

October 8, 2009

Pecan Pipeline North Dakota, Inc.
Attn: Mr. Greg Jacobsen, Sr. Landman
600 17th Street, Suite 1000N
Denver, Colorado 80202

SWCA Project Number: 15086

RE: OHWM and Wetland Delineation of the Little Knife River Headwaters

Dear Mr. Jacobsen,

SWCA Environmental Consultants (SWCA) completed an Ordinary High Water Mark (OHWM) and Wetland Delineation of the Little Knife River headwaters located directly north and south of U.S. Highway 2, east of Stanley, Mountrail County, North Dakota. This report provides a description of methods used by SWCA Ecologist Mike Cook to delineate "waters of the U.S.," as well as the results of SWCA's survey.

METHODS

Survey Area

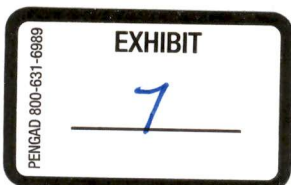
SWCA conducted an OHWM and wetland delineation survey on October 6, 2009. Ecologist Mike Cook surveyed an area encompassing an approximate 100-foot right-of-way (ROW) area. The proposed pipeline ROW travels in a northerly direction from the south of U.S. Highway 2 to the north side of the highway east of Stanley, North Dakota.

According to the National Weather Service, 1.49 inches of precipitation accumulated between October 1 and 6, 2009, at the Minot, North Dakota, monitoring station. This level of precipitation represents an approximately 1.14-inch departure from normal.

Prior to visiting the survey area, SWCA conducted a review of available background site information, including aerial imagery, National Wetlands Inventory (NWI) data, and U.S. Geological Survey (USGS) topographic quadrangle maps.

Wetland Delineation

SWCA conducted delineations in accordance with guidelines found in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (U.S. Army Corps of Engineers [USACE] 2008). Wetlands and OHWMs, if present, were delineated



within the 100-foot ROW according to the methods listed below. For an area to be considered a wetland, it must exhibit three criteria: the presence of hydric soils, wetland hydrology, and a vegetative community composed of >50% hydrophytes. SWCA placed red pin flags at the outer most extent of each wetland delineated.

Ordinary High Water Mark Delineation

SWCA used several different indicators to determine the proposed¹ outer limit of the OHWM. These indicators included a clear, natural line visible on the bank; shelving; changes in soil characteristics; the destruction of terrestrial vegetation; the presence of litter and debris; and watermarks on structures which are inundated during normal high water conditions.

Geographic Referencing

SWCA used a Trimble Geo XT global positioning system (GPS) unit to geographically record data points, and wetland and OHWM boundaries observed during the field survey. This unit typically has real-time and post-processed sub-meter accuracy. ArcGIS v. 9.3 (ESRI, Redlands, CA) was used to analyze collected GPS data, calculate the area of delineated features, and generate maps of the project area.

RESULTS

Wetlands

SWCA delineated two palustrine emergent wetlands (PEM) found within the 100-foot ROW. One wetland is located directly south of U.S. Highway 2 while the other wetland is located to the north of U.S. Highway 2. The two wetlands are hydrologically connected to each other via two concrete culverts which facilitate flow underneath U.S. Highway 2.

WET 1:

The hydrophytic plant community in this wetland was dominated by reed canarygrass (*Phalaris arundinacea*) (Figure 1). Hydrologic indicators within this wetland included soil saturation at the surface and the presence of sediment deposits. Soils within the wetland satisfied at least one hydric soil indicator (i.e., USACE Indicator F8: Redox Depressions). The soil profile is described as follows:

- At a depth of 0 to 10 inches, the matrix color was 10YR 2/1 with 5 percent 10YR 5/8 redoximorphic concentrations.
- Soil texture was noted as being a clay loam.

¹ The United States Corps of Engineers makes all final decisions regarding federal jurisdiction.



Figure 1. A representative view of WET 1 located to the south of U.S. Highway 2. Note the concrete culvert which hydrologically connects WET 1 and WET 2.

WET 2:

The hydrophytic plant community in this wetland was dominated by softstem bulrush (*Schoenoplectus tabernaemontani*) (Figure 2). Hydrologic indicators within this wetland included standing water to a depth of approximately 3 inches, water-stained organic material, and the presence of sediment deposits. Soils within the wetland satisfied at least one hydric soil indicator (i.e., USACE Indicator F8: Redox Depressions). The soil profile was recorded toward the wetland/upland border and is described as follows:

- At a depth of 0 to 10 inches, the matrix color was 10YR 2/1 with 5 percent 10YR 5/8 redoximorphic concentrations.
- Soil texture was noted as being a clay loam.



Figure 2. A representative view of WET 2 to the north of U.S. Highway 2. Note the two concrete culverts in the foreground.

OHWM:

No OHWM could be delineated due to the absence of applicable indicators including a clear, natural line visible on the bank; shelving; changes in soil characteristics; the destruction of terrestrial vegetation; the presence of litter and debris; and watermarks on structures which are inundated during normal high water conditions. Because such indicators were not observed within the project area, these areas were considered wetlands and delineated accordingly.

CONCLUSIONS

SWCA completed an OHWM and wetland delineation on October 6, 2009, at the headwaters of the Little Knife River (Mountrail County, North Dakota).

- No OHWM could be delineated due to a lack of applicable OHWM indicators.
- Two PEM wetlands were delineated within the project area.

Please contact me at 936.645.6830 or mcook@swca.com should you have any further questions regarding the information gathered during SWCA's field survey.

Sincerely,



Michael J. Cook
Ecologist-Bismarck Natural Resources
SWCA Environmental Consultants

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REFERENCES

U.S. Army Corps of Engineers. 2008. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*. Edited by J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-30. Vicksburg, MS: U.S. Army Engineer Research and Development Center.