Wetland Delineation Report

Amenia, North Dakota

Prepared for
Moore Engineering, Inc.

June 2019

Appendix D-4

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Note: appendices and some figures have been removed from this report for Appendix D of the EA, however they are available upon request to the ND NRCS.

1.0 Introduction

Barr Engineering Co. (Barr) was retained by Moore Engineering, Inc. to complete a wetland delineation in preparation for evaluation of potential impacts associated with features of a levee system that will be built around the town of Amenia, North Dakota. The proposed project is located west of County Road 18 in Cass County. The evaluation area is within Sections 23, 24, 25, and 26 of Township 141 North, Range 52 West. See **Figure 1** for a project location map.

On May 30, 2019, Barr conducted a wetland delineation within the evaluation area to assist with the planning activities. This Wetland Delineation Report has been prepared in accordance with the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual ("1987 Manual", USACE, 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE, 2010).

This report includes general environmental information (Section 2.0), descriptions of the delineated wetland area (Section 3.0), and a discussion of regulations and the administering authorities (Section 4.0). The **Tables** section includes the precipitation data. The **Figures** section includes the Site Location Map, Site Topography Map, Water Resources Map (NWI and NHD) Maps, Soil Survey Map, Wetland Delineation Maps, and Hydrologic Connections Map. **Appendix A** includes Wetland Data Forms, site photographs are included in **Appendix B,** and an aerial imagery review is provided in **Appendix C**.

2.0 General Environmental Setting

2.1 Site Description

The wetland evaluation area includes the construction limits for the levee system. The project area is located around the town of Amenia, North Dakota. A majority of the evaluation area consists of active agriculture land (**Figure 1**).

2.2 Site Topography

The topography within the evaluation area and the surrounding area is relatively flat. The evaluation area slopes slightly from west to east. Elevations within the evaluation area ranges from 948 to 956 feet (**Figure 2**).

2.3 Precipitation

Recent precipitation data were compared to historic data for evaluating annual and monthly deviations from normal conditions. Precipitation data were obtained from the Natural Resources Conservation Service, Agricultural Applied Climate Information Service (http://agacis.rcc-acis.org/?fips=38017) for wetlands in Cass County, Township 140 North, Range 49 West, Section 24.

Antecedent (preceding) moisture conditions were above the normal range based on precipitation during the three months prior to the May 30, 2019 site visit (**Table 1**). The annual precipitation for 2017 was below the normal range and the annual precipitation for 2018 was within the normal range. (**Table 2)**.

2.4 National Wetland Inventory and Water Resources

The NWI Map identifies one wetland within the evaluation area (**Figure 3**). The wetland community mapped within the evaluation area is freshwater emergent wetland and is located on the east side of the evaluation area. This wetland is listed with the Cowardin "x" modifier suggesting that this wetland was formed by excavation. The wetland is located in a roadside ditch adjacent to County Road 18. The USGS does not map any rivers, streams, or ditches within the evaluation but does map the Rush River just north of the evaluation area and several tributaries to the Rush River around the evaluation area.

2.5 Soil Resources

Soil information for the project site was obtained from the Natural Resources Conservation Service SSURGO Database. The soil map unit ID is labeled on **Figure 4**. The following table summarizes the associated map unit name, hydric classification presence, and hydric classification rating.

Map Unit ID	Map Unit Name	Hydric Classification Presence (%)	Hydric Classification Rating
I119A	Bearden silty clay loam, 0 to 2 percent slopes	10	Somewhat poorly drained
I233A	Fargo silty clay loam, 0 to 1 percent slopes	100	Poorly drained
I371A	Bearden-Kindred silty clay loam, 0 to 2 percent slopes	15	Somewhat poorly drained
I472A	Perella silty clay loam, 0 to 1 percent slopes	90	Poorly drained
I490A	Glyndon-Tiffany silt loams, 0 to 2 percent slopes	20	Poorly drained
I491A	Glacutt-Fargo silty clay loams, 0 to 2 perecnt slopes	35	Somewhat poorly drained
I507A	Glyndon loam, 0 to 2 percent slopes	8	Somewhat poorly drained
I518A	Overly silt loam, 0 to 2 percent slopes	2	Moderately well drained

3.0 Wetland Delineation

3.1 Wetland Delineation and Classification Methods

Wetlands within the evaluation area were delineated and classified during a site visit on May 30, 2019. The wetland delineation was established according to the Routine On-Site Determination Method specified in the U.S. Army Corps of Engineers Wetlands Delineation Manual (1987 Edition) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE, 2010).

The delineated wetland boundaries and sample points were surveyed using a Global Positioning System (GPS) with sub-meter accuracy (**Figures 5.1 and 5.2 provide the location of each wetland in relation to the evaluation area**).

Wetlands were classified using the U.S. Fish and Wildlife Service (USFWS) Cowardin System (Cowardin et al., 1979), the USFWS Circular 39 system (Shaw and Fredine, 1956), and the Eggers and Reed Wetland Classification System (Eggers and Reed, 1977).

Soil borings were conducted in and around wetland areas, to a depth of at least 24 inches below the ground surface where possible. Representative soil samples from each boring were examined for the presence of hydric soil indicators using the Natural Resources Conservation Service (NRCS) hydric soil indicators (Version 8.1). Soil colors (e.g., 7.5YR 4/2, etc.) were determined using a Munsell® soil color chart and noted on the Wetland Data Forms **Appendix A**.

Hydrologic conditions were evaluated at each soil boring, and this information was also noted on the Wetland Data Forms. The dominant plant species were identified, and the corresponding wetland indicator status of each plant species was determined and noted on the Wetland Data Forms (**Appendix A**). Photographs taken at the time of the site visit are provided in **Appendix B**.

3.2 Wetland Descriptions

Eight wetlands were delineated within the wetland evaluation area. These wetlands consisted of four different community types: deep marsh, shallow marsh, fresh (wet) meadow, and seasonally flooded basin. A description of each wetland is provided below, with representative photographs in **Appendix B**. A Wetland Summary Table is provided in **Table 3**. Wetland IDs are labeled on the wetland delineation maps (**Figures 5.1 and 5.2)**.

3.2.1 Wetland A

Wetland A consists of a network of roadside ditches located north of 28th Street SE and east and west of 155th Avenue SE in the town of Amenia (**Figure 5.1**). This wetland consists of a fresh (wet) meadow and shallow marsh communities. The dominant vegetation in the wetland consists of flat-stem spike-rush (*Eleocharis compressa* – FACW), reed canary grass (*Phalaris arundinacea* – FACW), and narrow-leaf cat-tail (*Typha angustifolia* – OBL). Soils in the wetland typically consisted of loam over clay loam and met the hydric soil criteria for A11 depleted below dark surface and F3 depleted matrix. Wetland A receives hydrology from run off. Hydrology in the wetland varied from saturation at the ground surface to approximately 8 inches of inundation during the May 30th visit. The wetland boundary was typically well defined by a steep change in topography that coincided with a change in vegetation to a smooth brome (*Bromus inermis*) dominated grassland or upland agricultural field. Sampling point SP-2 documents the conditions of Wetland A and sampling point SP-1 documents the adjacent upland conditions. The ditches of this wetland are connected via culverts that flow under roads and driveways. Water generally flows from north to south into the ditch located just north of 28th Street SE. The ditch north of 28th Street SE then flows east into an intermittent tributary that drains into the Rush River east of the evaluation area (**Figure 6**).

3.2.2 Wetland B

Wetland B is a seasonally flooded basin located in an enclosed depression in the northeast part of the evaluation area (**Figure 5.1**). The northern 2/3 of the wetland is located in a tilled agriculture field and no vegetation was present. The vegetation in the southern 1/3 of the wetland consists of eastern cottonwood (*Populus deltoides* – FAC) in the shrub layer and flat-stem spike rush, green ash (*Fraxinus pennsylvanica* – FAC), fowl bluegrass (*Poa palustris* – FACW), and reed canary grass in the herbaceous layer. Soils in the wetland typically consisted of silt loam over clay loam and met the hydric soil criteria for A11 depleted below dark surface. Wetland B receives hydrology from precipitation and overland flow. Hydrology in the wetland varied from saturation at the ground surface to approximately 1 - 2 inches of inundation during the May 30th visit. The wetland boundary was defined by a saturation line in the farmed area and a change to weedy upland species and slightly bermed soils in the southern 1/3. Sampling point SP-3 documents the conditions of Wetland A and sampling point SP-4 documents the adjacent upland conditions.

3.2.3 Wetland C

Wetland C is located in a ditch adjacent to a railroad grade and consists of a deep marsh community (**Figure 5.1**). The vegetation in this wetland was dominated by narrow-leaf cat-tail and reed canary grass. South of the evaluation area the wetland also includes green ash trees. Soils consisted of a mucky silt loam that met the hydric soil criteria for F1 loamy mucky mineral. Wetland C receives hydrology from run off. Hydrology in the wetland was observed as inundation of up to two feet during the May 30th visit. The wetland boundary was typically well defined by a steep change in topography. Sampling point SP-5 documents the conditions of Wetland C and sampling point SP-6 documents the adjacent upland conditions. The wetland slopes to the south but appears to be impounded at the southern end of the wetland. No outlet was observed in the wetland.

3.2.4 Wetland D

Wetland D consists of a fresh (wet) meadow community located in a roadside ditch south of 28th Street SE in the western portion of the evaluation area (**Figure 5.1**). The dominant vegetation in the wetland is reed canary grass. Soils in the wetland typically consisted of sandy loam over clay loam and silt loam and met the hydric soil criteria for F6 redox dark surface. Wetland D receives hydrology from run off. Hydrology in the wetland varied from saturation at the ground surface to approximately 1-2 inches of inundation during the May 30th visit. The wetland boundary was typically well defined by a steep change in topography that coincided with a change in vegetation to a smooth brome dominated grassland. Sampling point SP-8 documents the conditions of Wetland D and sampling point SP-9 documents the adjacent upland conditions. Wetland D flows from west to east along 28th Street SE through a series of culverts under driveways and roads. Wetland D flows north into Wetland A via culvert located east of 155th Avenue SE (**Figure 6**).

3.2.5 Wetland E

Wetland E is a seasonally flooded basin located in a depression in the western part of the evaluation area (**Figure 5.2**). Most of the wetland is located in a tilled agriculture field and did not have any vegetation during the May 30th site visit. The eastern fringe of the wetland was located at the edge of the field and the vegetation in this area was dominated by green ash, European buckthorn (*Rhamnus cathartica* - FACU), and reed canary grass. Soils in the wetland typically consisted of loam over clay loam and met the hydric soil criteria for F6 redox dark surface. Wetland E receives hydrology from precipitation and overland flow. Hydrology in the wetland varied from saturation at the ground surface to approximately 12 inches of inundation during the May 30th visit. The area generally slopes from west to east. There is a slight berm located at the eastern field edge that impounds water in Wetland E. The wetland extends outside of the evaluation area to the southeast into a forested area. Based on a review of topography data and site observations there does not appear a surficial outlet for Wetland E. The wetland boundary was defined by a change in topography and lack of saturation during the site visit.

3.2.6 Wetland F

Wetland F is a seasonally flooded basin located in a depression in the southwestern part of the evaluation area (**Figure 5.2**). Most of the wetland is located in a tilled agriculture field and did not have any vegetation during the May 30th site visit. Soils in the wetland typically consisted of clay loam over silt loam over silty clay and met the hydric soil criteria for F6 redox dark surface. Wetland F receives hydrology from precipitation and overland flow. Hydrology in the wetland varied from saturation at the ground surface to approximately 1 - 2 inches of inundation during the May 30th visit. The area generally slopes from west to east. There is a slight berm located at the eastern field edge that impounds water in Wetland F. Based on a review of topography data and site observations there does not appear a surficial outlet for Wetland F. The wetland boundary was defined by a change in topography and lack of saturation during the site visit.

3.2.7 Wetland G

Wetland G is located in a ditch west of 155th Avenue SE and consists of a shallow marsh community (**Figure 5.2**). The vegetation in this wetland was dominated by flat-stem spike-rush and fowl bluegrass. Soils consisted of a loam over silt loam and met the hydric soil criteria for A12 thick dark surface. Wetland G receives hydrology from run off. Hydrology in the wetland was observed as inundation of up to 12 inches during the May 30th visit. The wetland boundary was typically well defined by a steep change in topography and a change in vegetation to a Kentucky blue grass (*Poa pratensis* – FACU) and dandelion (*Taraxacum officinale* – FACU) dominated grassland. Sampling point SP-14 documents the edge of Wetland G and sampling point SP-15 documents the adjacent upland conditions. The wetland slopes to the north and flows through a series of culverts along 155th Avenue SE. The ditch appears to have intermittent flow to the north and appears to go subsurface.

3.2.8 Wetland H

Wetland H consists of a network of roadside ditches located west of County Road 18 near the town of Amenia (**Figures 5.1 and 5.2**). This wetland consists of a fresh (wet) meadow and deep marsh communities. The dominant vegetation in the wetland consists of fowl bluegrass, flat-stem spike-rush, reed canary grass, narrow-leaf cat-tail, and uptight sedge (*Carex stricta* – OBL). Soils in the wetland typically consisted of clay loam and met the hydric soil criteria for A12 thick dark surface. Wetland H receives hydrology from run off. Hydrology in the wetland varied from saturation at the ground surface to approximately 18 inches of inundation during the May 30th visit. The wetland boundary was typically well defined by a steep change in topography that coincided with a change in vegetation to a smooth brome dominated grassland or agricultural field. Sampling point SP-16 documents the conditions of Wetland H and sampling point SP-17 documents the adjacent upland conditions. The ditches are connected via culverts that flow under roads and driveways. Water generally flows from west to east into the ditch located west of County Road 18, then flows north toward 28th Street SE. Wetland H flow under 28th Street SE via culvert into Wetland A (**Figure 6**).

4.0 Regulatory Overview

The USACE regulates the placement of dredge or fill materials into wetlands that are located adjacent to or are hydrologically connected to interstate or navigable waters under the authority of Section 404 of the Clean Water Act. If the USACE has jurisdiction over any portion of a project, they may also review impacts to wetlands under the authority of the National Environmental Policy Act. The USACE should be contacted before altering any wetlands.

This report requests wetland boundary and type concurrence from the USACE. This submittal also is requesting a jurisdictional determination from the USACE with respect to administration of Section 404 of the Clean Water Act.

5.0 References

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U.S. Fish and Wildlife Service. 1956. *Wetlands of the United States Circular 39*. U.S. Government Printing Office, Washington, D.C.

U.S. Army Corps of Engineers and Minnesota Board of Water & Soil Resources. July 1, 2016. *Guidance for Offsite Hydrology/Wetland Determinations*.

Table 1

Antecedent Moisture Conditions Prior to May 30, 2019

Precipitation Worksheet Using NRCS

Precipitation data for target wetland location:

county: **Cass**

nearest community: **Amenia**

township number: **141N**

range number: **52W**

section number: **23, 24, 25, 26**

Aerial photograph or site visit date:

30-May-19

Score using 1971-2000 normal period

values are in inches	first prior month: **Apr-17**	second prior month: **Mar-17**	third prior month: **Feb-17**
estimated precipitation total for this location:	**1.27**	**1.58**	**1.69**
there is a 30% chance this location will have less than:	0.52	0.79	0.34
there is a 30% chance this location will have more than:	1.69	1.4	0.71
type of month: dry normal wet	**normal**	**wet**	**wet**
monthly score	**3 * 2 = 6**	**2 * 3 = 6**	**1 * 3 = 3**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**15 (Wet)**		

Table 2

Precipitation in Comparison to WETS Data

1971-2000 Summary Statistics													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
30%	0.43	0.34	0.79	0.52	1.61	1.94	1.66	1.51	1.21	0.72	0.49	0.35	18.18
70%	0.98	0.72	1.4	1.69	3.15	4.28	3.51	3.06	2.65	2.37	1.3	0.72	23.79
Average	0.81	0.59	1.17	1.4	2.61	3.51	2.88	2.52	2.18	1.97	1.09	0.59	21.32

Year	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
2000	0.33	0.99	1.77	1.33	2.69	11.72	2.44	3.07	3.64	1.96	4.13	0.69	34.76
2001	0.20	0.74	0.26	2.70	2.88	2.73	3.14	2.19	1.45	2.74	1.00	0.22	20.25
2002	0.21	0.12	1.06	1.26	3.87	4.76	5.65	3.73	1.73	1.44	0.15	0.83	24.81
2003	0.26	0.18	0.63	1.32	4.24	4.56	1.72	1.06	1.40	1.34	0.53	1.18	18.42
2004	0.73	0.72	1.58	0.16	6.22	1.07	4.21	2.01	4.69	3.54	0.05	1.01	25.99
2005	1.12	0.61	0.13	0.87	2.42	8.47	1.06	7.52	1.69	2.39	2.84	1.32	30.44
2006	0.37	0.46	1.22	1.28	1.99	1.34	2.23	2.21	3.91	0.96	0.12	1.06	17.15
2007	0.10	0.73	2.18	3.16	3.87	5.78	1.20	2.39	3.39	1.76	0.09	1.59	26.24
2008	0.09	0.67	0.98	2.33	1.89	6.06	1.78	4.55	5.08	4.46	1.13	1.80	30.82
2009	0.55	1.29	4.62	0.81	1.62	2.93	1.18	2.13	2.06	5.44	0.41	1.85	24.89
2010	1.57	0.86	1.41	1.49	2.69	4.26	4.23	2.76	5.82	1.91	0.73	1.75	29.48
2011	0.90	0.08	1.84	2.02	4.30	4.41	4.35	4.26	0.23	0.94	0.26	0.36	23.95
2012	0.58	0.95	0.78	1.10	1.51	2.50	2.88	0.92	0.12	2.22	0.59	0.37	14.52
2013	0.97	1.22	1.44	2.11	7.16	7.73	0.90	0.39	4.39	4.18	0.40	1.21	32.10
2014	0.77	0.11	0.72	3.43	1.99	5.69	1.64	2.11	2.45	0.33	0.71	0.25	20.20
2015	0.40	0.57	0.30	0.98	7.85	2.75	2.78	1.29	1.23	1.19	1.33	0.64	21.31
2016	0.69	0.30	0.96	2.11	1.42	2.45	5.98	1.56	2.60	2.39	1.80	1.27	23.53
2017	0.98	0.79	0.33	1.40	1.14	2.50	1.06	2.30	2.83	0.77	0.33	0.77	15.20
2018	0.21	0.83	1.93	0.37	1.94	4.03	2.86	2.52	2.50	2.70	0.61	1.13	21.63
2019	0.59	1.69	1.58	1.27	M2.04								

Precipitation data from the Fargo Hector Intl AP station located east of the project area.

"M" values refer to missing precipitation data. "T" values indicate trace precipitation amounts.

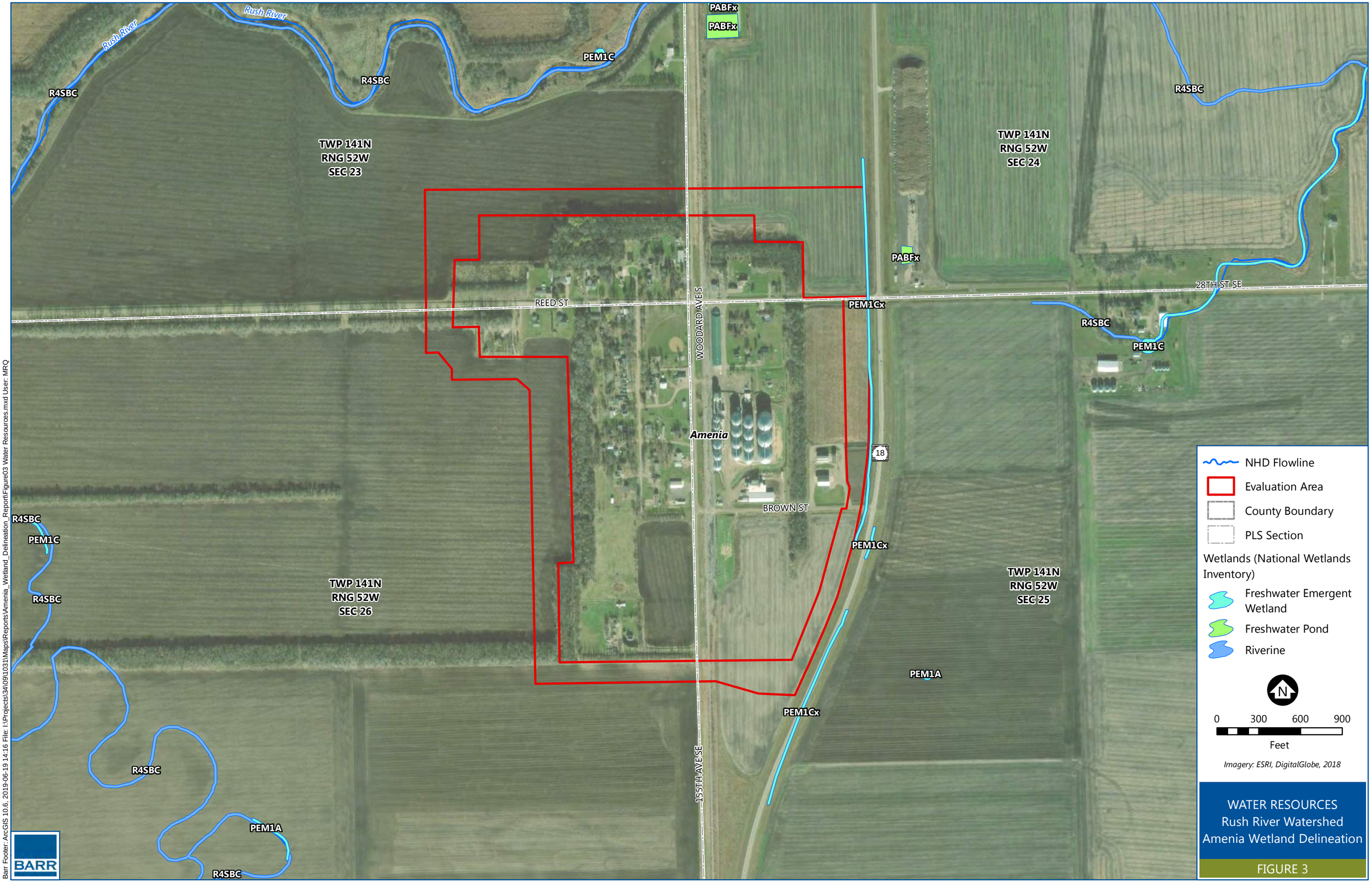
Above normal

Below normal

Normal

Wetland ID	Cowardin	Circular 39	Eggers and Reed	Acres*
A	PEM1B/C	Type 2/3	Fresh (wet) Meadow/Shallow Marsh	0.42
B	PEM1A	Type 1	Seasonally Flooded Basin	0.28
C	PEM1F	Type 4	Deep Marsh	0.10
D	PEM1B	Type 2	Fresh (wet) Meadow	0.02
E	PEMA	Type 1	Seasonally Flooded Basin	1.07
F	PEMA	Type 1	Seasonally Flooded Basin	0.14
G	PEMC	Type 3	Shallow Marsh	0.02
H	PEM1B	Type 2	Fresh (wet) Meadow	0.05
H	PEM1F	Type 4	Deep Marsh	0.05
			Total	2.15

*Area only includes wetland located inside of the evaluation area.



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SP-7
SP-5
SP-6
C
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B
SP-3
SP-4
WOODARD AVE S
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SP-2
SP-1
A
18
H
A
SP-8
D
SP-9
REED ST
CHAFFEE AVE
MILLER ST
STROUD SQ
VAIL ST
WHITNEY ST
Amenia
E
Data Plots
Culvert
Evaluation Area
Delineated Wetlands
Deep Marsh
Fresh (wet) Meadow
Seasonally Flooded Basin
N
0
125
250
375
Feet
Imagery: ESRI, DigitalGlobe, 2018
DELINEATED WETLANDS
Rush River Watershed
Amenia Wetland Delineation
FIGURE 5-1
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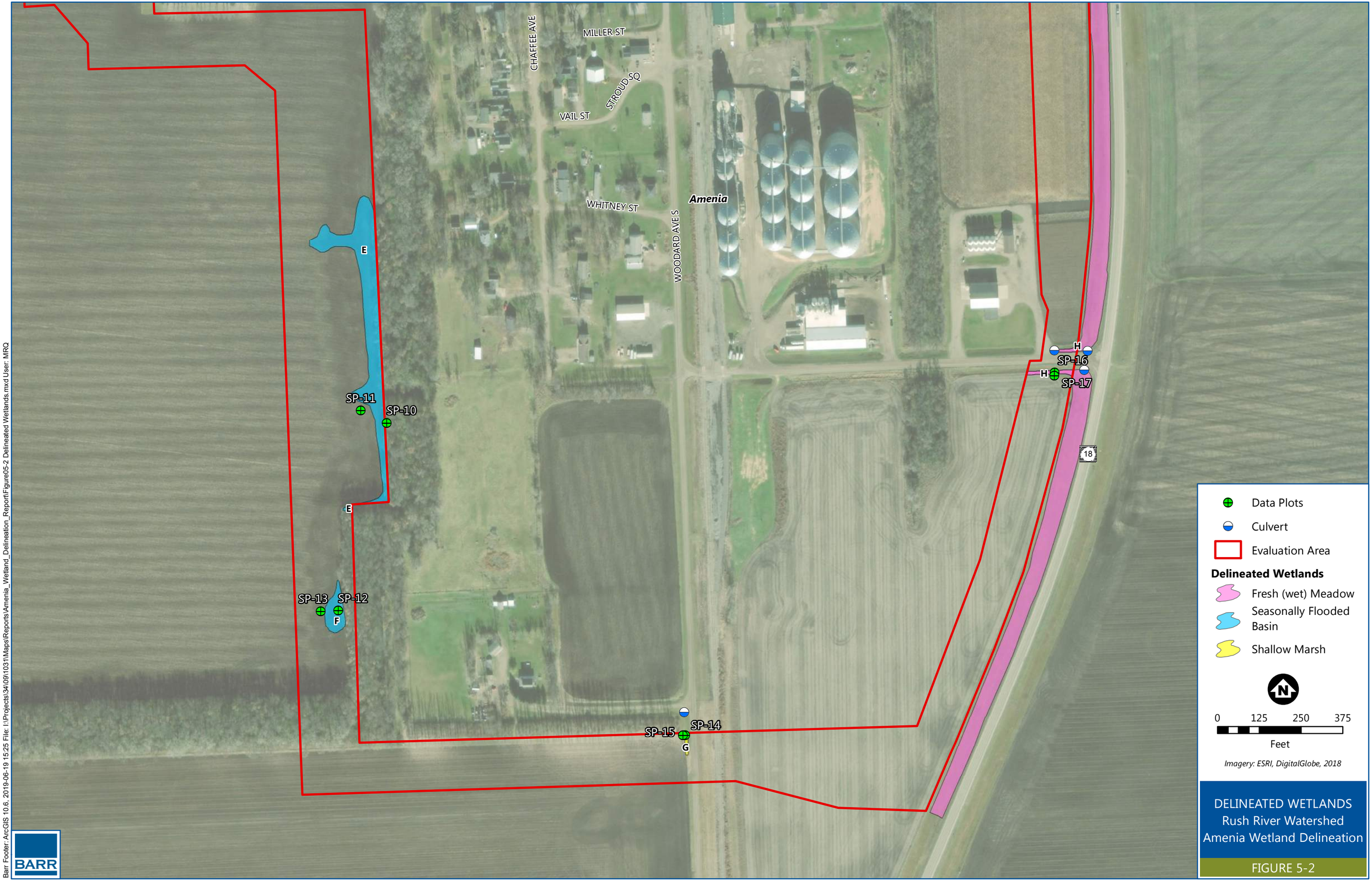
Barr Footer: ArcGIS 10.6, 2019-06-19 15:15 File: I:\Projects\34109\1031\Maps\Reports\Amenia_Wetland_Delineation_Report\Figure05-1 Delineated Wetlands.mxd User: MRQ


CHAFFEE AVE
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Data Plots
Culvert
Evaluation Area
Delineated Wetlands
Fresh (wet) Meadow
Seasonally Flooded Basin
Shallow Marsh
N
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125
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Imagery: ESRI, DigitalGlobe, 2018
DELINEATED WETLANDS
Rush River Watershed
Amenia Wetland Delineation
FIGURE 5-2
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Barr Footer: ArcGIS 10.6, 2019-06-19 15:25 File: I:\Projects\34\09\10311\Maps\Reports\Amenia_Wetland_Delineation_Report\Figure05-2 Delineated Wetlands.mxd User: MRQ

Wetland Functional Assessment for Rush River-Amenia Levee Alternative 1

A wetland delineation was conducted across the project area by Barr Engineering Co. (Barr) on May 30, 2019. Wetlands are located within the Rush River floodplain as well as adjacent to Highway 18 on the east side of the city of Amenia (see Wetland Delineation Report Amenia, North Dakota).

As a follow up to the wetland delineation, field delineated wetlands were assessed using the hydrogoemoprhic approach to wetland functional assessment (HGM) in February 2020. The HGM approach is a method to assess the functional conditions of a specific wetland referenced to data collected from wetlands across a range of physical conditions. Due to the project location within the prairie pothole region, the delineated wetlands were assessed using the NRCS Prairie Pothole HGM Worksheet. The assessment evaluates each wetland on the 6 primary functions of prairie pothole wetlands;

- Water storage
- Groundwater recharge
- Retain particulates
- Remove, convert and sequester dissolved substances
- Plant community residence and carbon cycling
- Faunal habitat

Each wetland function is evaluated in the field and from a desktop perspective. The functions are then scored and given a Functional Capacity Index (FCI) value. The FCI values range from 0 to 1. A score of 0 indicates the wetland has been significantly impacted and no longer functions naturally and 1 meaning the wetland functions naturally. The FCI value is then combined with the wetland area to produce a Functional Capacity Unit (FCU), which in turn provides a basis for determination of impact and mitigation. Each wetland was assessed for its pre-project condition and its projected post-project condition.

The pre-project HGM assessment determined the delineated wetlands have a relatively low functional capacity when compared to other prairie pothole wetlands. Most of the wetlands have been significantly disturbed by agricultural practices or from the creation of roadside ditches. The attached table provides a summary of the FCI and FCU values for each wetland.

A post-project HGM assessment was conducted for wetland impacts associated with Levee Alternative 1 and concluded that the project would result in a loss of functional capacity. Specifically a loss in groundwater storage, removal of dissolved substances, and vegetative diversity. However, the project would also result in an overall increase in nutrient cycling, practical retention vegetative structure, and faunal habitat. This benefit in function would occur as wetlands B and E, two of the largest wetlands would be protected from further agricultural disturbance as majority of the wetland area is located within the leveed area. It is anticipated these wetlands will be reseeded with a native seed mix resulting in an increased wetland function.

In February 2020, the field delineated wetlands were assessed using the hydrogoemoprhic approach to wetland functional assessment (HGM). The HGM approach is a method to assess the functional conditions of a specific wetland referenced to data collected from wetlands across a range of physical conditions. Due to the project location within the prairie pothole region, the delineated wetlands were assessed using the NRCS Prairie Pothole HGM Worksheet. The assessment evaluates each wetland on the 6 primary functions of prairie pothole wetland s;

- Water storage
- Groundwater recharge
- Retain particulates
- Remove, convert and sequester dissolved substances
- Plant community residence and carbon cycling
- Faunal habitat

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Wetland Functional Assessment Summary

Wetland ID	Functions	Pre Project Assessment			Post Project Assessment			Gain or Loss	
		Wetland Acres	FCI	FCU	Wetland Acres	FCI	FCU	FCI	FCU
A	Static	0.42	0.13	0.05	0.29	0.25	0.07	0.13	0.02
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.13	0.05		0.64	0.19	0.52	0.13
	Removal		0.11	0.05		0.23	0.07	0.12	0.02
	Retention		0.12	0.05		0.49	0.14	0.38	0.09
	Plants		0.23	0.10		0.59	0.17	0.36	0.07
	Structure		0.13	0.06		0.55	0.16	0.42	0.10
	Habitat		0.10	0.04		0.20	0.06	0.10	0.01
B	Static	0.28	0.62	0.17	0.19	0.56	0.11	-0.06	-0.07
	Dynamic		0.47	0.13		0.40	0.08	-0.07	-0.05
	Cycling		0.28	0.08		0.28	0.05	0.00	-0.03
	Removal		0.48	0.13		0.42	0.08	-0.05	-0.05
	Retention		0.29	0.08		0.29	0.06	0.00	-0.03
	Plants		0.52	0.15		0.52	0.10	0.00	-0.05
	Structure		0.29	0.08		0.29	0.06	0.00	-0.03
	Habitat		0.20	0.06		0.20	0.04	0.00	-0.02
C	Static	0.1	0.13	0.01	0.05	0.22	0.01	0.09	0.00
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.13	0.01		0.81	0.04	0.68	0.03
	Removal		0.11	0.01		0.06	0.00	-0.05	-0.01
	Retention		0.12	0.01		0.44	0.02	0.32	0.01
	Plants		0.23	0.02		0.58	0.03	0.34	0.01
	Structure		0.13	0.01		0.57	0.03	0.44	0.02
	Habitat		0.10	0.01		0.52	0.03	0.42	0.02
D	Static	0.02	0.13	0.00	0.01	0.21	0.00	0.08	0.00
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.13	0.00		0.61	0.01	0.48	0.00
	Removal		0.11	0.00		0.09	0.00	-0.03	0.00
	Retention		0.12	0.00		0.50	0.00	0.38	0.00
	Plants		0.23	0.00		0.44	0.00	0.21	0.00
	Structure		0.13	0.00		0.45	0.00	0.32	0.00
	Habitat		0.10	0.00		0.49	0.00	0.39	0.00
E	Static	1.07	0.46	0.49	1.01	0.40	0.40	-0.06	-0.09
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.28	0.30		0.28	0.28	0.00	-0.02
	Removal		0.45	0.48		0.36	0.36	-0.09	-0.12
	Retention		0.29	0.31		0.29	0.29	0.00	-0.02
	Plants		0.47	0.50		0.47	0.47	0.00	-0.03
	Structure		0.22	0.23		0.22	0.22	0.00	-0.01
	Habitat		0.15	0.16		0.15	0.15	0.00	-0.01
F	Static	0.14	0.54	0.08	0.00	0.00	0.00	-0.54	-0.08
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.37	0.05		0.00	0.00	0.00	0.00
	Removal		0.49	0.07		0.00	0.00	-0.49	-0.07
	Retention		0.20	0.03		0.00	0.00	-0.20	-0.03
	Plants		0.49	0.07		0.00	0.00	-0.49	-0.07
	Structure		0.22	0.03		0.00	0.00	-0.22	-0.03
	Habitat		0.15	0.02		0.00	0.00	-0.15	-0.02

Wetland ID	Functions	Pre Project Assessment			Post Project Assessment			Gain or Loss	
		Wetland Acres	FCI	FCU	Wetland Acres	FCI	FCU	FCI	FCU
G	Static	0.02	0.13	0.00	0.00	0.00	0.00	-0.13	0.00
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.13	0.00		0.00	0.00	0.00	0.00
	Removal		0.11	0.00		0.00	0.00	-0.11	0.00
	Retention		0.12	0.00		0.00	0.00	-0.12	0.00
	Plants		0.23	0.00		0.00	0.00	-0.23	0.00
	Structure		0.13	0.00		0.00	0.00	-0.13	0.00
	Habitat		0.10	0.00		0.00	0.00	-0.10	0.00
H	Static	0.1	0.13	0.01	0.04	0.18	0.01	0.05	-0.01
	Dynamic		0.00	0.00		0.00	0.00	0.00	0.00
	Cycling		0.13	0.01		0.60	0.02	0.48	0.01
	Removal		0.11	0.01		0.05	0.00	-0.06	-0.01
	Retention		0.12	0.01		0.25	0.01	0.13	0.00
	Plants		0.23	0.02		0.41	0.02	0.18	-0.01
	Structure		0.13	0.01		0.35	0.01	0.21	0.00
	Habitat		0.10	0.01		0.49	0.02	0.39	0.01

ACREAGE			
	Pre-project (ac)	Post-Project (ac)	Mitigation Required (ac)
A	0.42	0.29	0.13
B	0.28	0.19	0.09
C	0.1	0.05	0.05
D	0.02	0.01	0.01
E	1.07	1.01	0.06
F	0.14	0	0.14
G	0.02	0	0.02
H	0.1	0.04	0.06
Net	2.15	1.59	0.56

FUNCTIONS			
	Pre-project (FCU)	Post-Project (FCU)	Mitigation Required (FCU)
Static	0.83	0.60	0.22
Dynamic	0.13	0.08	0.05
Cycling	0.51	0.59	-0.08
Removal	0.76	0.51	0.24
Retention	0.50	0.53	-0.03
Plants	0.87	0.79	0.08
Structure	0.43	0.48	-0.05
Habitat	0.29	0.30	-0.01