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June 29, 2011

PUBLIC SERVICE COMMISSION

Mr. Darrell Nitschke  
Executive Director  
North Dakota Public Service Commission  
600 East Boulevard Avenue, Dept 408  
Bismarck, ND 58505-0480

In re: Enbridge Pipelines (ND) LLC  
Bakken Pipeline Project US  
Case No. PU-10-612  
Our File No.: 31-411-004

Dear Mr. Nitschke:

On May 5, 2011, the Public Service Commission issued a Certificate of Corridor Compatibility Number 118 and Route Permit Number 128 approving Enbridge Pipeline (ND) LLC Bakken Pipeline Project US. However, due to a landowner refusing to grant an easement, it has become necessary for Enbridge to seek a small deviation of the approved route.

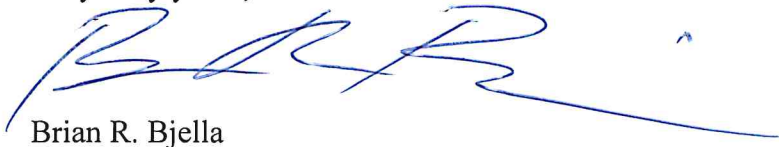
Enclosed please find the original and ten copies of Enbridge's Route Deviation Request filed pursuant to North Dakota Administrative Code § 69-06-05-02(2).

In its initial application, Enbridge requested a corridor of one mile in width. An exclusion/avoidance area study was completed for that one mile wide corridor area. This deviation request is within that one mile wide corridor. However, in issuing the Corridor Certificate the Public Service Commission reduced the corridor width to 250 feet. Thus, a portion of the deviated route falls outside of the 250 foot corridor. As a result, Enbridge has had exclusion/avoidance area study completed for that portion outside of the approved corridor, which has determined there are no such exclusion or avoidance areas.

As Enbridge will be commencing work on the Bakken Pipeline Project US very shortly, Enbridge respectfully requests an expedited review and approval of this deviation request.

Please call should you have any questions.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'B. R. Bjella', with a long horizontal flourish extending to the right.

Brian R. Bjella

lj  
enc.

cc: Burke County Auditor

Enbridge Pipelines (North Dakota) LLC  
Bakken Pipeline Project US  
Route Width Deviation Request  
Docket No. PU-10-612



June 28, 2011

**Enbridge Pipelines (North Dakota) LLC**

**North Dakota PSC  
Docket No. PU-10-612**

**Bakken Pipeline Project US**

**Route Deviation**

**June 28, 2011**

**Mile Post 39.45 – Johnson Deviation**

Enbridge Pipelines (North Dakota) LLC (“EPND”) hereby respectfully requests authorization to deviate from its general 250-foot wide surveyed route corridor<sup>1</sup> (“permitted route corridor”) as approved and permitted by the North Dakota Public Service Commission’s (“ND-PSC” or “Commission”) Findings of Fact, Conclusion of Law and Order dated May 5, 2011, in Case No. PU-10-612<sup>2</sup>. This route deviation is needed in order for EPND to adjust its pipeline centerline slightly to the south and west to avoid impacts to three (3) wetlands as more fully described below. The route deviation provides a secondary benefit of avoiding certain private land where pipeline access has been denied by one landowner. The affected landowner has granted a pipeline easement to EPND for the proposed route deviation.

**A. Description of Proposed Route Deviation**

The proposed route deviation (the “Johnson Deviation”), is located within the one-mile study area which the ND-PSC evaluated during the approval process of Case No. PU-10-612 and more than half of its length is located within the route corridor which the Commission approved by Order dated May 5, 2011. As proposed herein, the Johnson Deviation begins at Mile Post 39.45 where the pipeline centerline must be adjusted to the south and further west between Mile Post 39.45 in Section 3, Township 162 North, Range 92 West and Mile Post 39.91 in Section 34, Township 163 North, Range 92 West, all being located in Burke County, North Dakota. This minor route deviation will consist of approximately 2,465 feet of 12-inch diameter pipeline. Of that total, only 1,142 feet will be located outside of EPND’s permitted route corridor as shown on the route map attached hereto as Attachment A. The remaining 1,323 feet are located within EPND’s permitted route corridor, which the Commission approved by Order dated May 5, 2011. See Summary Table 1.1 below.

<b>Summary Table 1.1</b> <b>Comparison of Approved Pipeline Centerline Between MP 39.45 and MP 39.91</b> <b>To</b> <b>Proposed Pipeline Centerline Adjustment between MP 39.45 and</b> <b>New Ending MP 39.98</b>			
<b>Land Use &amp; Land Cross <sup>a</sup></b>	<b>Units</b>	<b>Approved Pipeline Centerline within Permitted Route Corridor</b>	<b>Requested Route Deviation</b>
Total Length	Feet	2,421	2,465
Length Outside Permitted Route Corridor	Feet	0	1,142

<sup>1</sup> The permitted route corridor is shown on Sheet No. 4 of Revised Exhibit H, which was submitted to the ND-PSC in a supplemental filing on January 19, 2011.

<sup>2</sup> In conjunction therewith, the Commission issued Corridor Certificate No. 118 and Route Permit No. 129.

<b>Summary Table 1.1</b>			
<b>Comparison of Approved Pipeline Centerline Between MP 39.45 and MP 39.91</b>			
<b>To</b>			
<b>Proposed Pipeline Centerline Adjustment between MP 39.45 and</b>			
<b>New Ending MP 39.98</b>			
<b>Land Use &amp; Land Cross <sup>a</sup></b>	<b>Units</b>	<b>Approved Pipeline Centerline within Permitted Route Corridor</b>	<b>Requested Route Deviation</b>
Roads Crossed	Number	1	1
Construction Footprint		110 feet	110 feet
Permanent Right-of Way Requirement		50 feet	50 feet
Temporary Workspace		60 feet	60 feet

The Johnson Deviation also requires EPND to relocate the bore location and temporary workspaces areas for its Highway 5 crossing (see Attachment A). The size of the temporary workspace areas will be as follows:

- South-side of Highway 5 will be approximately 75 feet x 135 feet, covering approximately 9,250 square feet, and
- North-side of Highway 5 will be approximately 75 feet x 100 feet, covering approximately 7,500 square feet.

The portions of the pipeline and temporary workspace areas outside EPND's permitted route corridor is located immediately to the west, and runs parallel to the existing approved and permitted route corridor for its entire length as shown on the route map (see Attachment A). EPND will maintain the same construction footprint and right-of way requirements as approved by this Commission Case No. PU-10-612.

#### **B. Purpose & Justification as Preferred Route**

As stated above, this route deviation is needed in order to avoid impacts to three (3) wetlands as described in more detail below. This slight modification will also adjust the pipeline centerline to avoid one (1) tract of private land where EPND has been denied access by one (1) landowner. EPND plans to adjust its pipeline centerline slightly to the south and west to gain access to adjacent private land where the landowner has granted EPND a pipeline easement. EPND believes that the proposed Johnson Deviation is in the public interest and respectfully requests that the Commission grant EPND approval to proceed with the minor centerline adjustment to its 12-inch diameter pipeline at this location.

### **C. Analysis of the Potential Impacts on the Human and Natural Environment**

In connection with the route deviation requested herein, EPND has analyzed the impacts of the proposed centerline adjustment in accordance with the Commission's Transmission Facility Corridor and Route Criteria<sup>3</sup>. As proposed, the Johnson Deviation has the same or less impacts as the existing sited and approved pipeline route corridor which was evaluated and permitted by this Commission in accordance with North Dakota Administrative Code ("NDAC") Section 49-22-09 and 69-06-08-02<sup>4</sup>. Thus, EPND submits the following information to demonstrate that no significant adverse impact will result from the location, construction and operation of the Johnson deviation.

#### **C.1 Exclusion Areas**

- No exclusion areas were identified in accordance with the criteria set out in NDAC Section 69-06-07-02.1

#### **C.2 Avoidance Areas**

- No inhabited residence, school or place of business was identified within 500 feet of the proposed route deviation. However, two private buildings were identified within the 500 foot parameter. These buildings are owned by the landowner who has granted EPND a pipeline easement for the proposed route deviation and are not used on a daily basis. Although a waiver is not required under the Commission's rules and regulations, EPND has obtained a waiver from the affected landowner and encloses such documentation herewith as Attachment B.
- No other avoidance areas were identified in accordance with the criteria set out in NDAC Section 69-06-07-02.2.

#### **C.3 Selection Criteria**

As shown on the table below, EPND has analyzed the impacts of the route deviation in relation to all of the relevant Selection Criteria. EPND concluded that the proposed route deviation will have no significant adverse impact on the location, construction and operation of the Project as approved by the Commission's Order dated May 5, 2011.

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<sup>3</sup> North Dakota Administrative Code Section 69-06-08-02.

<sup>4</sup> See Findings of Fact, Conclusion of Law Order dated May 5, 2011 in Case No. PU-10-612, which the Commission authorized the transmission facility corridor and route for the Bakken Pipeline Project US in Ward and Burke Counties in Corridor Certificate No. 118 and Route Permit No. 129.

<b>Table 1.2</b> Bakken Pipeline Project US Selection Criteria Considered		
SELECTION CRITERIA CONSIDERED	CROSSED BY APPROVED CORRIDOR AND ROUTE	CROSSED BY REQUESTED DEVIATION
Agricultural Production <sup>5</sup>	Yes	<u>See</u> Footnote 5
Family Farms and Ranches	Minimal	Substantially similar
Land Suitable for Irrigation	Minimal	Substantially similar
Surface and Groundwater Flow Patterns	Minimal	Substantially similar
Noise Sensitive Areas	Minimal	Substantially similar
Visual Effects	Minimal	Substantially similar
Extractive and Storage Resources	Minimal	Substantially similar
Wetlands <sup>6</sup>	Minimal	<u>See</u> Footnote 6
Woodlands	Minimal	Substantially similar
Communication or Electric Control Facilities	Minimal	Substantially similar
Human Health and Safety	Minimal	Substantially similar
Animal Health and Safety	Minimal	Substantially similar
Plant Life	Minimal	Substantially similar

#### C.4 Policy Criteria

EPND has analyzed the relevant Policy Criteria as it relates to the proposed route deviation. EPND has concluded that the proposed route deviation will not alter any of its commitments as stated in Policy Criteria<sup>7</sup> Section B.4.c of its Application for a Route Permit, as approved by the Commission's Order dated May 5, 2011.

<sup>5</sup> Slightly less agricultural land will be impacted, since route deviation crosses a private, graveled work area versus agricultural property as seen on the enclosed route map.

<sup>6</sup> The proposed route deviation actually avoids impacts to three wetlands and eliminates two previous identified wetlands crossings within the permitted route corridor at MP 39.45 and MP 39.91.

<sup>7</sup> North Dakota Rules Chapter 69-06-08-02.4

EPND hereby submits its commitment to maximize the benefits of its proposed route deviation so as to meet the Commission's Policy Criteria. Thus, EPND remains committed to the following:

- conduct its business in compliance with all applicable environmental laws and regulations;
- use energy conservation through the location, process, and design of its transmission facility as approved and the same for the proposed route deviation;
- provide training and utilize available labor in the state;
- construct its approved Project and the proposed route deviation as to take advantage of economies of scale;
- achieve transmission capacity in the most minimally intrusive and most efficient way possible; and
- coordinate with state and local officials.

#### **D. Environmental Assessment for Route Deviation**

The proposed route deviation will not impact the environmental data that has been assessed, specifically with regard to cultural resources, wetlands and protected species, as described in Section B of the Application for Certificate for Corridor Compatibility and approved by the Commission's Order dated May 5, 2011. EPND has performed additional field survey work for that portion of the route deviation which falls outside of EPND's 250-foot surveyed corridor, and hereby submits the following results.

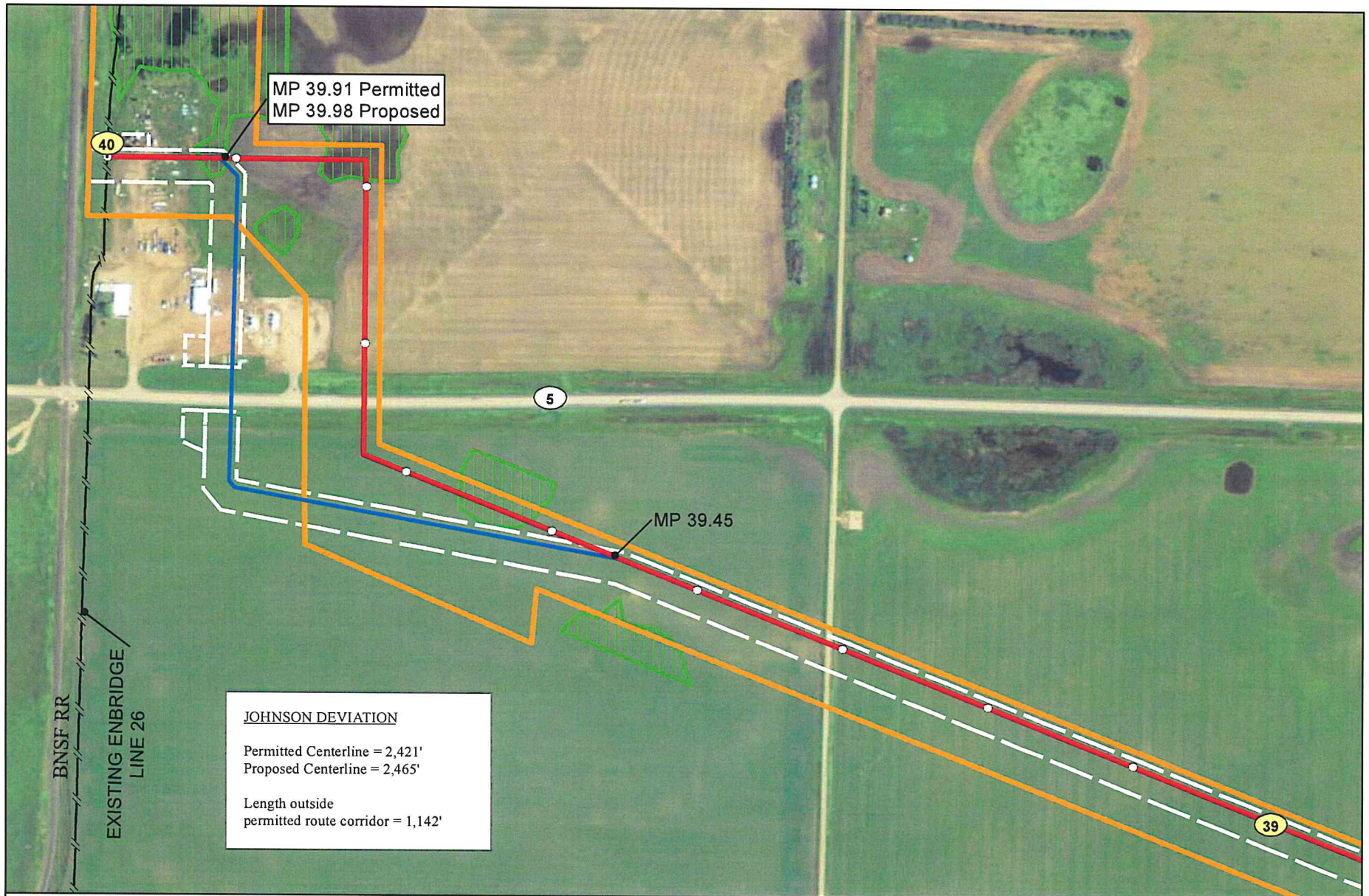
- Enclosed herewith as Attachment C is the State Historical Society of North Dakota's letter of concurrence dated June 2, 2011 stating that "No Historical Properties [will be] Affected" by the proposed route deviation.
- Enclosed herewith as Attachment D is the McCain and Associates Inc.'s Wetland Delineation Report dated June 8, 2011, which did not identify any additional wetland impacts within the proposed route deviation, nor any critical habitat areas.

Enbridge Pipelines (North Dakota) LLC  
Bakken Pipeline Project US  
Route Width Deviation Request  
Docket No. PU-10-612



June, 2011

**ATTACHMENT A**  
**Aerial Route Map**  
**and**  
**Topographic Map**



MP 39.91 Permitted  
MP 39.98 Proposed

**JOHNSON DEVIATION**  
 Permitted Centerline = 2,421'  
 Proposed Centerline = 2,465'  
 Length outside  
 permitted route corridor = 1,142'

- Legend**
- Permitted Centerline
  - Proposed Centerline
  - Environmental Corridor
  - Existing Enbridge Pipeline
  - O Mileposts
  - Workspace Boundary

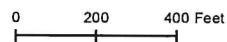
||||| Wetland Boundary

Note:

DOCKET NO. PU-10-612  
 REFERENCE SHEET # 2776-M-01004



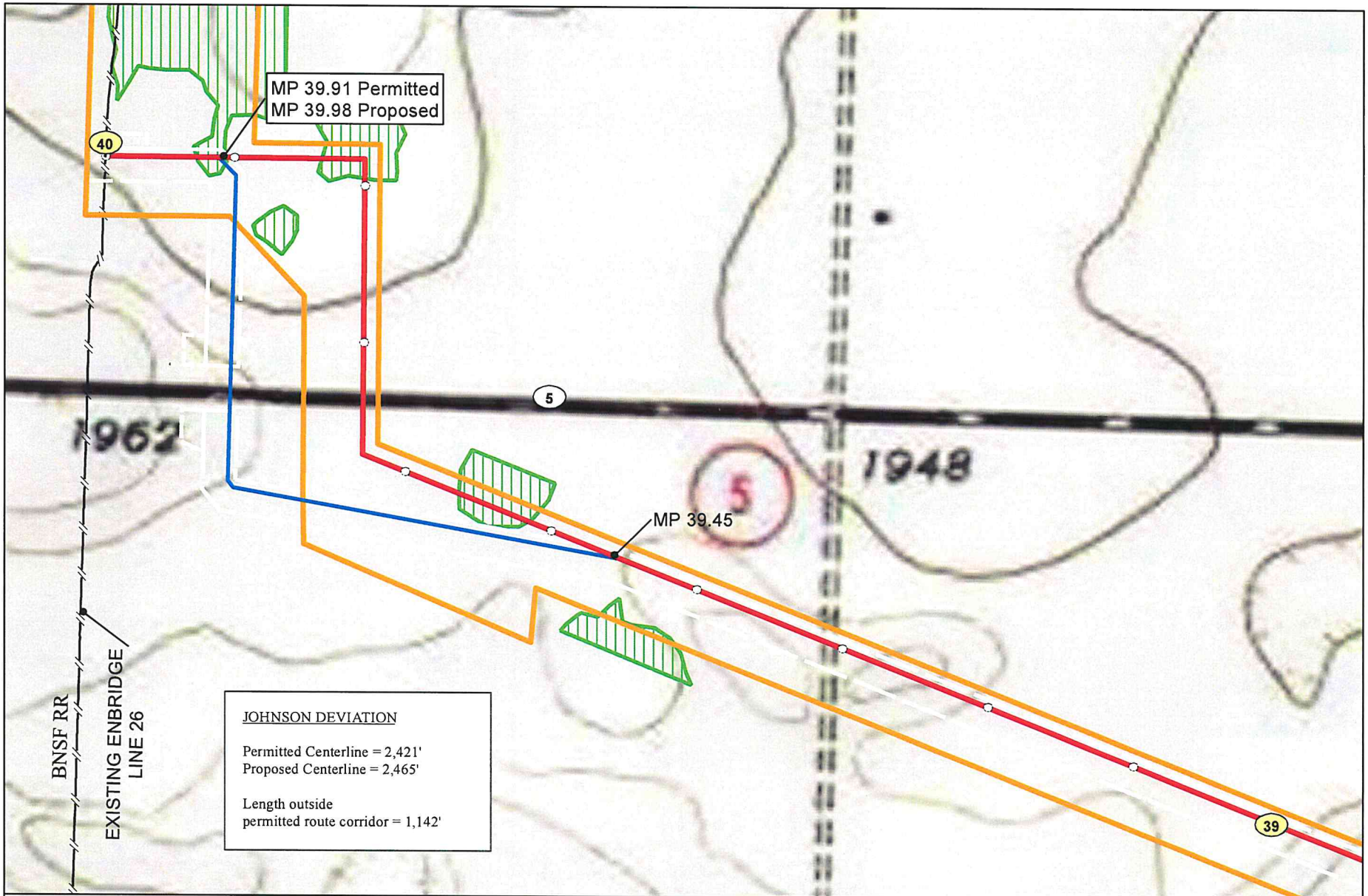
BAKKEN EXPANSION PROGRAM - US  
 BURKE COUNTY, ND



Revised: June 24, 2011

Drawing: MP 39.45 to MP 39.91

Revision  
**A**



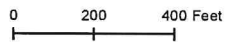
**JOHNSON DEVIATION**

Permitted Centerline = 2,421'  
 Proposed Centerline = 2,465'

Length outside  
 permitted route corridor = 1,142'

- Legend**
- Permitted Centerline
  - Proposed Centerline
  - Environmental Corridor
  - Existing Enbridge Pipeline
  - Mileposts
  - Workspace Boundary
  - Wetland Boundary

**Note:**  
 DOCKET NO. PU-10-612  
 REFERENCE SHEET # 2776-M-01004



Revised: June 24, 2011



BAKKEN EXPANSION PROGRAM - US  
 BURKE COUNTY, ND

Drawing: MP 39.45 to MP 39.91

Revision  
 A

Enbridge Pipelines (North Dakota) LLC  
Bakken Pipeline Project US  
Route Width Deviation Request  
Docket No. PU-10-612



**ATTACHMENT B**

**Landowner Waiver**

Enbridge (U.S.) Inc.  
1409 Hammond Avenue  
Superior, WI 54880  
Tel 715 398-4728  
Fax 832 325 5570  
www.enbridgepartners.com

Douglas B. Aller  
Lands & Right-of-Way  
Manager, US  
doug.aller@enbridge.com



April 28, 2010

Douglas Johnson  
P.O. Box 63  
Lignite, ND 58752

Re: Parcel ID #05945001, #05945002, and #05946000

Dear Douglas Johnson:

Please review the attached site map noting the proposed location of a pipeline (hereinafter referred to as "Facilities") associated with the Bakken Pipeline Expansion Project Application Enbridge intends to file with the North Dakota Public Service Commission. The map indicates that the Facilities will be located within 500 feet of your residence or business.

By signing below you are confirming that you have no objection to the installation of Enbridge's proposed Facilities at this location, or the future operation and maintenance of the Facilities. Your cordial cooperation in this matter is greatly appreciated.

Sincerely,

A handwritten signature in black ink that reads "Douglas B. Aller".

Douglas B. Aller

---

Attachment

A handwritten signature in black ink that reads "Douglas Johnson".  
\_\_\_\_\_  
Douglas Johnson

4.29.10  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

Enbridge Pipelines (North Dakota) LLC  
Bakken Pipeline Project US  
Route Width Deviation Request  
Docket No. PU-10-612



June, 2011

**ATTACHMENT C**

**State Historical Society Of North Dakota  
Letter Dated June 2, 2011**



STATE  
HISTORICAL  
SOCIETY  
OF NORTH DAKOTA

Jack Dalrymple  
Governor of North Dakota

North Dakota  
State Historical Board

Chester E. Nelson, Jr.  
Bismarck - President

Gerold Gertholz  
Valley City - Vice President

Richard Kloubec  
Fargo - Secretary

Albert I. Berger  
Grand Forks

Calvin Grinnell  
New Town

Diane K. Larson  
Bismarck

A. Ruric Todd III  
Jamestown

Sara Otte Coleman  
Director  
Tourism Division

Kelly Schmidt  
State Treasurer

Alvin A. Jaeger  
Secretary of State

Mark A. Zimmerman  
Director  
Parks and Recreation Department

Francis Ziegler  
Director  
Department of Transportation

Merlan E. Paaverud Jr.

June 2, 2011

Ms. Suzanne Canevello  
Metcalf Archaeological Consultants, Inc.  
PO Box 2154  
Bismarck ND 58502

ND SHPO REF: 10-1847B Bakken Pipeline US Reroute and Lignite Pipe Yard: A  
Class III Cultural Resource Inventory, Burke County, North Dakota

Dear Ms. Canevello,

We reviewed ND SHPO REF: 10-1847B "Enbridge's Bakken Pipeline US Reroute and Lignite Pipe Yard: A Class III Cultural Resource Inventory, Burke County, North Dakota" by Damien Reinhart, and find it acceptable. If consulted by a federal agency, we would concur with a "No Historic Properties Affected" determination, provided the APE remains as stated and mapped in this report.

Thank you for the opportunity to review this report. If you have any questions please contact Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail [squinnell@nd.gov](mailto:squinnell@nd.gov)

Sincerely,

Merlan E. Paaverud, Jr.  
State Historic Preservation Officer (North Dakota)  
And Director State Historical Society of North Dakota

Enbridge Pipelines (North Dakota) LLC  
Bakken Pipeline Project US  
Route Width Deviation Request  
Docket No. PU-10-612



June, 2011

**ATTACHMENT D**

**McCain and Associates, Inc.**

**Wetland Delineation Report**

**Dated June 8, 2011**

June 8, 2011

Ms. Angela Ronayne, PE  
Merjent  
615 First Avenue NE, Suite 425  
Minneapolis, MN 55413

**Re: Wetland Delineation Report Beaver Lodge Loop Project and Bakken Pipeline Expansion Project 2011 Spring Surveys**

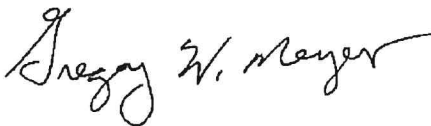
Dear Ms. Ronayne,

McCain and Associates, Inc. (McCain) is pleased to submit the "Wetland Delineation Report Beaver Lodge Loop Project and Bakken Pipeline Expansion Project 2011 Spring Surveys" for your review.

No additional wetlands were identified and delineated in the Bakken Pipeline Expansion Project 2011 Spring Survey areas. Fifteen isolated depression wetlands were identified and delineated in the Beaver Lodge Loop Project 2011 Spring Survey area. These wetlands consisted of thirteen newly identified and delineated wetlands and two previously delineated wetlands.

Please call me at 701-255-1475 if you have any questions or need additional informational.

Sincerely,



Greg Meyer, MS  
Ecologist

**WETLAND DELINEATION REPORT**

**BEAVER LODGE LOOP PROJECT**  
**AND**  
**BAKKEN PIPELINE EXPANSION**  
**PROJECT**  
**2011 SPRING SURVEYS**

*Prepared for:*



**ENBRIDGE PIPELINES (BAKKEN) LP**

**June 8, 2011**

**Wetland Delineation Report  
Beaver Lodge Loop Project &  
Bakken Pipeline Expansion Project  
2011 Spring Surveys**

**June 8, 2011**

Enbridge Pipeline (Bakken) LP  
Burke and Ward Counties, North Dakota

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## 1.0 Introduction

This project identified and delineated the extent of wetland areas along two proposed pipeline corridors for Enbridge Pipelines (Bakken) LP (Enbridge). Two additional survey areas along the Beaver Lodge Loop Project (BLLP) and two areas along the Bakken Pipeline Expansion Project (BPEP) were surveyed. The BLLP additional survey areas are located in Sections 19 and 20, T156N, R86W, and Section 24, T156N, R87W, in Ward County, North Dakota (Appendix A, Figure 1). The BPEP additional survey areas are located in Sections 1 and 3, T162N, R92W, and Section 34, T163N, R62W, in Burke County, North Dakota (Appendix A, Figure 2).

The projects are located within the Missouri Coteau region. This area is characterized by a hummocky landscape with rolling topography (Appendix A, Figures 3 and 4). Numerous wetland depressions called "potholes" are found in the region. The common agricultural crops of the area include wheat, barley, canola, and sunflowers.

Scattered depression wetlands are common in these survey areas. Many of the wetlands were cultivated in 2010 but heavy precipitation has caused some to be flooded beyond their hydric boundaries. The majority of these wetlands are shallow depression wetlands with temporary or seasonal water regimes. Common vegetation in the wetlands was curled dock (*Rumex crispus*), biennial wormwood (*Artemisia biennis*), and prairie cordgrass (*Spartina pectinata*).

Wetland field delineations of the additional survey areas were conducted by biologists of McCain and Associates, Inc. on May 19, 2011.

## 2.0 Procedures

The wetland field delineation was conducted in accordance with the *U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (Manual). The determination of permanent or temporary impacts to, and the mitigation of impacted wetlands, is outside the scope of work for this project.

Methodologies and criteria outlined by the Manual were used to identify and delineate wetlands for this project. The Manual provides the technical criteria for determining wetlands for purposes of Section 404 of the Clean Water Act. It specifies that positive evidence of hydrophytic vegetation, hydric soils, and wetland hydrology are criteria for wetland identification and delineation. Areas meeting all three criteria were classified as wetlands.

Wetland areas were systematically evaluated by using numerous observation points to define the boundaries. The frequency of observation points was increased in transitional areas between uplands and lower areas to accurately identify wetland boundaries based on vegetation, hydrology, soils, and landscape. Boundaries were digitally recorded with a Trimble Geo XH Global Positioning System (GPS) allowing sub-meter post-processed data accuracy.

Wetlands were documented with a soil observation point. The Wetland Determination Data Form of the Great Plains Manual was completed for each observation point. Climatic conditions were considered typical prior to and during the evaluation.

Existing vegetation was classified using hydrophytic vegetation criteria outlined in the Manual and the *National List of Plant Species that Occur In Wetlands: 1996 National Summary* (Kartesz, 1996), and *National List of Plant Species that Occur in Wetlands: North Plains (Region 4)* (Reed, 1988). Hydric soil indicators were determined using the *Field Indicators of Hydric Soils in the United States; Guide for Identifying and Delineating Hydric Soils, Version 7.0* (USDA-NRCS, 2010).

Hydrology was determined on-site by observation of hydrologic indicators. Aerial photography was used to assist hydrologic determinations.

A review of existing resource information and the wetland field delineation were used to identify and delineate wetlands within the BLLP and BPEP additional survey areas. No minimal size or area of wetland delineation was specified. Burke and Ward Counties NAIP 2009 and 2005 aerial photographs, USDI-Fish and Wildlife Service National Wetland Inventory (USFWS, 2011), and the digital soil survey of Burke and Ward Counties (USDA-NRCS, 2011), were consulted prior to field investigations.

### 3.0 Results

No additional wetlands were identified in the BPEP additional survey areas.

The BLLP additional survey area contains 13 additional wetlands and 2 previously delineated wetlands (Appendix A, Figures 3\_1 and 3\_2). All the wetlands are considered isolated depression wetlands. The previously delineated wetlands are documented in the *Wetland Delineation Report Beaver Lodge Loop Project* (McCain 2010), and their hydric boundaries were delineated as they extend into the BLLP additional survey areas. A total of 7.31 wetland acres were identified and delineated during the wetland field delineation.

A description of the delineated wetlands and documentation of the vegetation, hydrology, and hydric soils were recorded on the associated USACE Wetland Determination Data Forms (Appendix B) and are identified by site identification and observation point number (i.e. bllpw1, bllp1). Delineated wetlands are summarized in Table 1.

**Table 1. Wetland Identification and Characteristics (Field) Summary of Wetlands**

<u>Wetland ID</u>	<u>Acres</u>	<u>Figure</u>	<u>NWI</u>	<u>Wetland Type</u>
BLLP Wetland 1	0.03	3	PEMC	ISOLATED
BLLP Wetland 2	0.05	3	none	ISOLATED
BLLP Wetland 3	0.02	3	none	ISOLATED
BLLP Wetland 4	1.77	3	none	ISOLATED
BLLP Wetland 5	0.06	3	none	ISOLATED
BLLP Wetland 6	0.04	3	none	ISOLATED
BLLP Wetland 7	3.94	3	PEMC	ISOLATED
20156086-w5*	0.38	3	none	ISOLATED
BLLP Wetland 8	0.44	3	PEMC	ISOLATED
BLLP Wetland 9	0.01	3	none	ISOLATED
19156086-w8*	0.33	3	PEMC	ISOLATED
BLLP Wetland 10	0.09	3	PEMA	ISOLATED
BLLP Wetland 11	0.01	3	PEMC	ISOLATED
BLLP Wetland 12	0.07	3	PEMC	ISOLATED
BLLP Wetland 13	0.07	4	none	ISOLATED
<b>TOTAL</b>	<b>7.31</b>			

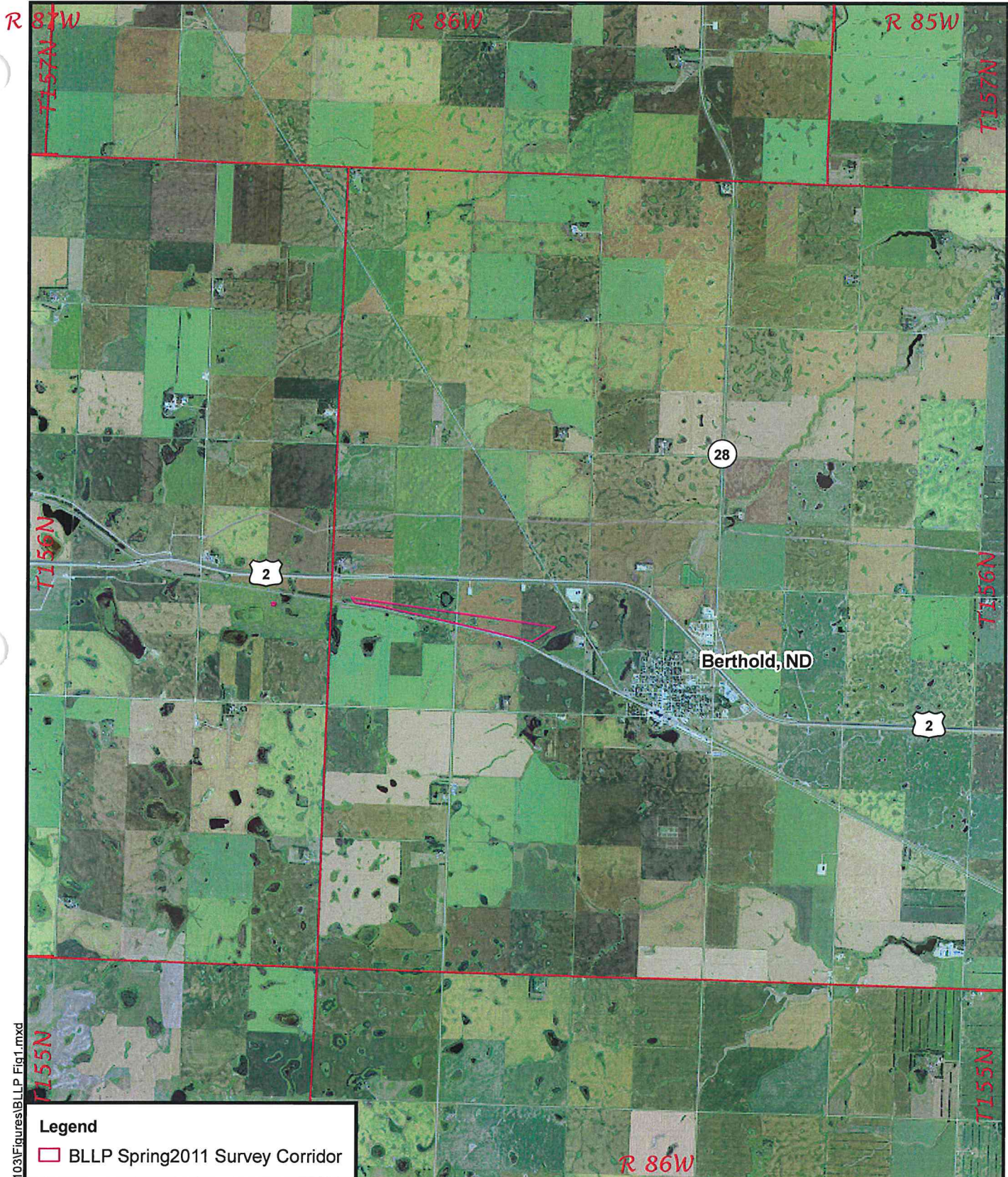
\*Documented in *Beaver Lodge Loop Project Wetland Delineation Report* (McCain, 2010),

## 4.0 References

- Environmental Laboratory. 1987. *Corp of Engineers Wetlands Delineation Manual*. Wetlands Research Program. Technical Report Y-87-1. Department of the Army, Waterways Experiment Station, US Army *Corp of Engineers*. Vicksburg, Mississippi, USA.
- Environmental Laboratory. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*. U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center Vicksburg, Mississippi, USA.
- Kartesz, J.T. 1996. *National List of Plant Species that Occur In Wetlands: 1996 National Summary*. Biota of North America Program. US Fish and Wildlife Service. <http://www.fws.gov/new/bha/list96.html> Accessed July 2010.
- McCain and Associates, Inc. 2010. Wetland Delineation Report Beaver Lodge Loop Project. 10pp.
- Reed, P.B., Jr. 1988. *National list of plant species that occur in wetlands: North Plains (Region 4)*. U.S. Fish and Wildlife Service Biological Report 88(26.4). 64pp.
- USDA-NRCS. 2010. *Field Indicators of Hydric Soils in the United States—Guide for Identifying and Delineating Hydric Soils, Version. 7.0 in G.W. Hurt, L.M. Vasilas, and C.V. Noble, editors*. USDA-NRCS in cooperation with the National Technical Committee for Hydric Soils.
- USDA-NRCS. 2011. Soil Survey of Burke County, North Dakota. <http://websoilsurvey.nrcs.usda.gov/app> Accessed May, 2011.
- USDA-NRCS. 2011. Soil Survey of Ward County, North Dakota. <http://websoilsurvey.nrcs.usda.gov/app> Accessed May, 2011.
- USFWS. 2011. United States Fish and Wildlife Service. National Wetlands Inventory. <http://wetlandsfws.er.usgs.gov/NWI/> Accessed May, 2011.

***Appendix A***

***Figures***



E:\Projects\MER1103\Figures\BLLP\_Fig1.mxd

**Legend**  
 BLLP Spring2011 Survey Corridor

1:63,360  
 1 inch = 1 miles  
 0 0.25 0.5 1 Miles  
 Basemap: NAIP 2009 Ward County, North Dakota Orthophoto

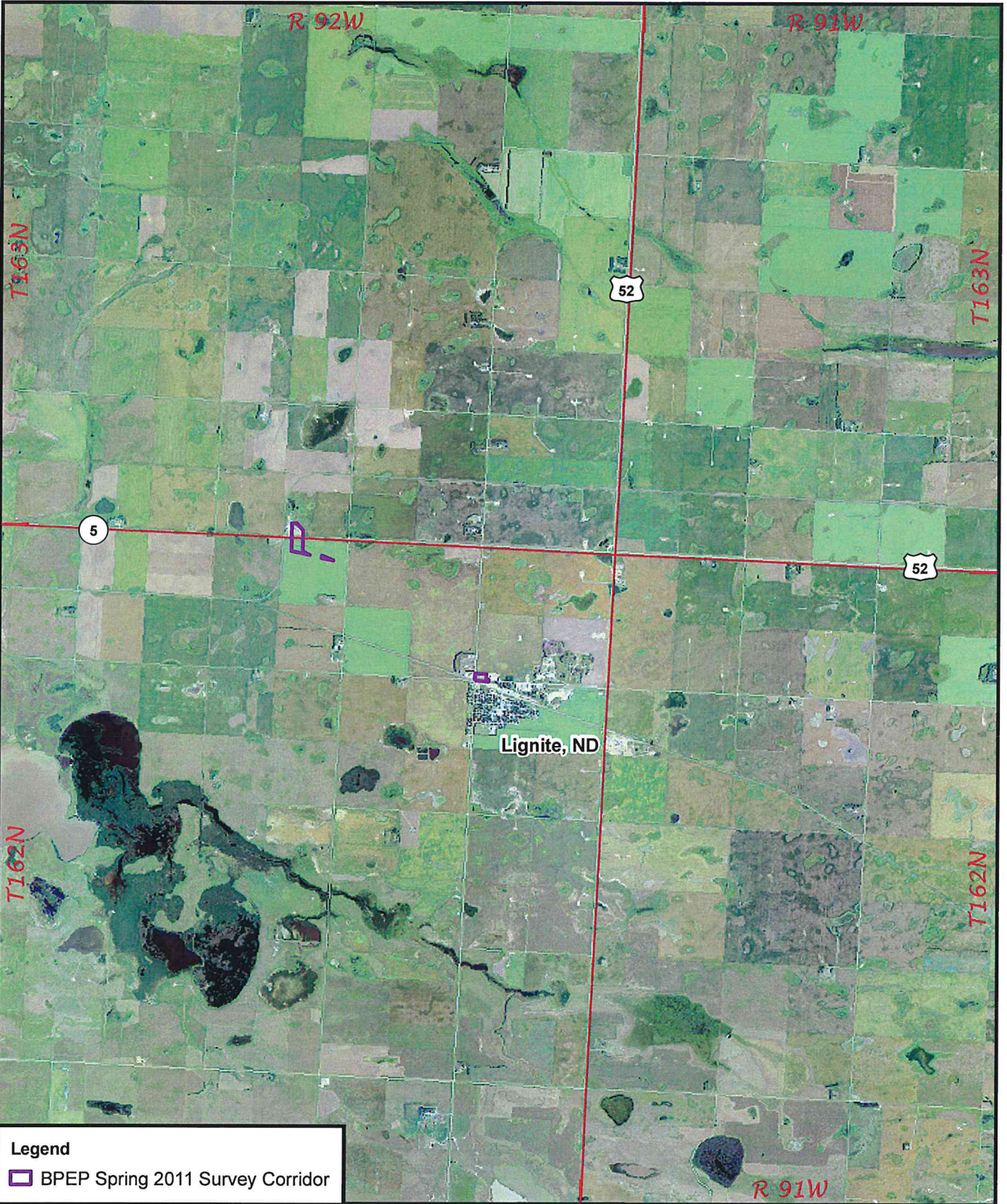


**McCain**  
 and Associates, Inc.

2718 Gateway Avenue  
 Suite 101  
 Bismarck, ND 58503  
 P 701-255-1475  
 F 701-255-1477

Date: June 2011      Rev: 01

**Figure 1**  
**GENERAL LOCATION**  
**BLLP Project 2011 Spring Surveys**  
**Enbridge Pipelines (Bakken) LP**

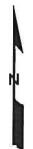


E:\Projects\MER1103\Figures\BLLP Fig1.mxd

**Legend**  
 BPEP Spring 2011 Survey Corridor

1:63,360  
 1 inch = 1 miles  
 0 0.25 0.5 1 Miles

Basemap: NAIP 2009 Burke County, North Dakota Orthophoto

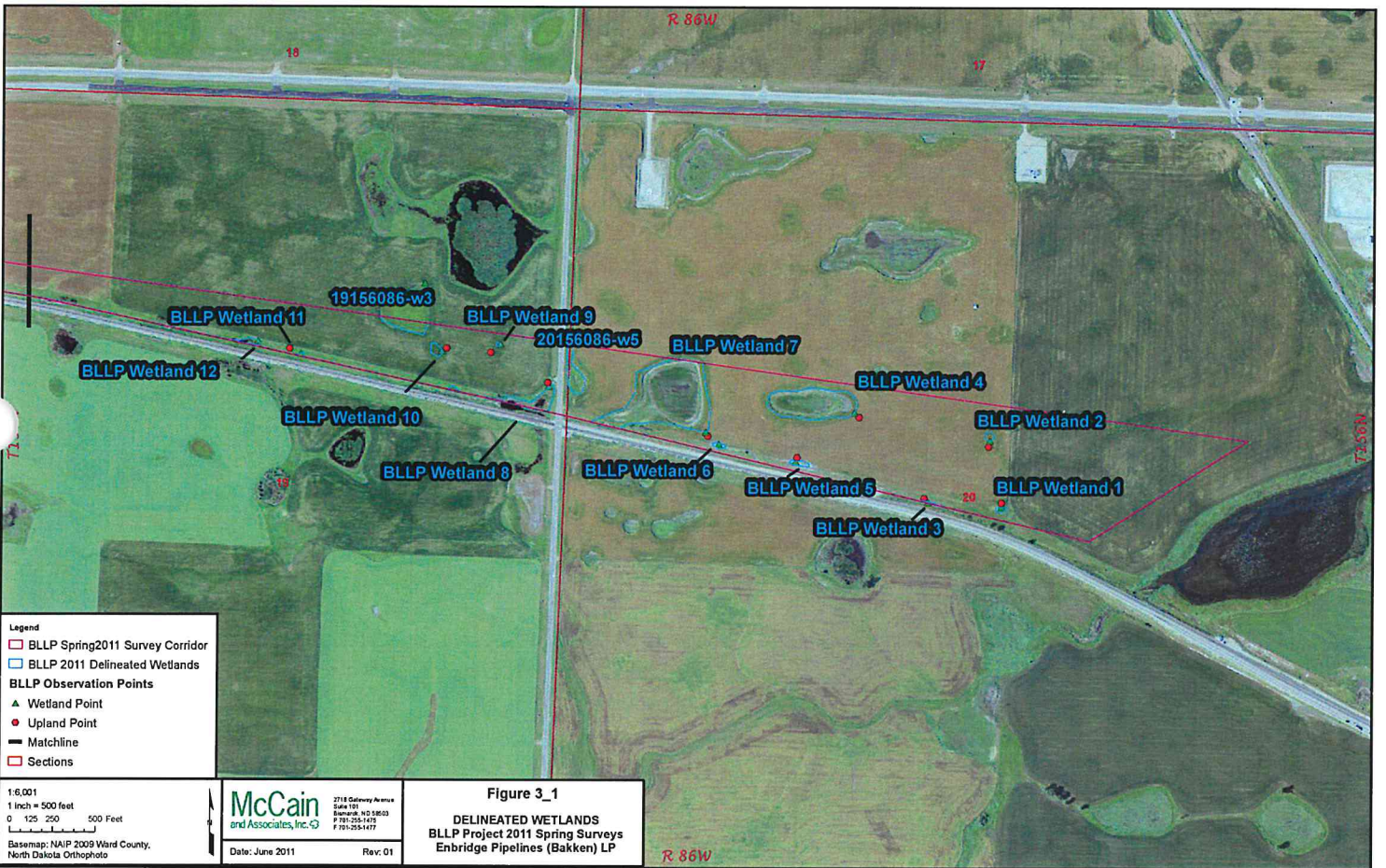


**McCain**  
 and Associates, Inc.

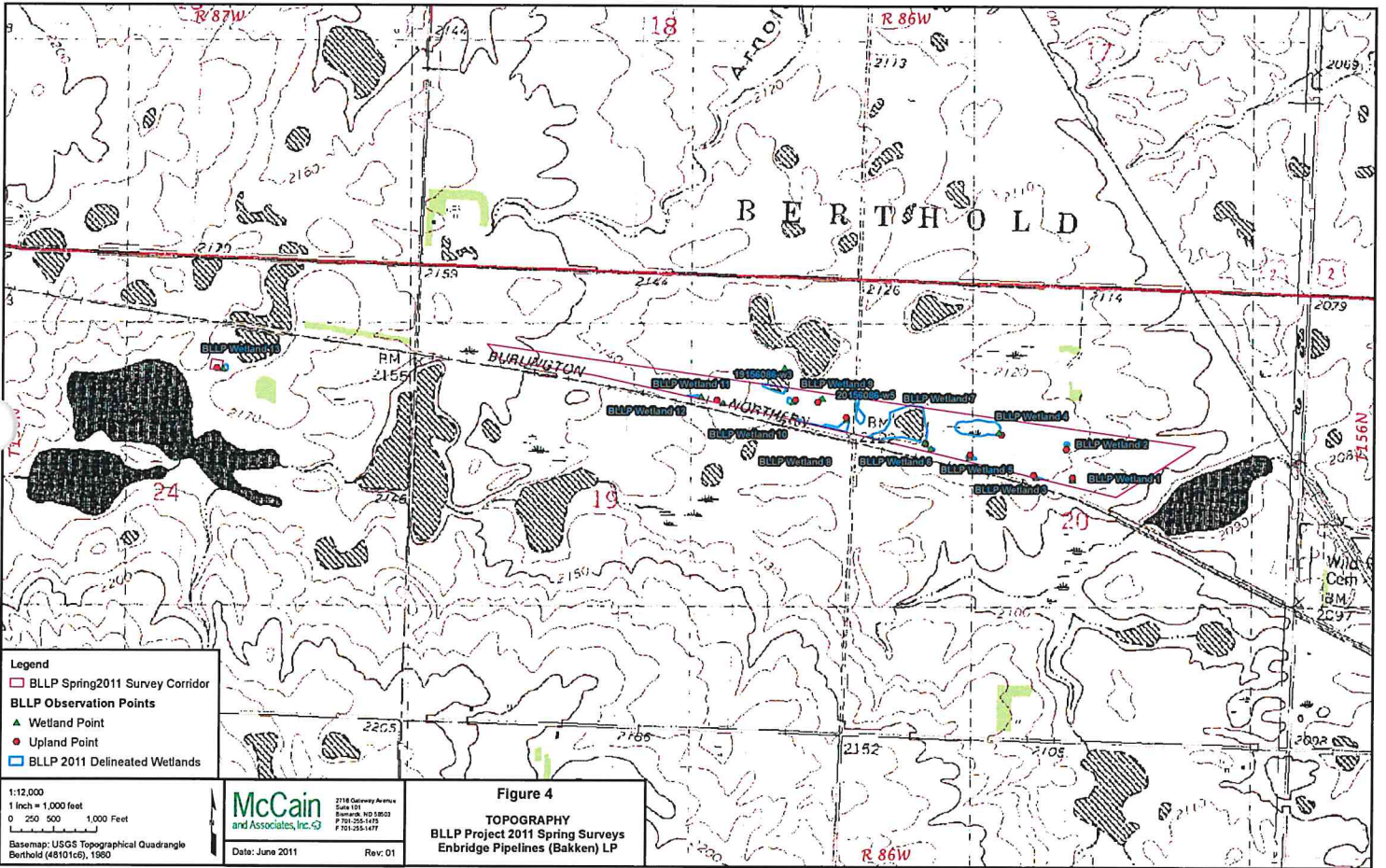
2718 Gateway Avenue  
 Suite 101  
 Bismarck, ND 58503  
 P 701-255-1475  
 F 701-255-1477

Date: June 2011      Rev: 01

**Figure 2**  
**GENERAL LOCATION**  
**BPEP Project 2011 Spring Surveys**  
**Enbridge Pipelines (Bakken) LP**







***Appendix B***

***USACE Wetland Determination Data Forms***

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpw1  
 Investigator(s): GWM/CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.321019 N Long: -101.760947 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland in cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <b>1</b> (A)  Total Number of Dominant Species Across All Strata: <b>1</b> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <b>100</b> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of:      Multiply by: OBL species      _____ x1 = _____ FACW species      _____ x2 = _____ FAC species      _____ x3 = _____ FACU species      _____ x4 = _____ UPL species      _____ x5 = _____ Column Totals:      _____ (A)      _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
<b>Herb Stratum (Plot Size: 5')</b>				
1. <u>Artemisia biennis</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> _____ 1 – Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
= Total Cover				
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>70</u></b>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:				

**SOIL**

Sampling Point: bl/pw1

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 2/1	100	—	—	—	—	sicl	—
7-14	10YR 3/1	100	—	—	—	—	sicl	—
14-24+	2.5Y 4/1	90	7.5YR 5/6	5	c	m	sicl	—
—	—	—	10YR 5/4	5	c	m	sicl	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)
- (MLRA 72 & 73 of LRR H)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 4  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllp1  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): E Lat: 48.321081 N Long: -101.760945 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
<b>Herb Stratum (Plot Size: 5')</b>				
1. <u>soybean stubble</u>	<u>30</u>	<u>yes</u>	<u>UPL</u>	<b>Hydrophytic Vegetation Indicators:</b> _____ 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
= Total Cover				
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>70</u></b>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:				

**SOIL**

Sampling Point: blp1

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 2/1	100	—	—	—	—	sicl	—
7-15	10YR 3/1	100	—	—	—	—	sicl	—
15-20+	2.5Y 4/3	100	—	—	—	—	sicl	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)  
(MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)  
(LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3)  
(where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3)  
(where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpw2  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): F Lat: 48.322066 N Long: -101.761288 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland in cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <u>Total % Cover of:</u> <u>Multiply by:</u> OBL species                      _____ x1 = _____ FACW species                      _____ x2 = _____ FAC species                      _____ x3 = _____ FACU species                      _____ x4 = _____ UPL species                      _____ x5 = _____ Column Totals:                      _____ (A)                      _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot Size: 5')	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> _____ 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Kochia scoparia</u>	<u>5</u>	<u>no</u>	<u>FAC</u>	
2. <u>soybean stubble</u>	<u>80</u>	<u>yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>5</u> = Total Cover				
Woody Vine Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>15</u>				
Remarks: <b>Cultivation impacted vegetation at wetland. Comparable uncultivated wetlands have prairie cordgrass and curled dock.</b>				

**SOIL**

Sampling Point: blpw2

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 2/1	100					sicl	
8-18+	2.5Y 4/2	70	10YR 5/6	30	c	m	sicl	
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)
- (MLRA 72 & 73 of LRR H)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 2  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blbp2  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): E Lat: 48.321970 N Long: -101.761312 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>soybean stubble</u>	<u>30</u>	<u>yes</u>	<u>UPL</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>70</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blipu2

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
7-13	10YR 3/3	50	_____	_____	_____	_____	sicl	_____
7-13	10YR 3/1	50	_____	_____	_____	_____	sicl	_____
13-18+	2.5Y 4/4	90	10YR 5/4	10	c	m	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)  
(MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)  
(LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3)  
(where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3)  
(where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpw3  
 Investigator(s): GWM/CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.321049 N Long: -101.762708 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: Depression wetland between cultivated field and railroad right-of-way.			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  Total % Cover of: _____ Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____  Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
<b>Herb Stratum (Plot Size: 5')</b>				
1. <u>Spartina pectinata</u>	<u>90</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Bromus inermis</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>100</u> = Total Cover				
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
<b>% Bare Ground in Herb Stratum <u>0</u></b>				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Remarks:				

**SOIL**

Sampling Point: blpw3

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 2/1	100					sicl	
2-10	10YR 3/1	50	10YR 5/4	10	c	m	sicl	
	2.5Y 4/2	40						
10-17	2.5Y 4/2	70	10YR 5/4	10	c	m	sicl	
	10YR 3/1	20						
17-24+	2.5Y 4/2	90	10YR 5/4	5	c	m	sicl	
			7.5YR 5/6	5	c	m	sicl	

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

Mixed soils due to railroad construction.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 6  
 Water Table Present? Yes  No  Depth (inches): 8  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 2

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpu3  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): E Lat: 48.321112 N Long: -101.762815 W Datum: NAD 83  
 Soil Map Unit Name: W/B Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point along edge of cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
			= Total Cover	<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
			= Total Cover																	
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <b><u>Bromus inermis</u></b>	<u>90</u>	<u>yes</u>	<u>FACU</u>																	
2. <b><u>Poa pratensis</u></b>	<u>10</u>	<u>no</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
			<u>100</u> = Total Cover																	
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
			= Total Cover																	
<b>% Bare Ground in Herb Stratum <u>0</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blpu3

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/1	100					sicl	
4-20	2.5Y 4/2	90	7.5YR 5/6	10	c	m	sicl	
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<p><b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)</p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF 12) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<p>Primary Indicators (minimum of one required; check all that apply)</p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<p>Secondary Indicators (2 or more required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
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**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpw4  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.322432 N Long: -101.764566 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam level NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland in cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>Kochia scoparia</u>	<u>5</u>	<u>no</u>	<u>FAC</u>																	
2. <u>soybean stubble</u>	<u>80</u>	<u>yes</u>	<u>UPL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>15</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>																				
Remarks: <b>Cultivation impacted vegetation at wetland. Comparable uncultivated wetlands have prairie cordgrass and curled dock.</b>																				

**SOIL**

Sampling Point: bllpw4

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1	100					sicl	
5-16+	2.5Y 4/1	80	7.5YR 5/6	20	c	m	sicl	

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 12  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpu4  
 Investigator(s): GWM / GET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): E Lat: 48.3223590 N Long: -101.764452 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
			= Total Cover	<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
			= Total Cover																	
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>soybean stubble</u>	<u>30</u>	<u>yes</u>	<u>UPL</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
			<u>30</u> = Total Cover																	
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
			= Total Cover																	
<b>% Bare Ground in Herb Stratum <u>70</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blipu4

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
7-16	10YR 3/2	100	_____	_____	_____	_____	sicl	_____
16-20+	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<b>(where tilled)</b>	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)	

**Field Observations:**

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blp5  
 Investigator(s): GWM/CET Section, Township, Range: 20.156.86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.321612 N Long: -101.765924 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland at edge of cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<u>Sapling/Shrub Stratum (Plot Size: _____)</u>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<u>Herb Stratum (Plot Size: 5')</u>																				
1. <b><u>Typha angustifolia</u></b>	<b><u>50</u></b>	<b><u>yes</u></b>	<b><u>OBL</u></b>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<u>Woody Vine Stratum (Plot Size: _____)</u>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>50</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blpw5

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 2/1	100					sicl	
3-15+	2.5Y 4/2	90	10YR 4/6	10	c	m	sicl	
-								

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)
- (MLRA 72 & 73 of LRR H)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- |   |  |   |
|---|--|---|
| <input checked="" type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Surface Soil Cracks (B6)                             |
| <input checked="" type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)              |
| <input checked="" type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                              |
| <input type="checkbox"/> Water Marks (B1)                                     | <input type="checkbox"/> Dry Season Water Table (C2)                   | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)        |
| <input type="checkbox"/> Sediment Deposits (B2)                               | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <b>(where tilled)</b>   |
| <input type="checkbox"/> Drift Deposits (B3)                                  | <b>(where not tilled)</b>  | <input type="checkbox"/> Crayfish Burrows (C8)                                |
| <input type="checkbox"/> Algal Mat or Crust (B4)                              | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5)                                   | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input checked="" type="checkbox"/> Geomorphic Position (D2)                  |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> FAC-Neutral Test (D5)                                |
| <input type="checkbox"/> Water-Stained Leaves (B9)                            |  | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)                    |

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 12  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpu5  
 Investigator(s): GWM/CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): E Lat: 48.321685 N Long: -101.765899 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
			= Total Cover	<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
			= Total Cover																	
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>soybean stubble</u>	<u>30</u>	<u>yes</u>	<u>UPL</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
			<u>30</u> = Total Cover																	
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
			= Total Cover																	
<b>% Bare Ground in Herb Stratum <u>70</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blpu5

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/1	100					sicl	
4-15+	2.5Y 4/3	95	7.5YR 5/6	5	c	m	sicl	
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpw6  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.321847 N Long: -101.767786 W Datum: NAD 83  
 Soil Map Unit Name: WOA Williams-Bowbells-Tonka-Complex NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland at edge of cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of:      Multiply by: OBL species      _____ x1 = _____ FACW species      _____ x2 = _____ FAC species      _____ x3 = _____ FACU species      _____ x4 = _____ UPL species      _____ x5 = _____ Column Totals:      _____ (A)      _____ (B) Prevalence Index = B/A = _____
<u>Sapling/Shrub Stratum</u> (Plot Size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
<u>Herb Stratum</u> (Plot Size: <u>5'</u> )				<b>Hydrophytic Vegetation Indicators:</b> _____ 1 – Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Scirpus validus</u>	<u>10</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Kochia scoparia</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
= Total Cover				
<u>Woody Vine Stratum</u> (Plot Size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<u>% Bare Ground in Herb Stratum</u> <u>70</u>				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Remarks:				

**SOIL**

Sampling Point: bllpw6

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1	100	_____	_____	_____	_____	sicl	_____
5-10	2.5Y 4/2	50	2.5Y5/1	10	d	m	sicl	_____
-	10YR 3/1	40	_____	_____	_____	_____	sicl	_____
10-16+	2.5Y 4/2	90	7.5YR 5/6	10	c	m	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 10

Water Table Present? Yes  No  Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpw7  
 Investigator(s): GWM/CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.322029 N Long: -101.768105 W Datum: NAD 83  
 Soil Map Unit Name: Pa Parnell silty clay loam NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland at edge of cultivated field.</b>			

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				<b>Prevalence Index worksheet:</b>  Total % Cover of:                      Multiply by: OBL species                      _____ x1 = _____ FACW species                      _____ x2 = _____ FAC species                      _____ x3 = _____ FACU species                      _____ x4 = _____ UPL species                      _____ x5 = _____  Column Totals:                      _____ (A)                      _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
<b>Herb Stratum (Plot Size: 5')</b>				
1. <u>Artemisia biennis</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
2. <u>Kochia scoparia</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>20</u> = Total Cover				
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>80</u></b>				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Remarks: <b>Reed canary grass in interior of wetland.</b>				

**SOIL**

Sampling Point: blpw7

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 2/1	100					sicl	
4-9	2.5Y 4/2	70	2.5Y5/1	5	d	m	sicl	
			2.5Y 6/1	15	d	m	sicl	
			10YR 5/6	10	c	m	sicl	
9-15+	2.5Y 6/1	90	10YR 5/6	10	c	m	sicl	

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)
- (MLRA 72 & 73 of LRR H)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 4  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water depth approximately 30" in center

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpu7  
 Investigator(s): GWM / CET Section, Township, Range: 20, 156, 86  
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.321969 N Long: -101.768054 W Datum: NAD 83  
 Soil Map Unit Name: WOA Williams-Bowbells-Tonka loams, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of:      Multiply by: OBL species      _____ x1 = _____ FACW species      _____ x2 = _____ FAC species      _____ x3 = _____ FACU species      _____ x4 = _____ UPL species      _____ x5 = _____ Column Totals:      _____ (A)      _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				<b>Hydrophytic Vegetation Indicators:</b> _____ 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Herb Stratum (Plot Size: 5')</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<b>0</b>		= Total Cover		
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>100</u></b>				
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Remarks: <b>no veg at observation point</b>				

**SOIL**

Sampling Point: blpu7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
3-10+	2.5Y 5/3	60	_____	_____	_____	_____	sicl	_____
_____	10YR 5/4	20	_____	_____	_____	_____	sicl	_____
_____	2.5Y 6/3	20	_____	_____	_____	_____	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)			<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)			
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>			
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>				

<b>Restrictive Layer (if present):</b>		<b>Hydric Soils Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____	Depth (Inches): _____	
Remarks:		

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>					
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<b>(where tilled)</b>			
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)			

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):		
				<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpw8  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): F Lat: 48.322660 N Long: -101.771897 W Datum: NAD 83  
 Soil Map Unit Name: Bt Bowbells-Tonka-Complex NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland at edge of cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<b>1</b> (A)																
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<b>2</b> (B)																
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<b>50</b> (A/B)																
4. _____	_____	_____	_____	Prevalence Index worksheet:																	
_____	_____	= Total Cover	_____																		
Sapling/Shrub Stratum (Plot Size: _____)				<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species <b>80</b></td> <td>x2 = <b>160</b></td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species <b>20</b></td> <td>x4 = <b>80</b></td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: <b>100</b> (A)</td> <td><b>240</b> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <b>2.4</b></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species _____	x1 = _____	FACW species <b>80</b>	x2 = <b>160</b>	FAC species _____	x3 = _____	FACU species <b>20</b>	x4 = <b>80</b>	UPL species _____	x5 = _____	Column Totals: <b>100</b> (A)	<b>240</b> (B)	Prevalence Index = B/A = <b>2.4</b>	
Total % Cover of:	Multiply by:																				
OBL species _____	x1 = _____																				
FACW species <b>80</b>	x2 = <b>160</b>																				
FAC species _____	x3 = _____																				
FACU species <b>20</b>	x4 = <b>80</b>																				
UPL species _____	x5 = _____																				
Column Totals: <b>100</b> (A)	<b>240</b> (B)																				
Prevalence Index = B/A = <b>2.4</b>																					
Herb Stratum (Plot Size: 5')				<b>Hydrophytic Vegetation Indicators:</b> _____ 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																	
1. <b>Phalaris arundinacea</b>	<b>80</b>	<b>yes</b>	<b>FACW</b>																		
2. <b>Bromus inermis</b>	<b>20</b>	<b>yes</b>	<b>FACU</b>																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
6. _____	_____	_____	_____																		
7. _____	_____	_____	_____																		
8. _____	_____	_____	_____																		
9. _____	_____	_____	_____																		
10. _____	_____	_____	_____																		
_____	<b>100</b>	= Total Cover	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
Woody Vine Stratum (Plot Size: _____)																					
1. _____	_____	_____	_____	Remarks:																	
2. _____	_____	_____	_____																		
_____	_____	= Total Cover	_____																		
% Bare Ground in Herb Stratum <b>0</b>																					

**SOIL**

Sampling Point: blpw8

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1	100	_____	_____	_____	_____	sicl	_____
5-8	10YR 3/1	70	_____	_____	_____	_____	sicl	_____
	2.5Y 4/2	30	_____	_____	_____	_____	sicl	_____
8-18	10YR 3/1	98	10YR 5/6	2	c	m	sicl	_____
18-24+	2.5Y 6/1	90	_____	_____	_____	_____	sicl	_____
	2.5Y 5/1	10	_____	_____	_____	_____	sicl	_____
	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) (LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)

- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)
- (MLRA 72 & 73 of LRR H)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 8  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water depth approximately 24" in center

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpu8  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.322725 N Long: -101.771929 W Datum: NAD 83  
 Soil Map Unit Name: Bt Bowbells-Tonka Complex NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point at edge of cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
			= Total Cover	<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
			= Total Cover																	
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>Bromus inermis</u>	<u>100</u>	<u>yes</u>	<u>FACU</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
			<u>100</u> = Total Cover																	
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
			= Total Cover																	
<b>% Bare Ground in Herb Stratum <u>0</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blpu8

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
6-18	10YR 3/2	100	_____	_____	_____	_____	sicl	_____
18-24+	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks:

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpw9  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323306 N Long: -101.773098 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Shallow depression wetland in cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				<b>Prevalence Index worksheet:</b>  Total % Cover of:                      Multiply by: OBL species                      _____ x1 = _____ FACW species                      _____ x2 = _____ FAC species                      _____ x3 = _____ FACU species                      _____ x4 = _____ UPL species                      _____ x5 = _____ Column Totals:                      _____ (A)                      _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
<b>Herb Stratum (Plot Size: 5')</b>				
1. <u>Rumex crispus</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
= Total Cover				
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>70</u></b>				
<b>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>				
Remarks:				

**SOIL**

Sampling Point: bllpw9

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 2/1	100					sicl	
4-8	10YR 3/2	100					sicl	
8-15	10YR 3/1	95	7.5YR	5	c	m	sicl	
15-30+	10YR 3/1	100						

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) (LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 3  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpu9  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323172 N Long: -101.773325 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
% Bare Ground in Herb Stratum <u>100</u>																				
<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																				
Remarks: <b>no vegetation at observation point</b>																				

**SOIL**

Sampling Point: blpu9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 3/2	100	_____	_____	_____	_____	sicl	_____
7-12+	10YR 4/4	100	_____	_____	_____	_____	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)			
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>			
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>				

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpw10  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323166 N Long: -101.774495 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam, level NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Shallow depression wetland in cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				<b>Prevalence Index worksheet:</b>  Total % Cover of: _____ Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____  Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
<b>Herb Stratum (Plot Size: 5')</b>				
1. <u>Rumex crispus</u>	<u>20</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Artemisia biennis</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
= Total Cover				
<b>Woody Vine Stratum (Plot Size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>60</u></b>				
<b>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>				
Remarks:				

**SOIL**

Sampling Point: blpw10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 2/1	100					sicl	
6-18+	2.5Y 4/2	80	7.5YR 5/6	20	c	m	sicl	

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)			
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>			
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)			
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>				

<b>Restrictive Layer (if present):</b> Type: _____ Depth (Inches): _____	<b>Hydric Soils Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

**HYDROLOGY**

Wetland Hydrology Indicators:					
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<b>(where tilled)</b>			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)			
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)			

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    6 Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0 Saturation Present? (includes capillary fringe)    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpu10  
 Investigator(s): GWM/CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323209 N Long: -101.774384 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<u>Sapling/Shrub Stratum</u> (Plot Size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<u>Herb Stratum</u> (Plot Size: <u>5'</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
<u>0</u> = Total Cover																				
<u>Woody Vine Stratum</u> (Plot Size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
% Bare Ground in Herb Stratum <u>100</u>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks: <b>no vegetation at observation point</b>																				

**SOIL**

Sampling Point: blpu10

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/1	100					sicl	
6-9	2.5Y 4/2	95	10YR 4/6	5	c	m	sicl	
9-15+	2.5Y 4/3	95	2.5Y 4/1	5	d	m	sicl	
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)
- (MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpw11  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323036 N Long: -101.777855 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam, gently undulating NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland at edge of cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>Spartina pectinata</u>	<u>90</u>	<u>yes</u>	<u>FACW</u>																	
2. <u>Bromus inermis</u>	<u>10</u>	<u>no</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>0</u></b>																				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																				
Remarks:																				

**SOIL**

Sampling Point: blpw11

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 2/1	100					sicl	
6-18+	10YR 3/1	95	7.5YR 5/6	3	c	m	sicl	
			2.5Y 4/2	2	d	m	sicl	

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<b>Primary Indicators (minimum of one required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 18

Water Table Present? Yes  No  Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: bllpu11  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): F Lat: 48.323108 N Long: -101.778136 W Datum: NAD 83  
 Soil Map Unit Name: WIB Williams loam.gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: upland comparison point at edge of cultivated field located between Wetlands 11 and 12			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>Bromus inermis</u>	<u>90</u>	<u>yes</u>	<u>FACU</u>																	
2. <u>Artemisia absinthium</u>	<u>10</u>	<u>no</u>	<u>UPL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
<b>100</b>			= Total Cover																	
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>0</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: blpu11

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
6-10	10YR 3/2	100	_____	_____	_____	_____	sicl	_____
10-18+	10YR 3/3	100	_____	_____	_____	_____	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

<b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>		

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blp12  
 Investigator(s): GWM / CET Section, Township, Range: 19, 156, 86  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323211 N Long: -101.778902 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam, level NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland at edge of cultivated field.</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____	(A)																
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____	(B)																
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____	(A/B)																
4. _____	_____	_____	_____																		
			= Total Cover																		
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																					
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>		<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																				
OBL species _____	x1 = _____																				
FACW species _____	x2 = _____																				
FAC species _____	x3 = _____																				
FACU species _____	x4 = _____																				
UPL species _____	x5 = _____																				
Column Totals: _____	(A) _____ (B) _____																				
Prevalence Index = B/A = _____																					
2. _____	_____	_____	_____																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
			= Total Cover																		
<b>Herb Stratum (Plot Size: 5')</b>																					
1. <u>Spartina pectinata</u>	<u>100</u>	<u>yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																	
2. _____	_____	_____	_____																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
6. _____	_____	_____	_____																		
7. _____	_____	_____	_____																		
8. _____	_____	_____	_____																		
9. _____	_____	_____	_____																		
10. _____	_____	_____	_____																		
			<u>100</u>	= Total Cover																	
<b>Woody Vine Stratum (Plot Size: _____)</b>																					
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>																	
2. _____	_____	_____	_____																		
			= Total Cover																		
<b>% Bare Ground in Herb Stratum <u>0</u></b>																					
Remarks:																					

**SOIL**

Sampling Point: bl1pw12

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 2/1	100					sicl	
8-16+	2.5Y 4/2	80	7.5YR 5/6	20	c	m	sicl	
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks:

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 18	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 3	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpw13  
 Investigator(s): GWM / CET Section, Township, Range: 24, 156, 87  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323512 N Long: -101.801821 W Datum: NAD 83  
 Soil Map Unit Name: WIC Williams loam, undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: <b>Depression wetland in cultivated field.</b>			

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. <u>Artemisia biennis</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>																	
2. <u>Rumex crispus</u>	<u>10</u>	<u>yes</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>70</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>																				
Remarks:																				

**SOIL**

Sampling Point: bllpw13

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1	100					sicl	
5-10	10YR 3/1	95	7.5YR 5/6	5	c	m	sicl	
10-16+	2.5Y 4/2	80	7.5YR 5/6	10	c	m	sicl	
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)

- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)  
(MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)  
(LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?** Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3)  
(where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3)  
(where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 4  
 Water Table Present? Yes  No  Depth (inches): 0  
 Saturation Present?  
 (includes capillary fringe) Yes  No  Depth (inches): 0

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water depth approximately 12" in center of wetland

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011  
 Applicant/Owner: McCain State: ND Sampling Point: blpu13  
 Investigator(s): GWM / CET Section, Township, Range: 24, 156, 87  
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR): E Lat: 48.323512 N Long: -101.801821 W Datum: NAD 83  
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: <b>upland comparison point in cultivated field</b>			

### VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
= Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<b>Sapling/Shrub Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
= Total Cover																				
<b>Herb Stratum (Plot Size: 5')</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
= Total Cover																				
<b>Woody Vine Stratum (Plot Size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
= Total Cover																				
<b>% Bare Ground in Herb Stratum <u>100</u></b>																				
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																				
Remarks: <b>no vegetation at observation point</b>																				

**SOIL**

Sampling Point: blpu13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-13	10YR 3/1	100	_____	_____	_____	_____	sicl	_____
13-18+	10YR 3/2	100	_____	_____	_____	_____	sicl	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)			
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>			
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF 12)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>				

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hydric Soils Present?** Yes  No

**HYDROLOGY**

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<b>(where tilled)</b>	
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)	

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

***Appendix C***

***Representative Photographs***



**Photograph 1. Photograph of Wetland 1 located in the BLLP additional survey area. Wetland 1 was cultivated in 2010. The photograph was taken facing south. The railroad tracks are visible in back of the wetland.**



**Photograph 2. Photograph of Wetland 2 located in the BLLP additional survey area. The wetland is a shallow depression and was cultivated in 2010. The photograph was taken facing north towards US Highway 2.**



**Photograph 3. Photograph of Wetland 4 located in the BLLP additional survey area. The wetland edges were cultivated in 2010. The photograph was taken facing northwest across the wetland.**



**Photograph 4. Photograph of Wetland 6 located at the edge of a cultivated field in Section 20 and the railroad right-of-way. The depression wetland is vegetated with hydrophytic vegetation. The photograph was taken facing southeast.**



**Photograph 5. Photograph of Wetland 8 located in the BLLP additional survey area in Section 19. The wetland is flooded beyond its hydric boundary. The photograph was taken facing southwest.**



**Photograph 6. Photograph of Wetland 10 located in Section 19 in the BLLP additional survey area. The shallow depression wetland was cultivated in 2010. The photograph was taken facing southwest.**