BE CONDUCTED IN WET CONDITIONS OR DURING HIGH WINDS IF SOIL IS PRONE TO WIND EROSION. DISCONTINUE STRIPPING IN LOCATIONS WHERE BUFFERS ARE REQUIRED AT WATERWAYS, WETLANDS, OR OTHER SENSITIVE AREAS. SOIL ADMIXING NOT PERMITTED.
4. BACKFILL TRENCH WITH SPOIL AND COMPACT IN ACCORDANCE WITH PROJECT SPECIFICATIONS. PROVIDE CROWN USING AVAILABLE SPOIL OVER TRENCH TO ACCOMMODATE SETTLEMENT. AVOID DAMAGE TO SOD LAYER BELOW SPOIL. CROWN SHOULD BE DISCONTINUED ACROSS DRAINAGE WAYS. DISPERSE EXCESS TOPSOIL ACROSS ROW.
5. REMOVE OVERSIZED BOULDERS FROM SUBSOIL SURFACE PRIOR TO TOPSOIL PLACEMENT.
6. PLACE TOPSOIL EVENLY ACROSS TRENCH AREA USING GRADER OR OTHER EQUIPMENT. MAINTAIN CROWN OVER TRENCH CENTERLINE. REMOVE OVERSIZED MATERIALS TO BE CONSISTENT WITH LOCAL CONDITIONS OR IN ACCORDANCE WITH ANY SPECIAL REQUIREMENTS.
7. AREAS REQUIRED STRIPPING WHEN TREES OR SHRUBS ARE PRESENT MUST COMPLY WITH THE APPROVED NDPSC TREE AND SHRUB MITIGATION PLAN.

KC HARVEY ENVIRONMENTAL, LLC

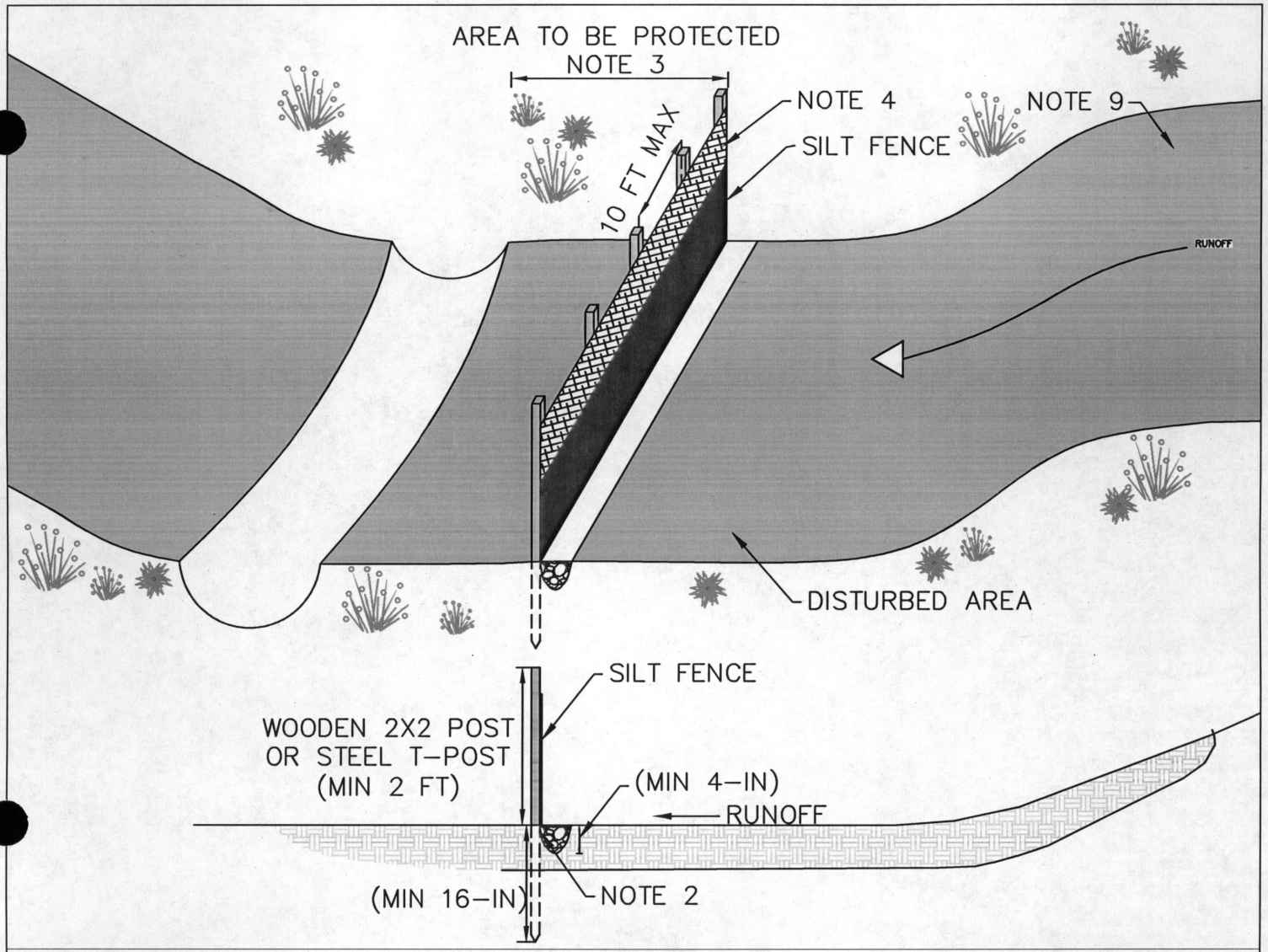
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 7 - SOIL HANDLING (OPTION 5)

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

1. TEMPORARY SEDIMENT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED.
2. SILT FENCE MAY BE INSTALLED EITHER BY EXCAVATING AN ANCHOR TRENCH OR USING A SILT FENCE PLOW. ANCHOR TRENCH SHALL BE LOCATED ON UPHILL SIDE OF FENCE. SILT FENCE MUST BE KEYED IN.
3. FIELD LOCATE SILT FENCING TO PROVIDE SEDIMENT CONTROL BETWEEN WATERWAYS OR WETLANDS LOCATED ADJACENT AND DOWNGRADIENT OF CONSTRUCTION DISTURBANCE. SILT FENCE SHOULD BE LOCATED TO PROVIDE A BUFFER OF UNDISTURBED VEGETATION BETWEEN WORK AREA AND PROTECTED AREA.
4. FOR LONG–TERM APPLICATIONS, WOVEN WIRE FENCE MAY BE FASTENED TO FENCE POST WITH TIES OR STAPLES.
5. FILTER CLOTH TO BE FASTENED SECURELY TO SMOOTH WIRE OR WOVEN WIRE FENCE WITH TIES.SPACED EVERY 24" ALONG TOP OF FABRIC.
6. WHEN TWO (2) SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX (6) INCHES AND FOLDED
7. SEDIMENT ACCUMULATION SHALL BE REMOVED WHEN BULGES DEVELOP IN THE SILT FENCE.
8. SILT FENCE SHALL BE MAINTAINED, AS NEEDED, THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.
9. PROVIDE SLOPE BREAKERS ABOVE SILT FENCE WHEN REQUIRED.
10. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

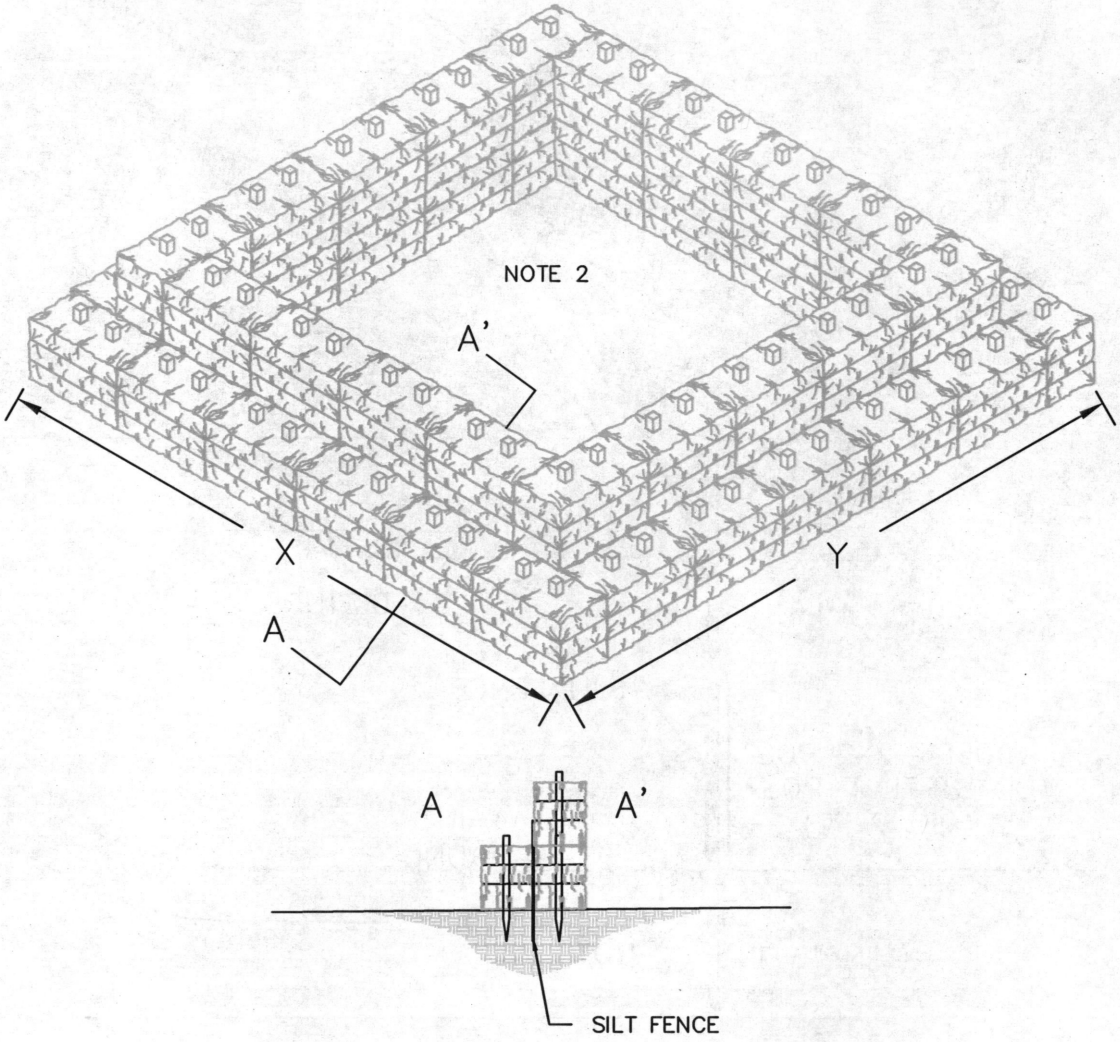
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 8 - TYPICAL SILT FENCE INSTALLATION

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFIED BELOW FOR THE REQUIRED PUMPING RATE.
2. PROTECT SUMP FLOOR FROM EROSION. LINE ENTIRE SUMP FLOOR WITH GEOTEXTILE FILTER FABRIC OR OTHER MATERIALS TO PREVENT EROSION.
3. INSTALLATION TO FOLLOW ON-SITE COMPANY ENVIRONMENTAL INSPECTOR.
4. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL PREVIEW PURPOSES ONLY.

X-DIMENSION FT	Y-DIMENSION FT	PUMPING RATE GPM
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500

KC HARVEY ENVIRONMENTAL, LLC

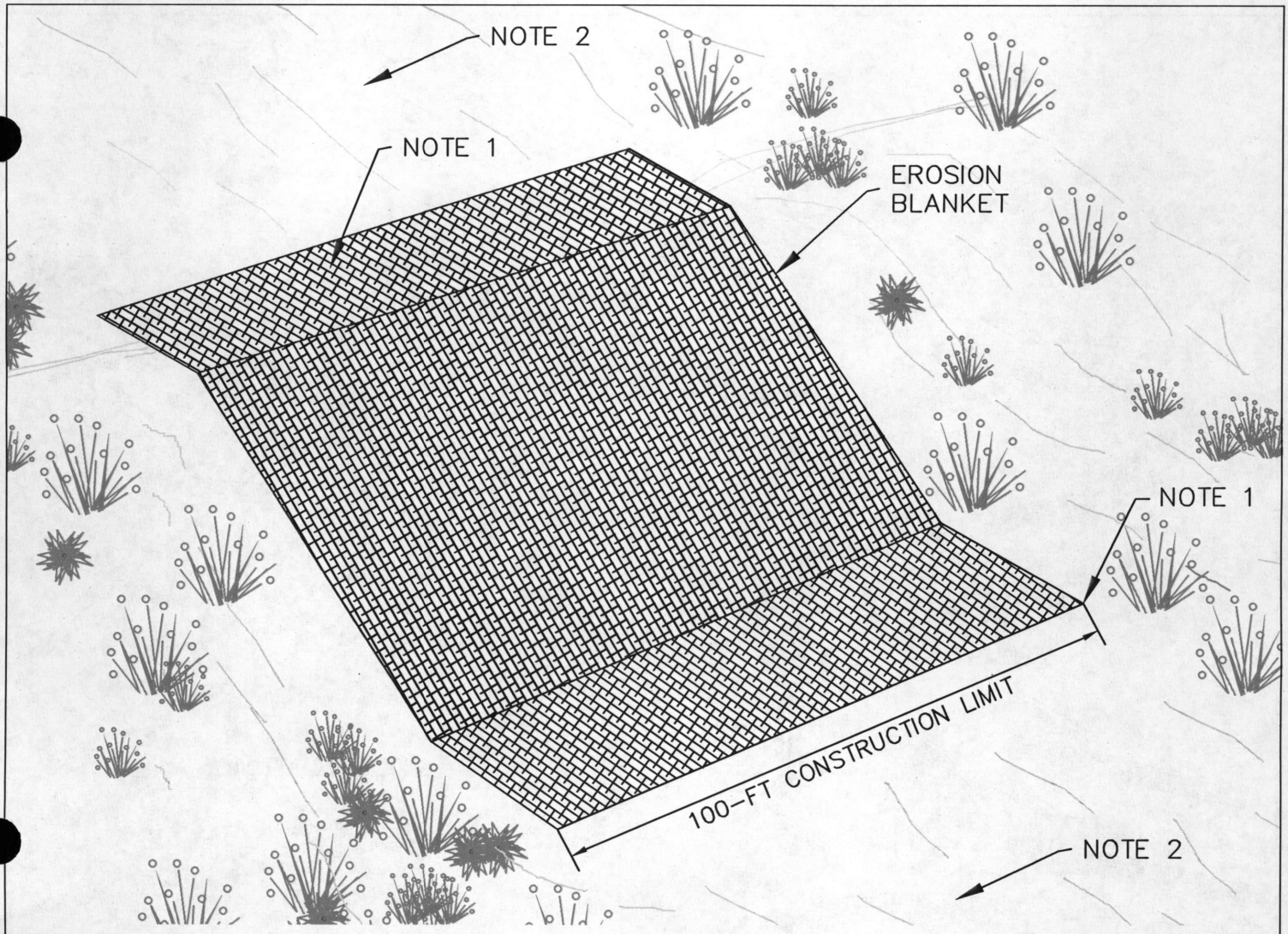
VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 9 - STRAW BALE DEWATERING STRUCTURE

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

DATE: APRIL 2015 REV. 0 SCALE: NTS



NOTES:

ROLLED EROSION CONTROL PRODUCTS (RECP). TEMPORARY DESIGNED FOR SHORT TERM (UP TO 1 YR).

USE DEGRADABLE MATERIALS (GENERALLY PREFERRED AND MORE PREVALENT) MADE FROM NATURALLY DECOMPOSING MATERIALS. DIFFERENT FIBERS YIELD DIFFERENT CHARACTERISTICS AND BREAKDOWN PATTERNS. RECPS ARE EITHER: PHOTODEGRADABLE – BROKEN DOWN BY SUNLIGHT EXPOSURE OR BIODEGRADABLE – DETERIORATED BY ACTION OF BIOLOGICAL ORGANISMS.

CONSULT PRODUCT DISTRIBUTORS FOR RECOMMENDATIONS REGARDING RECP SELECTION AND PERFORMANCE CRITERIA SUITABLE FOR SITE-SPECIFIC REQUIREMENTS. EVALUATE: DURATION, SLOPE GRADIENT, SOIL TYPE & ERODIBILITY, SEASONAL TEMPERATURE & WEATHER PATTERNS, REGIONAL PRECIPITATION DISTRIBUTION, VEGETATION NEEDS, ESPECIALLY WHERE GERMINATION CONDITIONS ARE NOT OPTIMAL.

1. ANCHOR RECP A MINIMUM OF 5 FEET ABOVE OR BELOW SLOPE BREAKS ACCORDING TO PRODUCT SPECIFICATIONS.
2. RECP TO MATCH GRADE ALONG ADJACENT RECLAIMED AND SEEDED TEMPORARY ROW. PROVIDE SLOPE BREAKERS ABOVE RECP APPLICATION, WHEN REQUIRED.
3. INSTALLATION TO FOLLOW ON-SITE COMPANY ENVIRONMENTAL INSPECTOR.
4. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO.TYPICAL 10 - ROLLED EROSION CONTROL PRODUCTS

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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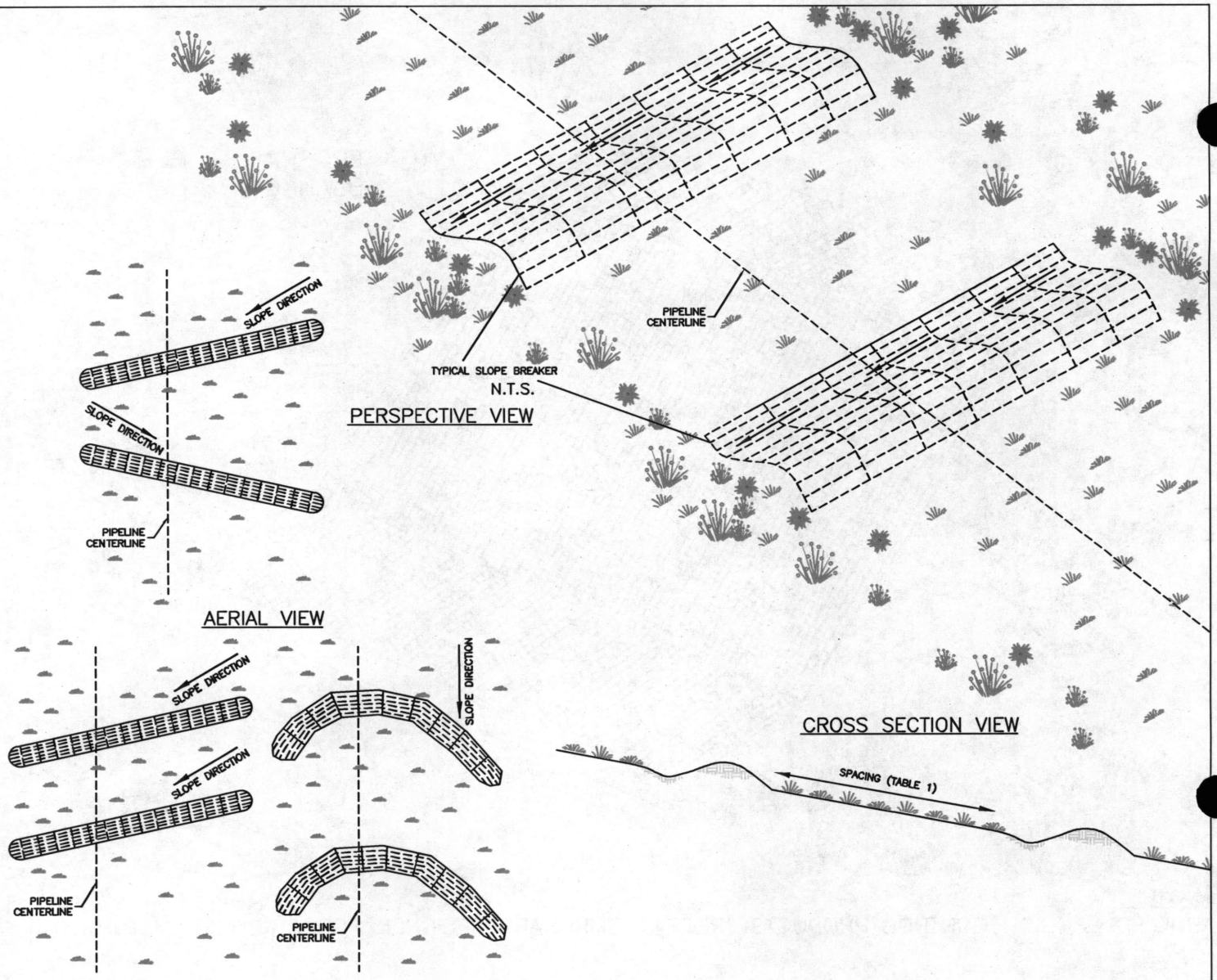

NOTES:

1. INSTALL PERMANENT SLOPE BREAKERS ACCORDING TO THE SPACING IN TABLE 1.
2. IF THE LENGTH OF THE SLOPE IS LESS THAN THE DISTANCE OF THE REQUIRED SPACING IN TABLE 1, NO SLOPE BREAKERS ARE REQUIRED UNLESS THE SLOPE IS ABOVE A WATERCOURSE; IN THIS CASE ONE LARGE BREAKER SHOULD BE INSTALLED AT THE TOE OF THE SLOPE.
3. DO NOT INSTALL PERMANENT SLOPE BREAKERS ON AGRICULTURAL LAND UNLESS SPECIFICALLY REQUESTED BY THE LANDOWNER.
4. ALIGNMENT OF THE SLOPE BREAKERS WILL BE AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

TABLE 1

SLOPE (%)	SPACING (FT)
5–15%	300 FT
>15–30%	200 FT
>30%	75 FT

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 11 - SLOPE BREAKERS

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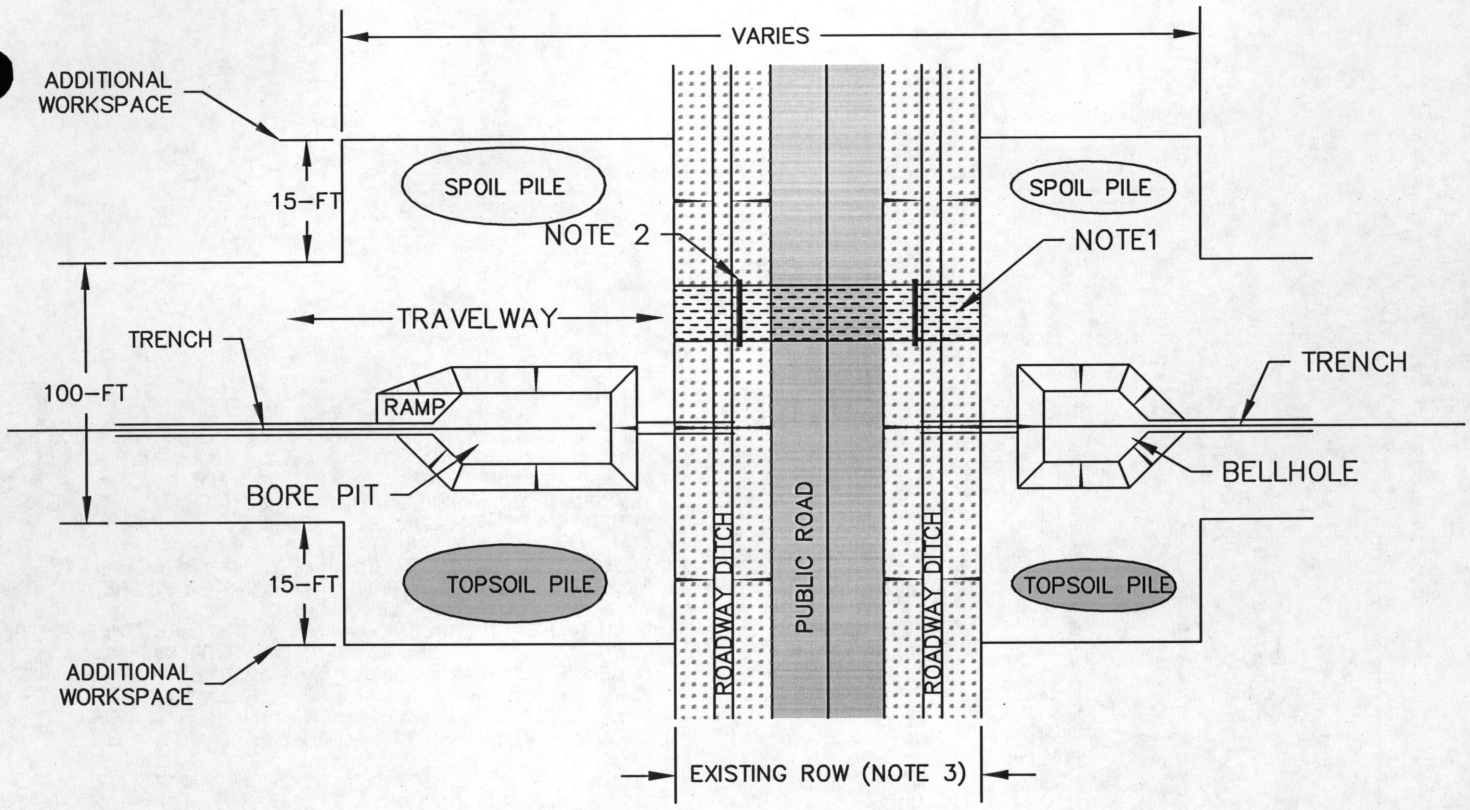

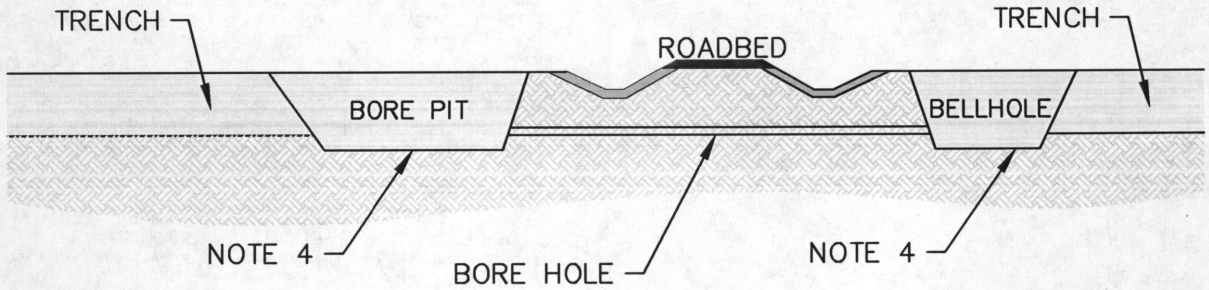

NOTES:

1. INSTALL TEMPORARY CROSSING OVER ROADWAY AND BORROW PITS. PROTECTIVE LAYER SHALL BE USED ON PAVED ROAD SURFACES TO PREVENT DAMAGE FROM TRACKED EQUIPMENT.
2. IF NECESSARY, INSTALL TEMPORARY CULVERT AND FILL IN BORROW PIT.
3. MAINTAIN EXISTING VEGETATION IN BORROW PITS. STRIPPING SHOULD BE LIMITED TO THE AREA OF TEMPORARY CROSSING. PROVIDE SEDIMENT CONTROLS IN ACCORDANCE WITH SWPPP.
4. COVER BELOW ROADWAY AND BORROW PITS.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 12 - ROAD BORING

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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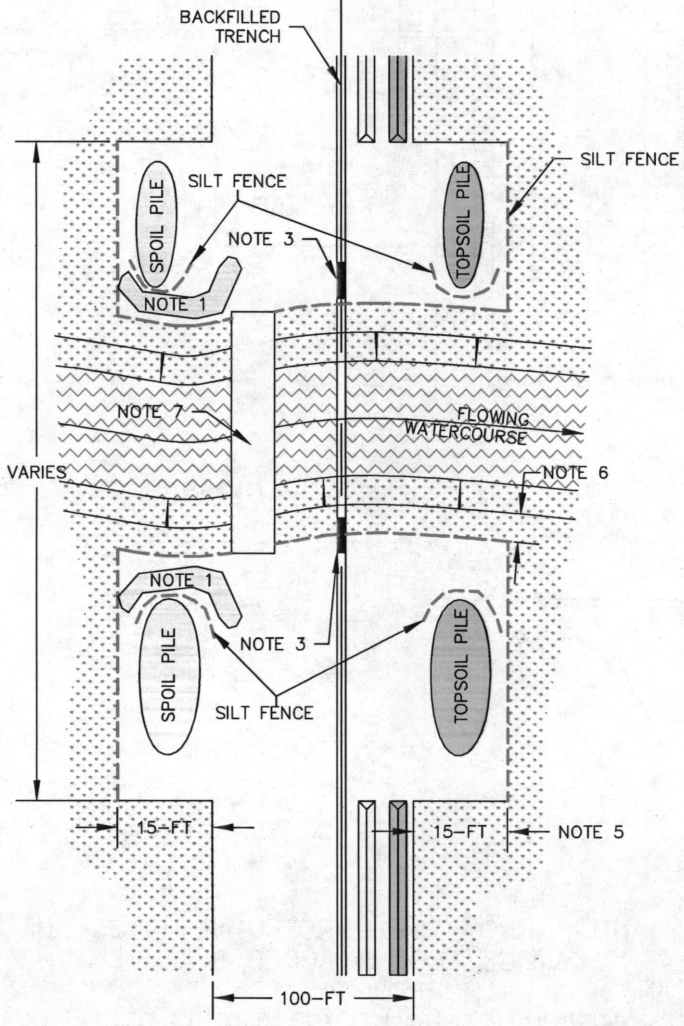

NOTES:
THIS METHOD APPLIES TO FLOWING WATERWAYS.

1. TOPSOIL AND SPOIL SHOULD BE STRIPPED FROM THE TRENCHLINE ONLY IN WETLAND AND RIPARIAN AREAS WHERE THE OPEN CUT METHOD IS APPROPRIATE. STOCKPILE WET MATERIALS IN TEMPORARY WORK AREAS WITHIN SEDIMENT CONTAINMENT BERM CONSTRUCTED FROM SUBSOILS OBTAINED FROM THE STRIPPED ROW.
2. NO HEAVY SILT LADEN WATER SHALL BE DISCHARGED TO THE WATERBODY. USE STRAW BALE DEWATERING STRUCTURES TO TREAT WATER PUMPED FROM THE TRENCH.
3. DITCH PLUGS MUST REMAIN INPLACE TO SEPARATE THE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL BACKFILL IS COMPLETE. CONTRACTOR SHALL EXCAVATE TRENCH IN CROSSING AS EXPEDIENTLY AS POSSIBLE AND INSTALL PIPE TO REDUCE DURATION OF WORK IN WATERBODY. TRENCH PLUGS SHALL BE INSTALLED UP SLOPE FROM SLOPE BREAKERS ADJACENT TO CROSSING.
4. CONTRACTOR SHALL RESTORE WATERBODY CHANNEL AND BANKS TO PRECONSTRUCTION CONTOUR, UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER. INSTALL EROSION CONTROLS AT CROSSING AS PROVIDED IN THE SWPPP. MAINTAIN STORMWATER BMPS UNTIL ADJACENT ROW IS STABILIZED.
5. PROVIDE ADDITIONAL WORKSPACE WHEN INDICATED ON THE CONSTRUCTION PLANS FOR STORAGE OF TOPSOIL AND SPOIL EXCAVATED FROM THE CROSSING. DO NOT STOCKPILE TOPSOIL OR SPOIL WITHIN THE WATERWAY.
6. PROVIDE A 10-FT BUFFER BETWEEN STRIPPED AREA AND TOP OF STREAM BANK. STRIPPING WITHIN WATERCOURSE SHOULD BE LIMITED TO THE AREA OF TEMPORARY CROSSING. PROVIDE SEDIMENT CONTROLS WITHIN THE WATERCOURSE IN ACCORDANCE WITH SWPPP.
7. INSTALL TEMPORARY CROSSING (OPTIONAL) OVER WATERWAY AS REQUIRED FOR SITE SPECIFIC CONDITIONS.
8. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

VANTAGE WEST SPUR PIPELINE PROJECT
ENVIRO. TYPICAL 13 - FLOWING WATERCOURSE CROSSING

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

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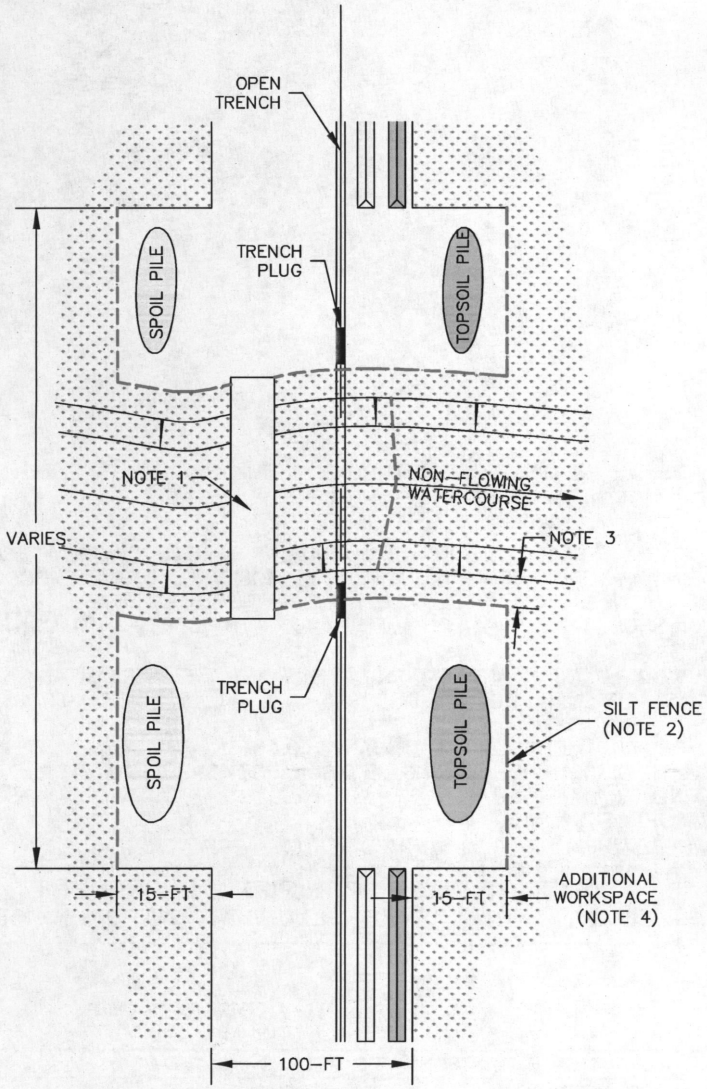

NOTES:
THIS METHOD APPLIES TO NON-FLOWING WATERWAYS.

1. INSTALL TEMPORARY CROSSING (OPTIONAL) OVER WATERWAY AS REQUIRED FOR SITE SPECIFIC CONDITIONS.
2. INSTALL SILT FENCE OR OTHER EROSION CONTROLS IN ACCORDANCE WITH THE SWPPP. SEDIMENT CONTROLS TO BE INSTALLED ALONG STRIPPING LIMITS TO BE MAINTAINED UNTIL CONSTRUCTION OF THE CROSSING IS COMPLETED. UPON COMPLETION OF CROSSING RECLAMATION REINSTALL AND MAINTAIN SEDIMENT AND EROSION CONTROLS UNTIL CROSSING AREA IS STABILIZED.
3. PROVIDE A 10-FT BUFFER BETWEEN STRIPPED AREA AND TOP OF STREAM BANK. STRIPPING WITHIN WATERCOURSE SHOULD BE LIMITED TO THE AREA OF TEMPORARY CROSSING. PROVIDE SEDIMENT CONTROLS WITHIN THE WATERCOURSE IN ACCORDANCE WITH SWPPP.
4. PROVIDE ADDITIONAL WORKSPACE WHEN INDICATED ON THE CONSTRUCTION PLANS FOR STORAGE OF TOPSOIL AND SPOIL EXCAVATED FROM THE CROSSING. DO NOT STOCKPILE TOPSOIL OR SPOIL WITHIN THE WATERWAY.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

VANTAGE WEST SPUR PIPELINE PROJECT
ENVIRO. TYPICAL 14 - NON-FLOWING WATERCOURSE X-ING

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

FILE:VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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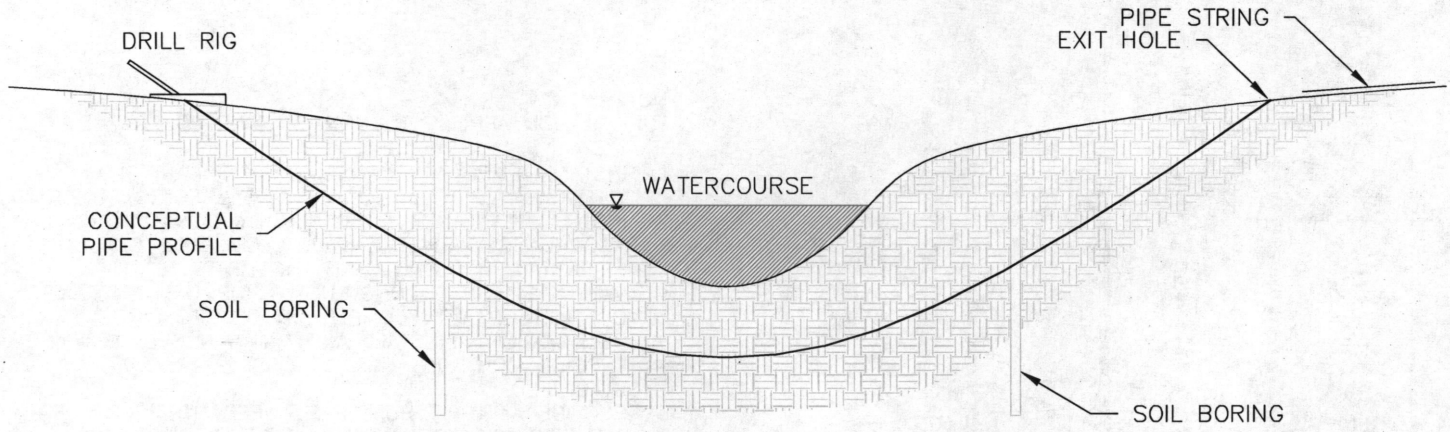

NOTES:

USE DIRECTIONAL BORING METHOD FOR WATERCOURSES AND WETLANDS WHERE OPEN CUT METHOD IS NOT APPROVED. PIPELINE WOULD BE INSTALLED AT CROSSING BY DRILLING A PILOT HOLE, REAMING THE HOLE AND PIPE PULL BACK.

1. CONTRACTOR SHALL PERFORM GEOTECHNICAL INVESTIGATION TO CHARACTERIZE SUBSURFACE CONDITIONS AND DETERMINE FEASIBILITY FOR DIRECTIONAL BORING METHOD. DIRECTIONAL BORING MAY BE PROBLEMATIC IF UNCONSOLIDATED GRAVELS OCCUR.
2. CONTRACTOR SHALL PROVIDE BORE LOCATION PLAN TO PROJECT ENGINEER FOR APPROVAL. THE PLAN SHOULD PROVIDE LOCATIONS OF MUD CONTAINMENT AND STORMWATER BMPS. PLAN SHOULD IDENTIFY EQUIPMENT AND CONTINGENCIES TO CONTAIN MUD IN THE EVENT OF A RELEASE.
3. MAINTAIN A BUFFER ZONE (10–FT MIN.) BETWEEN BOTH THE BORING LOCATION AND EXIT LOCATIONS AND THE STREAMBANK. PROVIDE STORMWATER BMPS IN ACCORDANCE WITH THE SWPPP AS APPROVED. DO NOT STRIP TOPSOIL OR VEGETATION FROM THE BUFFER ZONE.
4. MANAGE DRILL MUD TO PREVENT DISCHARGE TO WATERCOURSE. PROVIDE MUD STORAGE IN TANKS OR PITS, FULL TIME MONITORING SHOULD BE PROVIDED TO DETECT RELEASE TO STREAM. DISCONTINUE BORING IF DISCHARGE IS DETECTED. DRILL MUD SHOULD CONSIST OF BENTONITE WITHOUT ANY ADDITIVES, UNLESS APPROVED.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.
6. THIS BORING METHOD MAY BE APPLIED IN OTHER SITUATIONS WHERE THE OPEN CUT METHOD IS NOT APPROVED (E.G., GRASSLAND EASEMENTS, EXCLUSION ZONES).

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 15 - BORING UNDER A WATERCOURSE

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

FILE:VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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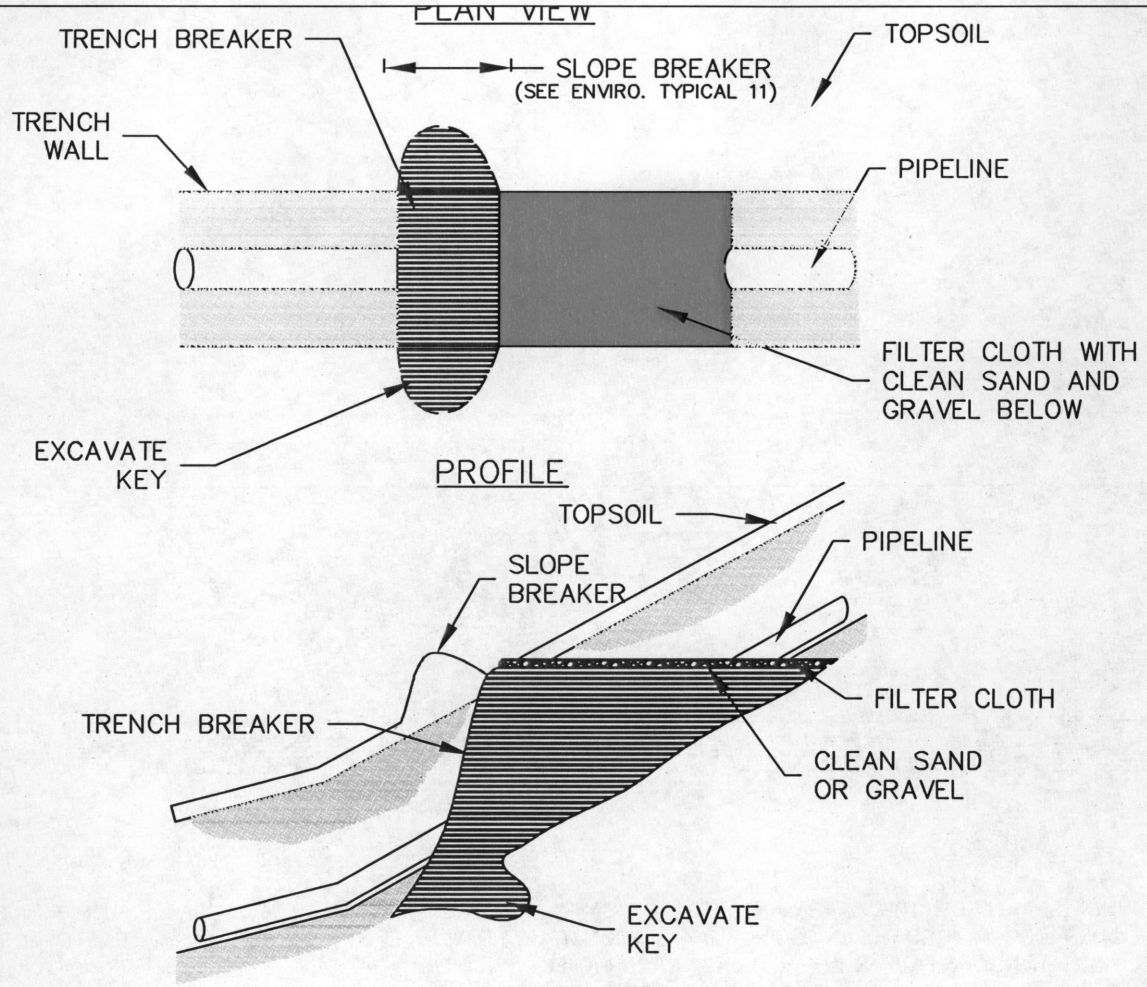

NOTES:

1. INSTALL TRENCH BREAKER ON MODERATE/STEEP SLOPES TO CONTROL SEEPAGE CHANNELING ALONG THE TRENCH LINE AND PREVENT EROSION OF PADDING AND BACKFILL MATERIAL.
2. TRENCH BREAKERS TO BE CONSTRUCTED OF EITHER SANDBAGS (MIXTURE OF SAND AND CEMENT 6:1), BENTONITE, POLYURETHANE FOAM, OR EQUIVALENT MATERIALS TO PROVIDE A BARRIER TO WATER SEEPAGE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
3. EXCAVATE KEYS INTO TRENCH BOTTOM AND SIDES TO THE EXTENT FEASIBLE FOR ADDED STABILITY.
4. THE DRAWINGS ABOVE PROVIDE A SCHEMATIC REPRESENTATION OF TRENCH BREAKER INSTALLATION. FINAL LOCATIONS AND DESIGN OF TRENCH BREAKERS WILL BE DETERMINED BY VANTAGE'S ENVIRONMENTAL INSPECTOR BASED ON SITE-SPECIFIC CONDITIONS AT THE TIME OF CONSTRUCTION.
5. INSTALL TRENCH BREAKER AS INDICATED IN THE ENVIRONMENTAL TYPICAL ABOVE TO SLOPE DOWNHILL TO ALLOW DRAINAGE TO THE SLOPE BREAKER AS ILLUSTRATED IN ENVIRONMENTAL TYPICAL 11..
6. INSTALL A PREFABRICATED DRAIN OR A LAYER OF SAND OR GRAVEL COVERED WITH FILTER CLOTH OVER THE BREAKER.
7. INSTALL TRENCH BREAKERS AT LOCATIONS ALONG THE TRENCH WHERE THE PROFILE IS 5% SLOPE OR GREATER. INSTALL TRENCH BREAKERS AT LOCATIONS AT THE BASE OF SLOPE ADJACENT TO WATERBODIES AND WETLANDS WHERE NEEDED TO AVOID DRAINING OF WETLANDS INTO TRENCH.
8. FINAL LOCATIONS FOR TRENCH BREAKERS TO BE DETERMINED BY PROJECT ENGINEER BASED ON SITE SPECIFIC CONDITIONS. TYPICAL SPACING REQUIREMENT ARE AS FOLLOWS:
   - 5 TO 15 % SLOPE – MINIMUM 300 FT SPACING
   - 15 TO 30 % SLOPE – MINIMUM 200 FT. SPACING
   - GREATER THAN 30 % SLOPE – MINIMUM 75 FT SPACING.
9. BACKFILL DOWNSLOPE SIDE OF TRENCH BREAKER PRIOR TO PLACING FILL ON UPSLOPE SIDE OF TRENCH BREAKER.
10. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 16 - TRENCH BREAKERS

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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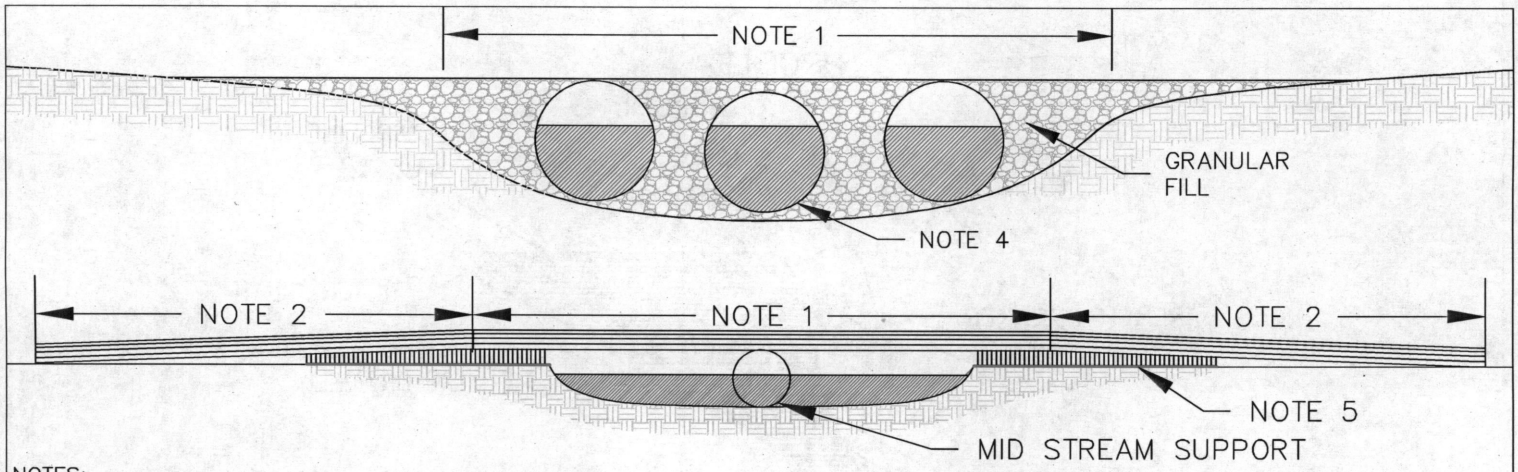

NOTES:

1. BRIDGE MUST SPAN FROM TOP OF BANK TO TOP OF BANK. CONSTRUCT BRIDGE IN ACCORDANCE WITH REQUIREMENTS IN CONSTRUCTION DOCUMENTS. THE CROSSING MAY BE CONSTRUCTED WITH EITHER STRUCTURAL MATTING OR USING IN–STREAM CULVERT AND GRANULAR FILL AS APPROVED BY THE PROJECT ENGINEER. THE BRIDGE MUST BE FIRMLY ANCHORED TO PREVENT IT FROM BEING TRANSPORTED OR ERODED DOWNSTREAM DURING HIGH FLOW.
2. CONSTRUCT BRIDGE RAMPS USING STRUCTURAL MATTING AND MATCH GRADE AT EDGE OF STREAMBANK BUFFER. IF CONDITIONS PROHIBIT WOOD OR METAL RAMPS, EARTHEN RAMPS MAY BE USED AS APPROVED. SUPPORT MUST BE PROVIDED AT TOP OF BANK AND UNDER SPAN IF SETTLEMENT OCCURS.
3. INSPECT BRIDGE OPENING PERIODICALLY AND FOLLOWING RAINFALLS OF OVER ½". REMOVE ANY DEBRIS RESTRICTING FLOW. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE SWPPP.
4. IF GRANULAR FILL IS USED IN CHANNEL PROVIDE ADEQUATE CULVERT CAPACITY FOR ANTICIPATED FLOW. REMOVE ALL FILL FROM CHANNEL AND RESTORE TO ORIGINAL CONTOUR.
5. BRIDGE SUPPORT MATERIAL SHALL BE COMPACT SUBSOIL OR ALTERNATIVE. GEOTECHNICAL CLOTH BUFFER MAY BE REQUIRED TO PREVENT THE ADMIXING OF SOILS, AT THE DIRECTION OF THE ON–SITE ENVIRONMENTAL INSPECTOR.
6. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

VANTAGE WEST SPUR PIPELINE PROJECT
ENVIRO. TYPICAL 17 - TYPICAL BRIDGE DETAILS

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

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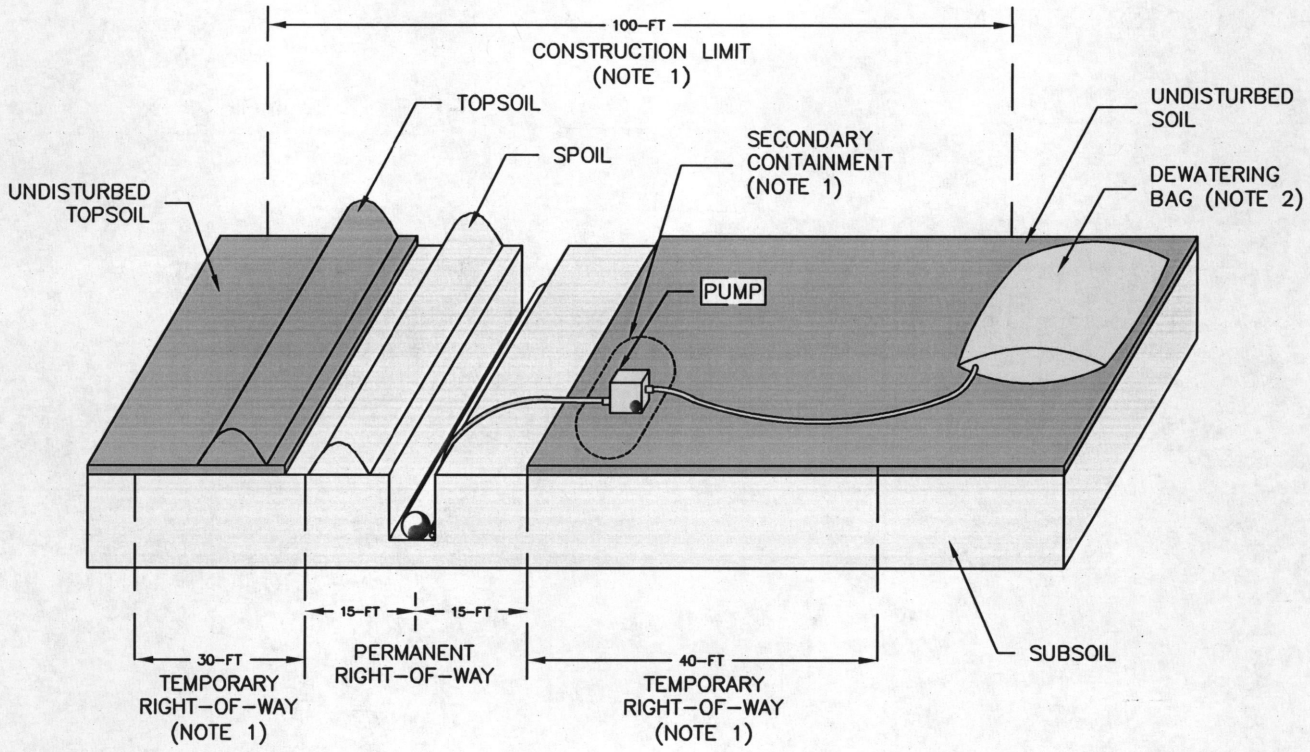

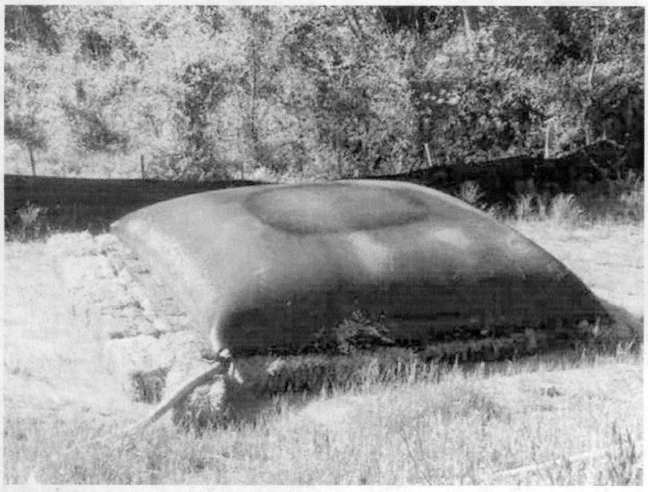

NOTES:

1. WATER PUMPS SHALL BE CONTAINED WITHIN SECONDARY CONTAINMENT DEVICES WHILE WORKING IN WETLAND AREAS.
2. WATER DISCHARGES SHOULD BE DIRECTED TO WELL VEGETATED UPLAND AREAS.
3. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 18 - DEWATERING BAG

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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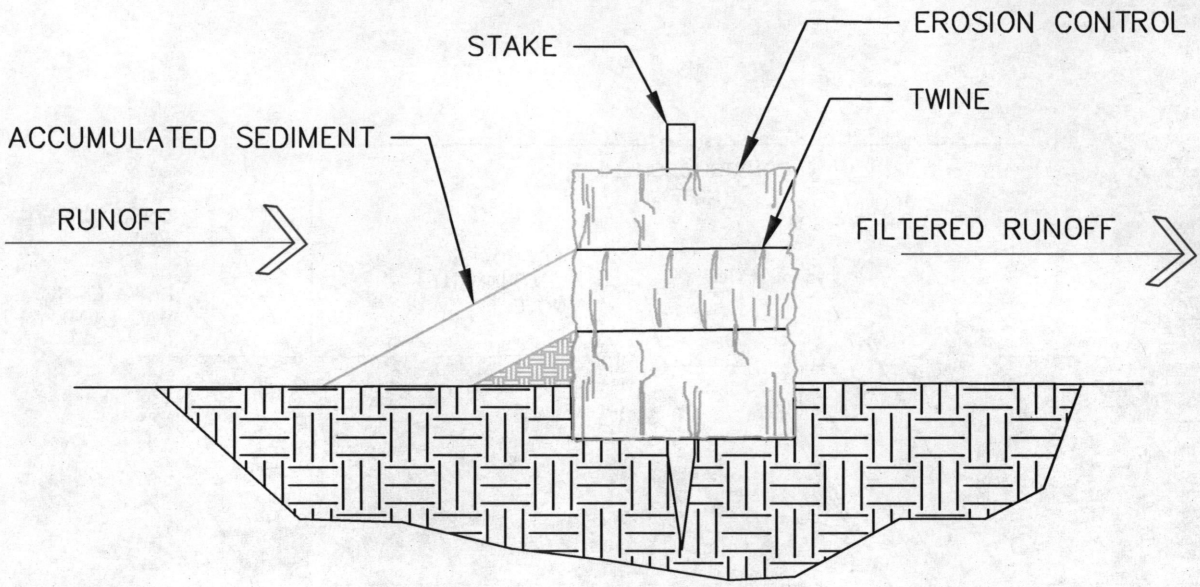

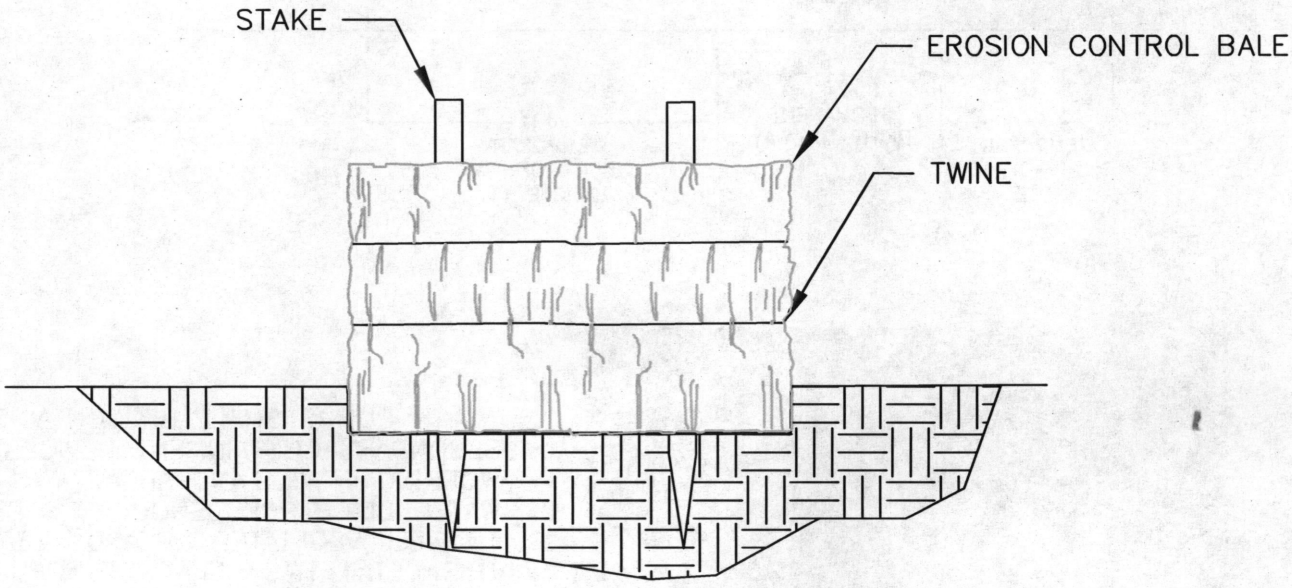

NOTES:

1. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF OF THE EXPOSED BALE HEIGHT.
2. CONSTRUCT BALE DITCH CHECKS OF WHEAT STRAW, OAT STRAW, PRAIRIE HAY OR BROMEGRASS HAY THAT IS FREE OF NOXIOUS WEEDS.
3. STAKES USED TO ANCHOR THE BALES SHOULD BE MADE OF A HARDWOOD MATERIAL WITH MINIMUM DIMENSIONS: 2 INCHES SQUARE BY 4 FEET LONG.
4. BIODEGRADABLE TWINE SHOULD BE USED TO BIND BALES.
5. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 19 - TYPICAL STRAW BALE INSTALLATION

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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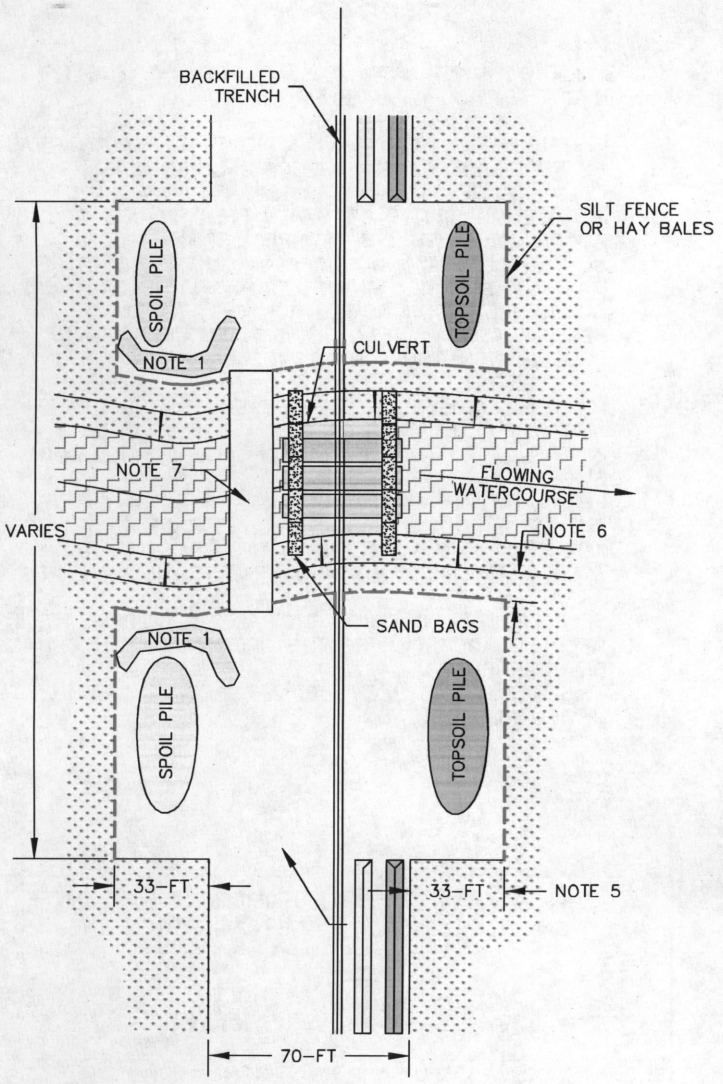

NOTES:
THIS METHOD APPLIES TO FLOWING WATERWAYS.

1. TOPSOIL AND SPOIL SHOULD BE STRIPPED FROM THE TRENCHLINE ONLY IN WETLAND AND RIPARIAN AREAS WHERE THE OPEN CUT METHOD IS APPROPRIATE. STOCKPILE WET MATERIALS IN TEMPORARY WORK AREA WITHIN SEDIMENT CONTAINMENT BERM CONSTRUCTED FROM SUBSOILS OBTAINED FROM THE STRIPPED ROW.
2. USE SANDBAGS TO RESTRICT WATER FLOW THROUGH CULVERTS.
3. NO HEAVY SILT LADEN WATER SHALL BE DISCHARGED TO THE WATERBODY. USE A STRAWBALE DEWATERING STRUCTURE OR A DEWATERING BAG TO TREAT WATER PUMPED FROM THE TRENCH.
4. CONTRACTOR SHALL RESTORE WATERBODY CHANNEL AND BANKS TO PRECONSTRUCTION CONTOUR, UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER. INSTALL EROSION CONTROLS AT CROSSING AS PROVIDED IN THE SWPPP. MAINTAIN STORMWATER BMPS UNTIL ADJACENT ROW IS STABILIZED.
5. PROVIDE ADDITIONAL WORKSPACE WHEN INDICATED ON THE CONSTRUCTION PLANS FOR STORAGE OF TOPSOIL AND SPOIL EXCAVATED FROM THE CROSSING. DO NOT STOCKPILE TOPSOIL OR SPOIL WITHIN THE WATERWAY.
6. PROVIDE A 10-FT BUFFER BETWEEN STRIPPED AREA AND TOP OF STREAM BANK. STRIPPING WITHIN WATERCOURSE SHOULD BE LIMITED TO THE AREA OF TEMPORARY CROSSING. PROVIDE SEDIMENT CONTROLS WITHIN THE WATERCOURSE IN ACCORDANCE WITH SWPPP.
7. INSTALL TEMPORARY CROSSING (OPTIONAL) OVER WATERWAY AS REQUIRED FOR SITE SPECIFIC CONDITIONS.
8. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

VANTAGE WEST SPUR PIPELINE PROJECT
ENVIRO. TYPICAL 20 - FLUME METHOD

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

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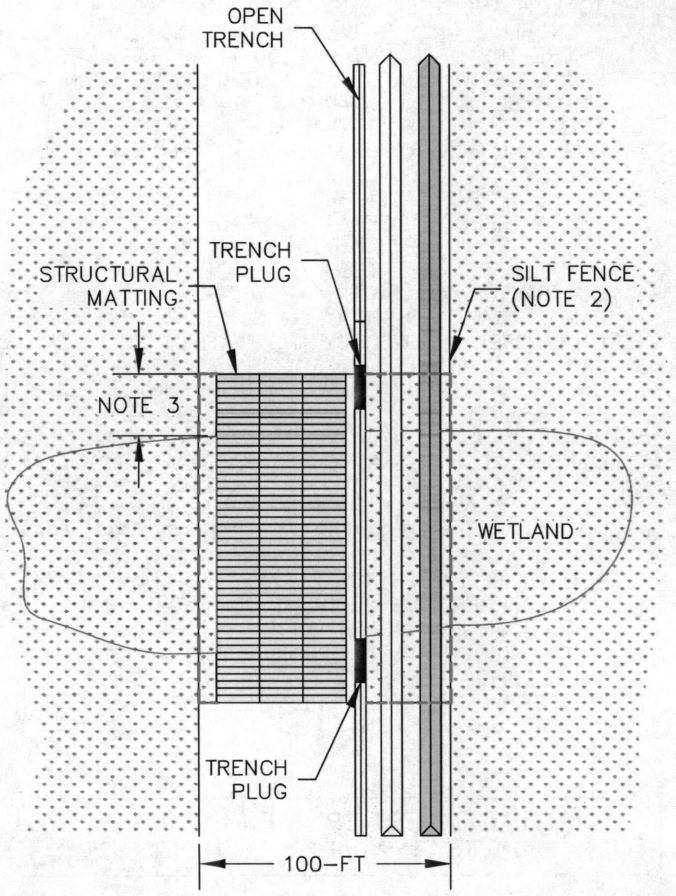

NOTES:
THIS METHOD APPLIES TO WETLAND AREAS WHERE THE OPEN CUT METHOD IS APPROPRIATE.

1. INSTALL STRUCTURAL MATTING OVER WETLAND AREAS AS REQUIRED FOR SITE-SPECIFIC CONDITIONS.
2. FIELD LOCATE STORMWATER RUNOFF AREAS AND INSTALL SILT FENCE OR OTHER EROSION CONTROLS IN ACCORDANCE WITH THE SWPPP. SEDIMENT CONTROLS TO BE INSTALLED ALONG STRIPPING LIMITS ARE TO BE MAINTAINED UNTIL CONSTRUCTION OF THE CROSSING IS COMPLETED. UPON COMPLETION OF CROSSING RECLAMATION, REINSTALL AND MAINTAIN SEDIMENT AND EROSION CONTROLS UNTIL CROSSING AREA IS STABILIZED.
3. PROVIDE A 10-FT BUFFER BETWEEN STRIPPED AREA AND WETLAND.
4. INSTALL SEDIMENT CONTROLS IN ACCORDANCE WITH SWPPP.
5. PROVIDE ADDITIONAL WORKSPACE WHEN INDICATED ON THE CONSTRUCTION PLANS FOR STORAGE OF TOPSOIL AND SPOIL EXCAVATED FROM THE CROSSING. DO NOT STOCKPILE TOPSOIL OR SPOIL WITHIN THE WETLAND AREA.
6. SEE DETAIL 5 OR 7 FOR STRIPPING REQUIREMENTS IN WETLAND AREAS WHERE THE OPEN CUT METHOD HAS BEEN APPROVED.
7. THIS DETAIL HAS BEEN PREPARED FOR ENVIRONMENTAL REVIEW PURPOSES ONLY.

VANTAGE WEST SPUR PIPELINE PROJECT
ENVIRO. TYPICAL 21 - WETLAND CROSSING

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

FILE:VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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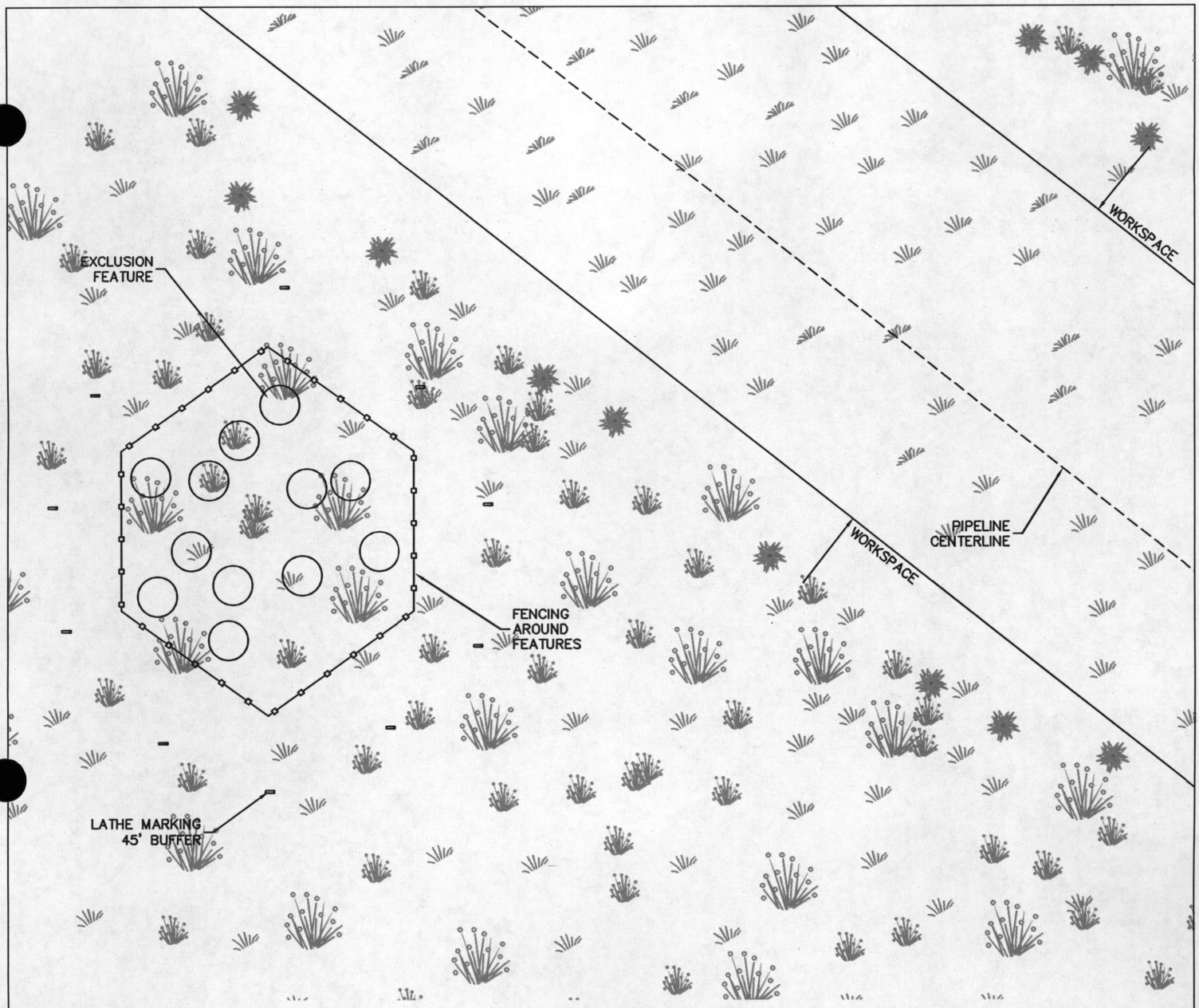

NOTES:

1. FENCING WILL BE PLACED AND MAINTAINED BETWEEN THE EXCLUSION FEATURES AND CONSTRUCTION ACTIVITY THROUGHOUT CONSTRUCTION.
2. ENVIRONMENTAL INSPECTOR TO BE PRESENT WHEN FENCE IS PLACED.
3. NO GROUND DISTURBANCE, EQUIPMENT TRAFFIC, OR FOOT TRAFFIC BEYOND THE LIMITS OF THE FENCE.

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

VANTAGE WEST SPUR PIPELINE PROJECT

ENVIRO. TYPICAL 22 - EXCLUSION FEATURES

FILE: VANTAGE_WESTSPUR_EPP_DETAILS_043015.DWG

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