Technical Report

Preliminary Draft Wetland Delineation Technical Report:

US 14 EIS Corridor

From Front Street in New Ulm, MN to the south side of CSAH 6 west of North Mankato, MN

Prepared by:

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District 7
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With Support from:
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Table of Contents

List of Tables

List of Figures

1.0 Introduction and Background

The US 14 Draft EIS Project Area (New Ulm, MN to North Mankato, MN) is approximately 22 miles long; bounded on the west by the south side of the US 14 Bridge over the Minnesota River (Brown County) and on the east by the south side of County State Aid Highway (CSAH) 6. The US 14 Draft EIS Project Area, entirely in Nicollet County, includes bypasses of the Cities of Courtland, MN and Nicollet, MN. **Figure 1** shows the generalized US 14 Draft EIS Project Area. Proposed Build Alternatives are depicted schematically on **Figure 2** and in more detail on **Figure 3** (Appendix D).

This Preliminary Draft Wetland Technical Report is intended to provide Mn/DOT and wetland regulatory agencies with a clear picture of the extent of wetland resources in the US 14 Draft EIS Project Area and a preliminary estimate of potential wetland impacts per proposed alternative. These data will be necessary for road designers to attempt to avoid and minimize impacts to project area wetlands.

The US 14 Draft EIS Project Area is situated at the southeastern edge of the Prairie Pothole Region (USGS 2004). The eastern half of the project area is relatively flat with poorly developed natural drainage. The western half of the project area is an undulating to deeply dissected landscape situated close to the Minnesota River.

For purposes of this Preliminary Draft Wetland Technical Report, the US 14 Draft EIS Project Area will be referred to as the US 14 Project Area Polygon. The US 14 Project Area Polygon has been clearly defined and is depicted on **Figure 3** (Appendix D) as a thick-lined yellow polygon. The intention of creating the US 14 Project Area Polygon is to facilitate agency review of this Preliminary Draft Wetland Technical Report. Thus, agencies reviewing this report can sign-off in agreement on the extent of wetlands within the US 14 Project Area Polygon. Further, the Project Area Polygon gives road designers the space to adjust an alignment while knowing what the wetland impacts would be with the adjustment. Some notes on the dimensions of the US 14 Project Area Polygon are as follows:

- The perimeter of the US 14 Project Area Polygon lies 450 feet outside of the centerline for proposed alignment alternatives. This means 300 feet outside of the preliminary Right-of-Way (ROW) Limit and assumes that the preliminary ROW Limit is 150 feet either side of the median centerline,
- The perimeter of the US 14 Project Area Polygon lies 650 feet south of the centerline of existing US 14 between the US 14 western terminus and Hwy. 37. This means 500 feet south of the preliminary ROW Limit in this road section assuming the ROW Limit is 150 feet either side of the centerline of existing US 14,
- The perimeter of the US 14 Project Area Polygon lies 150 feet outside of the centerline for proposed local access road improvements. This means 75 feet outside of the preliminary ROW Limits for proposed local road accesses and assumes that the preliminary ROW Limit is 75 feet either side of the centerline. Local access roads in the US 14 Project Area Polygon are depicted on Figure 3 (Appendix D) in orange color.

- The area of the US 14 Project Area Polygon is 6,902 acres.

It should be noted that wetland delineations in the Minnesota River bottoms near the western terminus of the US 14 Project Area Polygon were completed prior to extension of the Project Area limits over the Minnesota River. With the Project Area extension, some Minnesota River bottom wetlands near the existing US 14 bridge are not accounted for in this Report. Figure 3 depicts the terminus of wetland delineations with respect to the current terminus of the US 14 Project Area Polygon. The wetland boundary near the western Project Area terminus will be extended in Spring 2005 and any additional wetland acreage delineated will be reported in a subsequent version of this Report. Further, any wetland impacts associated with improvements to US 14 that occur outside of the US 14 Project Area Polygon will be reported in a subsequent version of this Report.

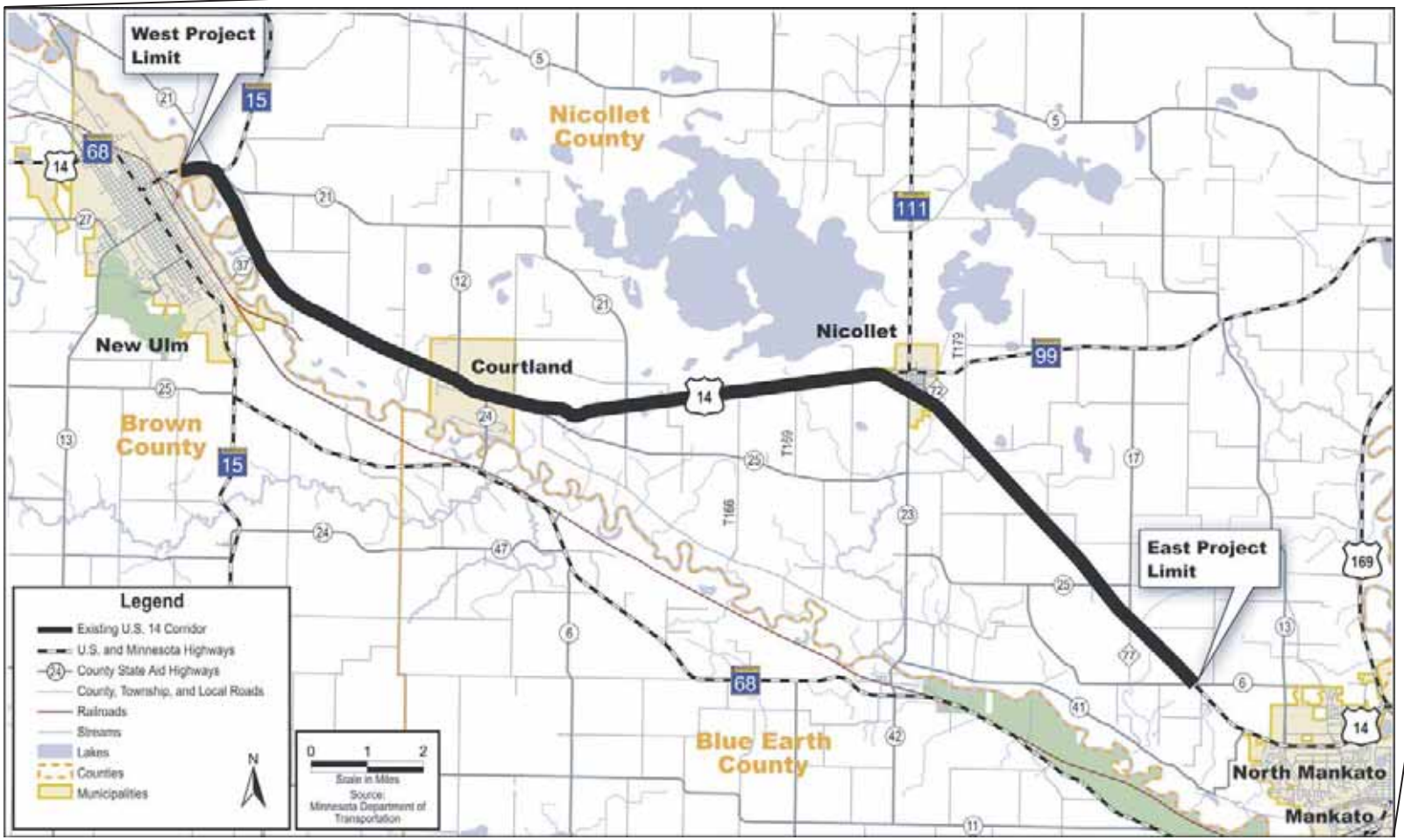
Wetland resources within the US 14 Project Area Polygon were examined using a review of published sources, a planning-level "windshield" assessment of wetlands, and detailed wetland delineation procedures. Detailed wetland delineations were carried out for alternatives to be retained in the US 14 Draft EIS. The Routine On-site Wetland Delineation Method was used to delineate wetlands in non-agricultural landscapes within the US 14 Project Area Polygon. In areas where agriculture had disturbed the vegetation, the Off-site Aerial Slide Review Method was used to delineate potential wetland. The use of the Aerial Slide review method in agricultural landscapes was effective in identifying potential Type 1 wetlands (per Circular 39 terminology), a wetland type that is often undetected with other delineation methods. See Section 2.0 for a description of methods used to assess wetland resources in the US 14 Project Area Polygon. See Section 3.0 for results of the wetland delineation effort.

The Aerial Photo Exhibit (**Figure 3**), folded at the end of this report, shows a 24" X 36" aerial photo base map of the US 14 Project Area Polygon in addition to the following information:

- National Wetland Wetland Inventory (NWI),
- Hydric Soils,
- The US 14 Project Area Polygon boundary,
- Digitized boundaries of delineated wetlands (agricultural wetlands and non-agricultural wetlands) labeled with unique wetland identifiers,
- Mn/DNR Public Waters and Public Waters Wetlands,
- Gridwork of Township-Range-Section Boundaries with each section labeled.

Two Compact Disks (CDs) are included in the back pocket of this report; the first CD contains a pdf of this Report and associated graphics, and the second CD contains the Farm Service Agency (FSA) aerial slides for the US 14 Project Area Polygon for the years 1991-2000 .

Key events and associated dates in the assessment of wetland resources in the US 14 Project Area Polygon, those that are completed and those that remain to be completed, are summarized in **Table 1**. See sections below for more detailed description of wetland assessment activities in the US 14 Project Area Polygon.

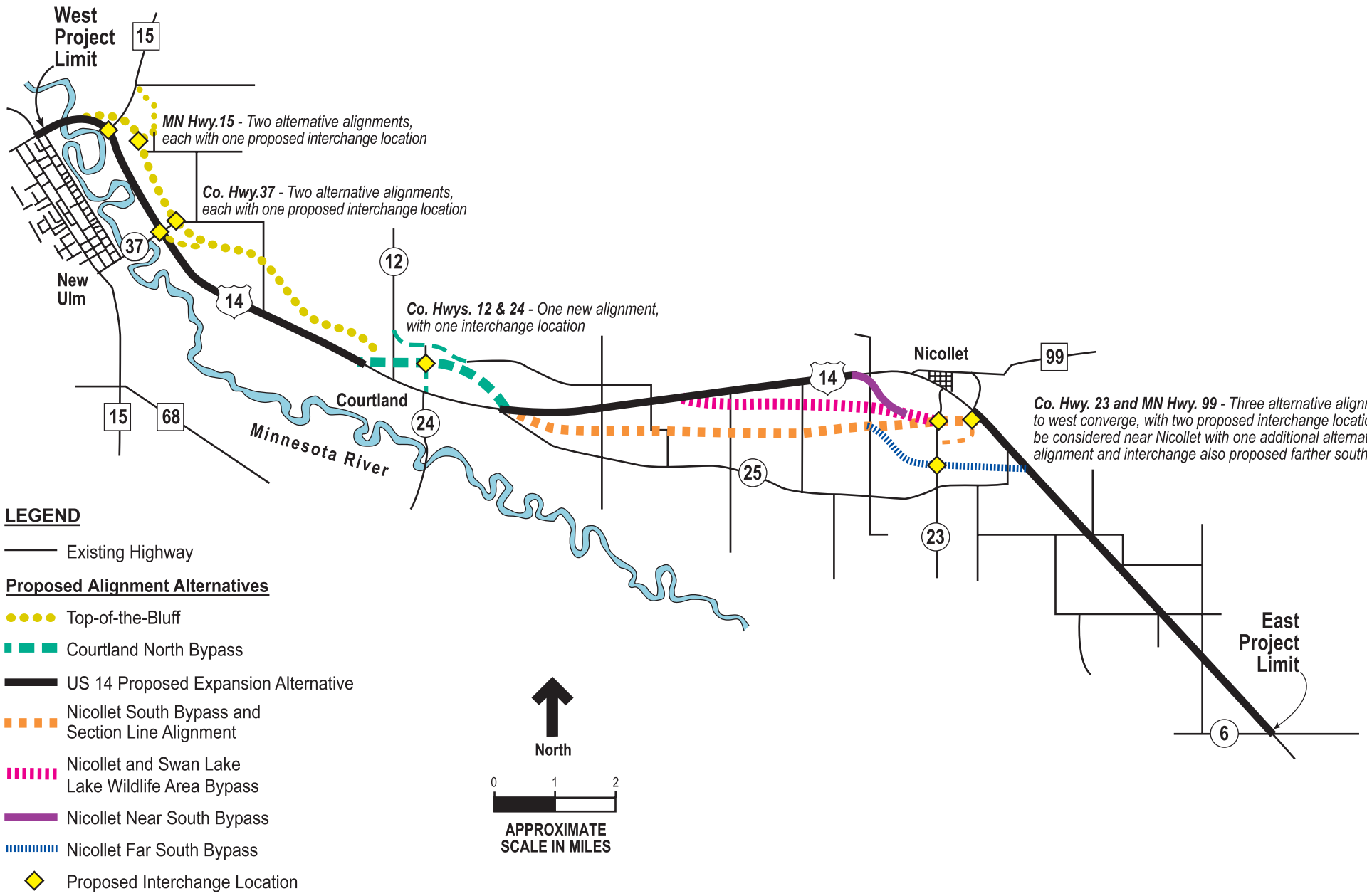


US 14 Wetland Technical Report
New Ulm to North Mankato

T112004005MKE 316774.14.D1 Study Area Map 11-29-04tll

Figure 1

Study Area Map



US 14 Wetland Technical Report
New Ulm to North Mankato

T112004005MKE 316774.14.D1 US 14 Alignments_2 12-27-04tl

Figure 2

US 14 Proposed Alternatives

TABLE 1
Key Events and Dates Related to Wetland Assessment in the US 14 Project Area Polygon

Event	Date	Notes
Planning-Level "Windshield" Wetland Survey	June 2, 2004	Cursory assessment of wetland resources. Digitized and submitted to Mn/DOT as GIS layer.
Three-Parameter Wetland Delineations (Non-Agricultural Wetlands)	September 22-23, 2004 October 18-20, 2004	Wetland boundaries recorded with GPS. Uploaded to GIS and submitted to MnDOT
Aerial Slide Review (Agricultural Wetlands)	September – November, 2004	10 years of Farm Service Agency aerial slides analyzed in agricultural areas within the US 14 Project Area Polygon.
Technical Evaluation Panel (TEP) Field Review	To be scheduled concurrent with Mn/DOT review of this Report	Field review exercise with Mn/DOT, wetland regulatory personnel, and CH2M HILL wetland professional. Purpose is to gain concurrence on wetland boundaries within the US 14 Project Area Polygon.
Selection of Preferred Alternative and submittal of "Final" version of this Report	October, 2005	Key report update will be precise accounting of wetland impacts along the Preferred Alternative.

Representatives of Mn/DOT, state, and federal environmental agencies met on July 21, 2004 for a day-long Environmental Workshop to discuss issues relevant to the US 14 Project Area. The Workshop was held at the Mn/DNR Regional Headquarters in New Ulm, MN. In attendance were representatives from the Mn/DNR, Board of Water and Soil Resources (BWSR), Nicollet County Soil and Water Conservation District (SWCD), US Fish and Wildlife Service, and the US Army Corps of Engineers (USACOE). The issue of wetlands was among a suite of environmental subjects discussed. At this Workshop, BWSR asserted that Type 1 wetlands (per Circular 39 terminology), while not as obvious on the landscape as other Wetland Types, are wetlands nonetheless and should not be overlooked in the wetland delineation effort for the subject US 14 (Front Street in New Ulm, MN to South Side of CSAH 6 – west of North Mankato, MN) Project Area.

Further wetland agency contacts included coordination with the Nicollet County SWCD, BWSR and NRCS concerning the aerial slide review conducted to delineate agricultural wetlands in the US 14 Project Area Polygon.

1.1 Legal Context

At the State Government level wetlands are protected by the Minnesota Wetland Conservation Act (WCA) administered by the Board of Water and Soil Resources (BWSR) and the Protected Waters Program administered by the Minnesota Department of Natural Resources (MnDNR).

At the Federal Government level, wetlands are protected by the Clean Water Act (CWA), primarily Sections 401 and 404; and the Swampbuster provisions of Federal agricultural legislation (The Farm Bill).

To comply with Section 404 of the Clean Water Act, the federal government mandates the use of two wetland delineation manuals: the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Department of Agriculture's National Food Security Manual* (third ed.). A 1994 Federal Memorandum of Agreement between the Department of Defense, Department of Interior, USEPA, and the USDA requires the use of the *1987 Corps of Engineers Wetland Delineation Manual* by all federal resource agencies on nonagricultural land and the *National Food Security Act Manual* for determinations or delineations on agricultural lands.

Wetland regulations relevant to the US 14 Project Area Polygon are summarized below.

State Regulations

Minnesota WCA. The WCA (April 2003 update) establishes a state policy of no net loss of wetlands and requires in the course of project development the avoidance of wetlands, minimization of impacts to wetlands, and mitigation for unavoidable impacts to wetlands. The WCA specifies several exemptions, e.g. conditions under which wet areas are not afforded the protection of the WCA. Categories of exemptions that potentially apply to the US 14 Project Area Polygon, excerpted from the *Minnesota Wetland Conservation Act Manual (April 2003 update)*, are **1)** Incidental Wetlands (See Section 3.5 for more information about Incidental Wetlands), and **2)** The *de minimis* exemption. A *de minimis* is an area of wetland that may be impacted for which there is no obligation to mitigate for it. The appropriate *de minimus* varies with respect to several factors such as location in the State, wetland types impacted and presence of shoreland zones. However, if the *de minimus* impact threshold is exceeded then mitigation is required for all wetland impacts. A preliminary estimate of wetland impacts per proposed alternative (See Section 3.4) shows that the applicable *de minimus* will likely be exceeded by any proposed alternative. Therefore, the *de minimus* will not likely be applicable to the US 14 Project Area Polygon.

Governor's Executive Order 03-04 and 00-02. This is the No-Net-Loss of Wetlands policy for the State of Minnesota.

Pubic Waters Work Permit Program. Those wetlands, waters, and streams that are included on Protected Waters and Wetlands Maps are under the jurisdiction of the Mn/DNR and specifically excluded from protection under the WCA.

Federal Regulations

Clean Water Act (CWA) (Sections 404 and 401). Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers administers the Section 404 permit program, while the US Environmental Protection Agency oversees the overall implementation of the Clean Water Act.

The United States Supreme Court issued a decision on January 8, 2001 asserting that the U.S. Army Corps of Engineers does not have jurisdiction per Section 404 of the CWA over wetlands that are isolated with respect to surface hydrology. This decision, referred to as Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers does not affect the Corps' jurisdiction of wetlands that have a surface water connection (intermittent or perennial) to tributaries (navigable or other). The Corps will determine whether it has jurisdiction per the CWA over isolated basins on a case by case basis.

DOT Order 5660.1A. "Preservation of the Nation's Wetlands" policy.

Swampbuster Provisions of the Food Security Act. The Swampbuster program provides disincentives for wetland conversion by denying federal farm program benefits to farmers who violate the program by converting wetlands to agricultural use.

Executive Order (EO) 11990 – Protection of Wetlands. EO 11990 requires federal agencies to minimize detrimental actions affecting wetlands while preserving and enhancing the natural and beneficial values of wetlands. This protection is extended to road improvements that, in part, receive Federal funding.

1.2 Purpose of This Report

This Preliminary Draft Wetland Technical Report has been prepared in order to:

- **Present** an accurate record of wetland resources within the US 14 Project Area Polygon early in the road planning process,
- **Provide** a document with which to guide the Technical Evaluation Panel (TEP) in a field review,
- **Solicit** review and comment on wetland resources from Mn/DOT and wetland regulatory agencies early in the planning process,
- **Calculate** estimated wetland impacts by wetland type per proposed alignment alternative, and,
- **Assist** in the comparison of alternatives proposed in the DEIS.

Refinements of alternatives throughout the planning process will likely change wetland impacts. Wetland impacts will be calculated again once the Preferred Alternative has been selected and the road footprint is known with more precision.

This draft report is intended for the critical review of appropriate wetland resource agencies such as BWSR, Nicollet County SWCD, Mn/DNR, and the U.S. Army Corps of Engineers. This draft report is also intended to serve as a resource with which to guide a Technical Evaluation Panel (TEP) in a field verification exercise. It is expected that this draft report is a working document; agency comments will be incorporated in the final report. As a result of the TEP, it is expected that wetland resource agencies will sign-off in agreement of the wetland resources in the US 14 Project Area Polygon. This Preliminary Draft Wetland Technical Report is intended to provide definitive locations of wetlands in the US 14 Project Area Polygon so that road designers can have the information necessary to avoid and minimize impacts to wetlands to the extent practicable. It is anticipated that at the time of the selection of the Preferred Alternative (FEIS phase), this report will be updated and will become the "Final Wetland Technical Report".

1.3 Wetland Naming Protocol Used in this Report

Wetlands in this report are summarized in two sections; Section 3.1 – Summary of Non-Agricultural Wetlands, and Section 3.2 – Summary of Agricultural Wetlands. Wetlands

described in this report have been assigned unique identifiers as seen in the Wetland Summary section and in **Figure 3** – Aerial Photo Exhibit. The naming protocol for identified wetlands in this report uses a prefix of "AW" for Agricultural Wetlands, and "W" for non-agricultural wetlands [1]. **Table 2** shows the wetland naming protocol for purposes of this report using the **Prefix-Township-Range-Section-Wetland Number** format.

TABLE 2
Wetland Naming Protocol for the US 14 Project Area Polygon

Wetland Effort *	**Prefix**	**Township**	**Range**	**Section**	**Wetland Number**
Agricultural Wetlands	AW	-XX [1]	-# #	-# #	-#
Non-Agricultural Wetlands	W	-XX [1]	-# #	-# #	-#

* Agricultural Wetlands (AW), in the context of this report, are not to be confused with wetlands mapped by the NRCS.

[1] Townships are indicated with a two-letter code as follows: “CO” = Courtland, “NI” = Nicollet, “NU” = New Ulm, and “BE” = Belgrade

In addition to the above-referenced wetland naming protocol, wetlands were numbered by their occurrence west to east in the US 14 Project Area Polygon (without regard to status as Agricultural Wetlands or Non-Agricultural Wetlands) from Wetland #1 through Wetland #64. These two naming protocols are separated by a colon “:” in Appendices E and F and in Figure 3. Hopefully, this dual naming protocol will be useful to those agencies who will and will not examine this Report on a section by section basis.

[1] The use of the prefix “AW” and “W” wetland naming protocols, for purposes of this report, is not to be confused with the Natural Resource Conservation Service codes “AW” meaning “Artificial Wetland” and “W” meaning “Wetland”.

2.0 Methods

Assessment of wetlands in the US 14 Project Area Polygon consisted of a review of published sources, a preliminary planning-level "windshield" survey of the US 14 Project Area Polygon, delineation of non-agricultural wetlands per the "Three-parameter" methodology, and delineation of agricultural wetlands with an aerial slide review.

Published sources used in the wetland assessment included National Wetland Inventory (NWI) mapping, Mn/DNR Protected Waters and Wetlands Map for Nicollet County, soil survey data, rainfall data, aerial photography, topographic maps, and stream gage data.

2.1 Review of Published Resources

The review of published sources is relevant to any subsequent effort to assess the extent of wetland resources, e.g. Planning-Level Wetland Survey (See Section 2.2), Three-Parameter Wetland Delineations (Non-Agricultural Wetlands) (See Section 2.3), and Aerial Slide Review (Agricultural Wetlands) (See Section 2.4).

Soils

The *Soil Survey of Nicollet County, Minnesota* (NRCS 1994) and the County Hydric Soils List for Nicollet County (NRCS 2004) were examined prior to and during fieldwork in the US 14 Project Area Polygon. SSURGO digital soils data were obtained and hydric soil polygons were overlain on aerial photography for use during fieldwork and as part of the aerial slide review analysis. Definitions of hydric soils are per the *Field Indicators of Hydric Soils in the United States: Guide for Identifying and Delineating Hydric Soils, Version 5.01, 2003* (NRCS 2003) and the *1987 Corps of Engineers Wetland Delineation Manual*. These sources were reviewed prior to and during fieldwork. **Table 3** summarizes hydric soils in Nicollet County. **Figure 3** – Aerial Photo Exhibit (Appendix D) shows polygons of hydric soils mapped in the US 14 Project Area Polygon.

TABLE 3
Characteristics and landscape positions of hydric soils in the US 14 Project Area Polygon

Map Unit Symbol	Map Unit name	Landscape Position
35	Blue Earth mucky silt loam	Depressions on moraines
84	Brownton silty clay	Flats on moraines. Rims on depression on moraines.
86	Canisteo clay loam	Rims on depression on moraines. Flats on moraines
109	Cordova clay loam	Flats on moraines. Swales on moraines.
110	Marna silty clay loam	Flats on moraines. Swales on moraines.
112	Harps clay loam	Rims on depressions on moraines. Flats on moraines.
113	Webster clay loam	Flats on moraines. Swales on moraines.
114	Glencoe silty clay loam	Depressions on moraines

TABLE 3
Characteristics and landscape positions of hydric soils in the US 14 Project Area Polygon

Map Unit Symbol	Map Unit name	Landscape Position
134	Okoboji silty clay loam	Depression on moraines
196	Joliet silty clay loam	Swales on stream terraces. Flats on stream terraces
221	Canisteo silty clay loam, depressional	Depressions on moraines
269	Millington clay loam	Swales on floodplains. Flats on floodplains.
317	Oshawa silty clay loam	Depressions on floodplains
321	Tilfer silty clay loam	Flats on stream terraces. Swales on stream terraces.
336	Delft clay loam	Swales on moraines. Drainageways on moraines.
386	Okoboji mucky silty clay loam	Depressions on moraines.
525	Muskego muck	Depression on moraines
539	Klossner muck	Depressions on moraines
575	Nishna silty clay loam	Flats on floodplains. Swales on floodplains.
854	Cordova-Urban Land Complex	Flats on moraines.
956	Canisteo – Glencoe Complex	Rims on depressions on moraines. Flats on moraines.
978	Cordova – Rolfe Complex	Flats on moraines. Swales on moraines.
1075	Klossner – Muskego Complex, ponded	Depression on moraines
1917	Nishna silty clay, ponded	Backswamps on floodplains
1931	Essexville sandy loam	Beach ridges on moraines
1999	Minneiska – Kalmarville Complex, frequently flooded	Flats on floodplains. Meanders on floodplains.

Source: *Soil Survey for Nicollet County* (NRCS 1994)

Rainfall Data

Analysis of rainfall data pertinent to the US 14 Project Area Polygon serves two purposes: **1)** to establish the validity of wetness signatures interpreted in the aerial slide review (Agricultural Wetlands) and **2)** to assist in interpretation of wetland hydrology indicators observed during 3-parameter wetland delineations (Non-Agricultural Wetlands). For both wetland delineation methodologies, a non-normal rainfall is considered to be plus or minus ≥30% of the normal rainfall. The normal rainfall is based on the 1971-2000 average. **Table 4** shows normal rainfall for the 1971-2000 period compared to actual rainfall (April-August) recorded at two weather stations near the US 14 Project Area Polygon; one in Mankato, MN and the other in New Ulm, MN (National Weather Service 2004). Shaded cells in **Table 4** indicate non-normal rainfall.

The 1990's was one of the warmest decades on record and weather patterns in the Upper Midwest during this period were highly variable.

TABLE 4

Rainfall Recorded at 2 Weather Stations in the US 14 Project Area Polygon Compared to the 30-Year Normal (1971-2000) * †

Year	April		May		June		July		August	
	Mankato [1]	New Ulm [2]	Mankato [1]	New Ulm [2]	Mankato [1]	New Ulm [2]	Mankato [1]	New Ulm [2]	Mankato [1]	New Ulm [2]
1991	5.36	5.43	6.76	3.95	4.83	5.19	6.24	4.94	4.53	4.51
1992	2.05	2.81	2.15	2.21	4.50	4.21	4.77	3.33	5.19	5.19
1993	3.86	2.40	5.90	5.66	9.21	7.44	6.68	7.72	8.37	6.22
1994	4.19	4.51	1.66	2.60	7.64	6.22	5.11	2.92	6.32	7.18
1995	2.92	3.23	3.18	3.49	5.65	3.71	7.88	6.10	4.57	3.36
1996	0.66	0.37	4.06	3.87	8.96	4.35	1.96	2.59	6.18	3.85
1997	1.58	1.28	3.47	2.33	5.20	5.10	6.21	5.44	3.54	2.82
1998	3.43	0.86	4.11	3.11	4.92	5.68	2.50	6.28	4.03	3.08
1999	6.12	4.69	5.36	3.46	5.27	5.99	6.66	5.28	3.85	3.58
2000	1.14	0.76	5.77	8.49	7.73	4.34	4.48	4.17	2.20	5.85
2001	5.94	7.24	4.32	2.78	3.47	3.12	3.14	3.94	1.44	1.85
2002	2.13	2.36	2.05	2.38	5.09	10.05	2.00	3.62	4.92	3.41
Mankato Normal Range [1]	2.04-4.26		2.46-4.11		4.04-7.24		3.57-6.30		3.48-5.27	
New Ulm Normal Range [2]	1.57-3.13		2.32-4.10		3.31-5.30		2.38-4.83		2.96-4.75	

Source: National Weather Service

* Shaded cells in this table indicate rainfall outside of the normal range for a given weather station.

[1] Mankato, MN Weather Station (Station # 21-5073).

[2] New Ulm, MN Weather Station (Station # 21-5887).

† The Minnesota Wetland Conservation Act defines normal rainfall as the 30-year average (1971-2000) and the normal range is defined as ± ≥30% of normal rainfall.

National Wetland Inventory (NWI)

Digital NWI data were obtained and overlain on aerial photography and depicted on maps used during wetland fieldwork (USFWS 1990). The NWI is a useful tool with which to guide wetland fieldwork; however, this effort was completed over 20 years ago, is based on remote-sensing methods, and has not been systematically field-verified. Polygons mapped by the NWI are depicted on the Aerial Photo Exhibit.

Aerial Photography

Digital color orthophotos were obtained from the US Department of Agriculture, Farm Service Agency (FSA) and used for the Aerial Photo Exhibit (at back of this report). Photos were taken between June 2002 and August 2002 during a time of full leaf out and mature crops prior to harvest . The resolution of the aerial photos used is approximately 2 meters. Aerial slides from the FSA were also obtained for other years as part of the aerial slide review conducted to determine the extent of agricultural wetlands. See Section 2.4 Aerial Slide Review for more information. The FSA aerial slides for the complete US 14 Project Area Polygon for the period 1991-2000 are burned on a CD, included at the back of this report. **Table 5** summarizes dates of aerial photography with respect to rainfall normalcy.

TABLE 5
Dates of Farm Service Agency Aerial Photography with Respect to Rainfall Normalcy

Year	Month	Rainfall Normalcy	
		New Ulm, MN	Mankato, MN
1991	August	Normal	normal
1992	July	Normal	normal
1993	July	Non-Normal (**wet**)	Non-normal (**wet**)
1994	June	Non-normal (**wet**)	Non-normal (**wet**)
1995	August	Normal	normal
1996	July	Normal	Non-normal (**dry**)
1997	July	Non-normal (**wet**)	normal
1998	Unknown	Unknown	Unknown
1999	July	Non-normal (**wet**)	Non-normal (**wet**)

Source: National Weather Service

Natural Resources Conservation Service (NRCS) Wetland Mapping

The NRCS has mapped several polygons in the vicinity of the US 14 project area as "AW" = Artificial Wetlands, "FW" = Farmed Wetlands, "W" = Wetlands, and "PC" = Prior Converted. However, very few of these NRCS designations have been certified (SWCD personal communication with Jeff Olson, November, 2004). Therefore, these polygons are not depicted in this report. Concurrence of the Technical Evaluation Panel (TEP) will be sought to use this Report and revisions of this Report as the basis for wetland resources in the US 14 Project Area Polygon rather than using previous wetland mapping from other sources such as NRCS mapping..

Public Waters and Public Waters Wetlands

Public Waters Wetlands are those wetlands regulated by the Minnesota Department of Natural Resources (Mn/DNR) and specifically excluded from jurisdiction under the Minnesota Wetland Conservation Act. The following, exerpted from the Mn/DNR webpage, summarizes key facts about Public Waters Wetlands:

> *"Public waters wetlands include all type 3, type 4, and type 5 wetlands (as defined in U.S. Fish and Wildlife Service Circular No. 39, 1971 edition) that are 10 acres or more in size in unincorporated areas or 2 ½ acres or more in size in incorporated areas (see Minnesota Statutes Section 103G.005, subd. 17b, Wetland Type). DNR Waters utilizes county-scale maps to show the general location of the public waters and public waters wetlands (lakes, wetlands, and watercourses) under its regulatory jurisdiction. These maps are commonly known as Public Waters Inventory (PWI) maps. The regulatory "boundary" of these waters and wetlands is called the ordinary high water level (OHWL)."*

Locations of Public Waters and Public Waters Wetlands within the US 14 Project Area Polygon were determined with review of the Protected Waters and Wetlands Map for Nicollet County (Minnesota Department of Natural Resources 1996). Relevant data from the Protected Waters and Wetlands Map for Nicollet County has been transcribed onto Figure 3 (Appendix D), found at the back of this Report. Individual Protected Waters and Wetlands within the US 14 Project Area Polygon are described in Section 3.3 – Protected Water Wetlands.

2.2 Planning-Level Wetland Survey

Digital NWI (USFWS 2004) and hydric soils data (SSURGO 2004) were overlain on 2002 aerial photography for the US 14 Project Area Polygon. These data were used to assist with a "windshield level" verification of wetlands in the US 14 Project Area Polygon conducted on June 2, 2004. All areas mapped as wetland by NWI or hydric soil by SSURGO within the US 14 Project Area Polygon were observed generally from the nearest road. Field observations were recorded pertaining to the landscape position, dominant vegetation, and readily visible indicators of hydrology (crop drown-out, standing water, moist or cracked soil, tire ruts). However, field data collected at this stage was cursory and only recorded if readily observable from the roadside with binoculars.

Areas that, based on June 2, 2004 field observations, showed evidence of being potential wetlands were depicted as polygons on a preliminary GIS map of wetlands in the US 14 Project Area Polygon. The results of the "windshield" wetland survey were used to provide preliminary input to road designers on potential wetland locations. Depictions of estimated wetland boundaries at the Planning-Level are not to be construed as Wetland Delineations.

2.3 Three-Parameter Wetland Delineations (Non-Agricultural Wetlands)

Detailed wetland delineations were undertaken when proposed alignment alternatives were screened to those that will be carried forward in the DEIS. The delineation effort built upon the previous planning-level wetland assessment.

Wetland delineations in non-agricultural areas were conducted in accordance with the Routine On-site procedures in the *1987 US Army Corps of Engineers Wetland Delineation Manual* (hereafter, *The 1987 Manual*) and associated Regulatory Guidance Letters. Data on soils, hydrology, and vegetation (the three parameters mandated in the 1987 Manual) were collected at each potential wetland. At least one sampling transect was established at each wetland which included a sampling pit clearly on the upland side of the wetland boundary and another sampling pit clearly on the wetland side of the wetland boundary. The wetland boundary was established at the line where one or more of the mandatory parameters (hydric soils, indicators of wetland hydrology, and a predominance of hydrophytic vegetation) were not present.

The definition of hydric soils as used in this report is per *Field Indicators of Hydric Soils, Version 5.01, March 2003. The 1987 Manual* provides additional information relevant to the definition and characteristics of hydric soils. The *Soil Survey for Nicollet County, Minnesota* (NRCS 2004) was consulted for locations of polygons of hydric soils, potential inclusions of hydric soil, and non-hydric soils. Soil map units considered hydric in Nicollet County are based on the *Nicollet County Hydric Soils List* maintained by the Natural Resources Conservation Service (NRCS 2004).

The definitions of wetland hydrology and predominance of hydrophytic vegetation follow *The 1987 Manual*. The designation of Wetland Plant Indicator Status for plants observed in wetland and upland sampling pits follows *The National List of Plant Species That Occur in Wetlands – 1996 Update* (USFWS 1996).

Boundaries of Non-Agricultural wetlands were recorded with a Garmin e-trex Legend GPS Unit. Prior to fieldwork, the GPS Unit was tested for precision and accuracy and found to allow navigation to within ~2 meters of a test waypoint in an environment relatively free of tree cover. Selected wetland boundary points recorded with GPS were also flagged with fluorescent red pin flags numbered with the corresponding GPS waypoint number. The purpose of the flagging was to assist in the Technical Evaluation Panel (TEP) should it have a field component , yet to be scheduled.

2.4 Aerial Slide Review (Agricultural Wetlands)

Agricultural wetlands may be dry enough to grow crops in some years though wet enough in other years to stunt or prevent crop growth. Thus, interpretation of a sequence of years of aerial photography is used to identify agricultural wetlands. In general, areas that consistently show signatures of wetness are potential agricultural wetlands; whereas, areas that do not consistently show signs of wetness are not agricultural wetlands. Procedures used to map Agricultural Wetlands in the US 14 Project Area Polygon follow *The State of Minnesota Cooperative Agreement for Implementation of the Federal Wetland Delineation MOA*, specifically, *The Minnesota Wetland Mapping Conventions for the 1985 Food Security Act (FSA) (as amended) and Section 404 of the Clean Water Act (CWA).*

For purposes of this Preliminary Draft Wetland Technical Report, we discuss "Non-Agricultural Wetlands" and "Agricultural Wetlands" in separate sections. See Sections 2.3, 3.1, and 3.2, respectively. "Agricultural Wetlands" were delineated with the NRCS off-site aerial slide review methodology. The reason we chose this dual methodology is because of the difficulty of

locating wet depressions in mature row crops. These wet depressions are more easy to locate using an aerial slide review and wetness signatures may not be present at the time of fieldwork. Further, offsite methods minimize intrusiveness in farmed land and avoid potential crop damage that may occur in the course of traversing it.

Aerial photography (35 millimeter slides) for the US 14 Project Area Polygon was obtained from the Farm Service Agency. The aerial slide set was composed of ten years of data, from 1991-2000 and 2002. The US 14 Project Area Polygon comprises portions of more than 40 sections, thus, the whole slide set contained over 400 photos. The Nicollet County Soil and Water Conservation District (SWCD) scanned these slides and burned them on a CD as high resolution jpeg images, organized by Township, Range, and Section (T-R-S). This CD is included at the back of this report. Aerial slides used for this effort were not ortho-rectified.

Aerial slide images for a ten-year sequence (for a given Township-Range-Section) were projected onto a wall with a digital projector. The aerial slides were not ortho-rectified. The scale of the first projected image of the sequence was measured and recorded based on known distances between roads or other recognizable features. The scale of subsequent projected images in the sequence was adjusted to match the scale of the first projection by adjusting the distance of the projector to the wall. Overhead transparency sheets were aligned with the projected images and taped to the wall. Areas showing signatures of wetness for a given year were outlined on the transparencies with permanent marker. Based on the known projection scale, the area (acres) of Agricultural Wetlands was determined and the locations were digitized onto ortho-rectified photography and displayed as a GIS layer.

Three corroborative data sources in the aerial slide review were used to draw conclusions concerning the designation of an area as wetland in the US 14 Project Area Polygon. These are:

- Wetness signatures recorded from the Farm Service Agency (FSA) aerial slides,
- Hydric soil mapping by the Nicollet County Soil Survey, and
- National Wetland Inventory (NWI) mapping.

These corroborative data sources were qualitatively weighted with respect to their estimated reliability in predicting the presence or absence of wetlands. The data source with the best likelihood of predicting the presence / absence of wetlands is the FSA aerial slide review, the metric being the percentage of years that a wetness signature is observed. When corroborated with hydric soil mapping, the FSA slide review is a reliable off-site procedure for identifying potential wetlands. In our professional opinion, NWI mapping is an important corroborative source; however, this effort is outdated and most of it has never been field verified. Therefore, the use of NWI as corroborative evidence doesn't likely add much to ones acuity in identifying wetlands using off-site procedures.

Table 6 shows the decision matrix for off-site wetland determinations prescribed for a "Pothole" dominated landscape modified from the Minnesota Wetland Mapping Conventions. The decision matrix in the Mapping Conventions was modified for purposes of this Report in order to provide a more conclusive wetland status within the US 14 Project Area Polygon. The following bulleted points summarize the contents of Table 6:

- If the aerial slide review revealed wetness signatures in ≤ 30% of years analyzed, then the parcel was designated as Non-wetland regardless of hydric soil mapping (yes or no) or NWI mapping (yes or no).
- If the aerial slide review revealed wetness signatures in >30% but <50% of years analyzed and corroborative sources (hydric soils mapping and NWI mapping) were both present, then the parcel was designated as Wetland.
- If the aerial slide review revealed wetness signatures in >30% but <50% of years analyzed and if either hydric soils mapping or NWI mapping were absent, then the conclusion drawn is that the parcel must be field verified.
- If the aerial slide review revealed wetness signatures in >30% but <50% of years analyzed and if both hydric soils mapping and NWI mapping were absent, then the conclusion drawn is that the parcel is Non-wetland.
- If the aerial slide review revealed wetness signatures in ≥50% of years analyzed and if both hydric soil mapping and NWI mapping were present then the parcel was designated as Wetland.
- If the aerial slide review revealed wetness signatures in ≥50% of years analyzed and if hydric soil mapping was present and NWI mapping was not present then the parcel was designated as Wetland.
- If the aerial slide review revealed wetness signatures in ≥50% of years analyzed and if hydric soil mapping was not present (regardless of NWI mapping) then the conclusion drawn is that the parcel must be field verified.

TABLE 6

Decision Matrix for Off-Site Wetland Determinations for a Pothole Dominated Landscape

Farm Service Agency (FSA) Slides	**Map Units: Hydric Soils**	**National Wetland Inventory (NWI) Mapping[1]**	**Wetland Status**
≤ 30%	Yes or No	Yes or No	Non-wetland
>30% and <50%	Yes	Yes	Wetland
>30% and <50%	Yes	No	Field verify
>30% and <50%	No	Yes	Field verify
>30% and <50%	No	No	Non-wetland
≥ 50%	Yes	Yes	Wetland
≥ 50%	Yes	No	Wetland
≥ 50%	No	Yes	Field verify
≥ 50%	No	No	Field verify

TABLE 6

Decision Matrix for Off-Site Wetland Determinations for a Pothole Dominated Landscape

Farm Service Agency (FSA) Slides	Map Units: Hydric Soils	National Wetland Inventory (NWI) Mapping [1]	Wetland Status

Source: Modified from Minnesota Wetland Mapping Conventions for the 1985 Food Security Act (FSA) (as amended) and Section 404 of the Clean Water Act (CWA).

[1] Aerial slides taken after a month of non-normal rainfall, i.e. plus or minus ≥ 30% of normal, should be used with caution in the analysis or not used at all.

[2] Field verification will take place as part of the Technical Evaluation Panel (TEP) field exercise and agency review. Best professional judgement was used where data were not conclusive using all available corroborative evidence.

Hydric soil mapping (NRCS 1994), the NWI (USFWS 1990), and climatic data (National Weather Service 2004) were used to augment the aerial slide interpretation effort. Hydric soil mapping and NWI data are GIS layers displayed in **Figure 3** (Aerial Photo Exhibit). Climatic data were used to determine rainfall prior to the date an aerial photo was taken. Analysis of rainfall is provided in Section 2.1 – Review of Published Sources (See **Table 4**).

Results of the Aerial Slide Review are summarized in Section 3.2 – Agricultural Wetlands and in Appendix B – Data Sheets for Aerial Slide Review. Agricultural Wetlands are depicted on **Figure 3** (Aerial Photo Exhibit – Appendix D).

2.5 Wetland Functional Assessment (MnRAM v. 3.0)

Wetland functions were assessed for wetlands within the US 14 Project Area Polygon using the Minnesota Routine Assessment Method, version 3.0 (MnRAM v. 3.0). For purposes of this Preliminary Draft Report and the Draft EIS, project area wetlands were categorized into logical functional groupings (A-G). Thus, MnRAM v. 3.0 was not performed on each wetland within the US 14 Project Area Polygon; rather, MnRAM v. 3.0 was performed on groupings of wetlands that express functionality similarly. MnRAM v. 3.0 in the Draft EIS phase of this project thus serves as a means with which to compare wetland functional impacts among proposed US 14 alternatives. Wetland functional groupings are as follows:

- **Functional Grouping A** – Isolated (hydrologically) basins with emergent vegetation.
- **Functional Grouping B** - Isolated (hydrologically) agricultural basins, vegetation type unknown.
- **Functional Grouping C** – Isolated (hydrologically) agricultural basins, no hydrophytic vegetation apparent (crops only).
- **Functional Grouping D** – Isolated (hydrologically) basins with perennial woody vegetation.
- **Functional Grouping E** - Non-isolated (hydrologically) basins with emergent or herbaceous vegetation.
- **Functional Grouping F** - Non-isolated (hydrologically) basins with perennial woody vegetation.

- **Functional Grouping G** – Isolated (hydrologically) basins with open water or excavated ponds.

Detailed MnRAM v. 3.0 forms for each functional grouping (A-G) are provided in Appendix C of this Preliminary Draft Report.

3.0 Results

Aerial Slide Review. Two-hundred and three (203) depressional areas were analyzed with the Aerial Slide Review, some of which lie outside of the current US 14 Project Area Polygon and many of which were determined to be "Non-Wetlands" per off-site delineation procedures. Of these 203 depressional areas, 39 lie wholly or partly in the US 14 Project Area Polygon *and* exhibit some evidence of wetlands per off-site delineation procedures. Of these 39 polygons, 30 were determined to meet the definition of "Wetlands" per off-site delineation procedures and 9 polygons were determined to require "Field Verification". The total area of these 39 polygons within the US 14 Project Area Polygon is 170.3 acres. The total area of the 30 polygons that meet the definition of "Wetlands" per off-site delineation procedures is 145.4 acres. The total area of the 9 polygons for which "Field Verification" will be necessary is 24.9 acres.

Routine On-Site Wetland Delineation. The Routine On-Site Wetland Delineation effort identified 22 non-agricultural wetlands that lie wholly or partly in the US 14 Project Area Polygon, with a total area of 143.5 acres.

Palustrine wetland types identified within the US 14 Project Area Polygon include floodplain forest, wet meadow, sedge meadow, scrub-shrub wetland, emergent marsh, and agricultural wetlands. The *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979) assigns codes to these wetland types consistent with usage in the NWI. The publication *Wetlands of the United States* (a.k.a 'Circular 39') (Shaw and Fredine 1956) assigns codes to wetland types consistent with usage in the Minnesota Wetland Conservation Act. **Table 7** summarizes the areal extent of wetland types delineated with the Routine On-Site Delineation and the Aerial Slide Review (Off-site delineation procedures) in the US 14 Project Area Polygon.

TABLE 7

Areal Extent of Wetland Types in the US 14 Project Area Polygon[1]

	Delineation Methodology			
Circular 39 (Cowardin Code)	**Routine On-Site (acres)**	**Aerial Slide Review (acres)**	**Total Area (acres)**	**Percentage Area of US 14 Project Area Polygon[2]**
Type 1 (PEMA)	0.0	145.4	145.4	2.1%
Type 2 (PEMB)	14.9	0.0	14.9	0.2%
Type 3 (PEMC)	52.7	0.0	52.7	0.8%
Type 4 (PEMC, PEMF)	0.0	0.0	0.0	0.0%
Type 5 (PEMF, POWF)	2.9	0.0	2.9	0.04%
Type 6 (PSS1A, PSS1C)	1.8	0.0	1.8	0.03%
Type 7 (PFO1A, PFO1C)	71.2	0.0	71.2	1.0%
Type 8 (PFO –various)	0.0	0.0	0.0	0.0%
Total	**143.5**	**145.4**	**288.9**	**4.2%**

TABLE 7

Areal Extent of Wetland Types in the US 14 Project Area Polygon[1]

	Delineation Methodology			
Circular 39 (Cowardin Code)	**Routine On-Site (acres)**	**Aerial Slide Review (acres)**	**Total Area (acres)**	**Percentage Area of US 14 Project Area Polygon [2]**
(Areas Requiring "Field Verification")	**0.0**	**24.9**	**24.9**	**0.4%**
Grand Total	***143.5***	***170.3***	***313.8***	***4.9%***

[1] Translations of Cowardin Codes and Circular 39 Codes are per the Minnesota Wetland Conservation Act. These acreages are based on data analyzed on January 18, 2005.

[2]Assumes US 14 Project Area Polygon is 6,902 acres.

Note: Acreages in this table do not represent wetland impacts, rather they represent the total extent of wetlands in the US 14 Project Area Polygon.

Detailed descriptions of individual wetlands in the US 14 Project Area Polygon are provided in Appendix A - Routine On-Site Wetland Delineation Forms, Appendix B – Aerial Slide Review Data Sheets, and Appendix C – Minnesota Routine Assessment Method (MnRAM v.3.0) Forms.

As a result of agency coordination including the Technical Evaluation Panel (TEP), we expect that the jurisdictional status of wetlands in the US 14 Project Area Polygon will be determined. In future updates to this Report, no distinction will be made between "Non-Agricultural Wetlands" and "Agricultural Wetlands"; rather all areas determined to be wetlands will be categorized into wetland types per Circular 39.

3.1 Non-Agricultural Wetlands

Table 11 (Appendix E) summarizes non-agricultural wetlands in the US 14 Project Area Polygon.

3.2 Agricultural Wetlands

Table 12 (Appendix F) summarizes agricultural wetlands in the US 14 Project Area Polygon.

3.3 Public Waters and Public Waters Wetlands

Relevant data from the Nicollet County Protected Waters and Wetlands Map was transcribed onto Figure 3 (Appendix D). Information about Public Waters and Public Waters Wetlands in the US 14 Project Area Polygon is included in **Table 11** (Appendix E) and **Table 12** (Appendix F).

Two Pubic Waters Wetlands and two Public Waters are mapped partly or wholly within the US 14 Project Area Polygon, summarized as follows:

- **Public Water Wetland "26W"** is mapped south of the City of Nicollet, MN. The Protected Wetland (26W) corresponds in part with delineated wetlands "W-NI-28-6-1" and "AW-NI-28-9-1."
- **Public Water Wetland "62W"**, an abandoned River oxbow, is mapped in the bottoms of the Minnesota River just northwest of Hwy 37
- **Public Water, "60P"** is mapped in a meander loop of the Minnesota River between the western project area terminus and the US 14 / Hwy 37 intersection.
- **Heyman's Creek**, in portions within the US 14 Project Area Polygon, is mapped as a Public Water.

3.4 Preliminary Discussion of Wetland Sequencing

Wetland sequencing refers to the planning process which demonstrates to the degree practicable wetland avoidance, wetland impact minimization, and mitigation for unavoidable wetland impacts. This Preliminary Draft Wetland Technical Report describes and depicts precise wetland boundaries within the US 14 Project Area Polygon; with wetland resources defined, road designers are able to develop alignment alternatives with wetland sequencing rules in mind.

3.4.1 Wetland Impact Avoidance

Road designers have been presented with digitized wetland boundaries within the US 14 Project Area Polygon so that they can design alternatives that to the extent practicable avoid wetlands. Certainly, other natural and socio-economic resources bring to bear on alternative and alignment decisions as well, thus, the planning process becomes one of best-balance of impacts to these resource types. Given the abundance of wetlands in the US 14 Project Area Polygon it will be impracticable to design alternatives that meet safety guidelines and completely avoid impacts to wetlands. Detailed efforts to avoid wetland impacts in the course of road design will be documented in the update to this Preliminary Draft Wetland Technical Report, after a Preferred Alternative has been selected. For this Preliminary Draft Wetland Technical Report, the following points summarize successful wetland avoidance implemented thus far in the roadway planning process:

- The Far North Bypass of the City of Courtland, MN was eliminated as an alternative early in the planning process in part because of the potential for high acreage impacts to wetlands. This alternative will not be carried forward for discussion in the Draft Environmental Impact Statement (DEIS) associated with this road improvement project.
- Alternative E-3 was designed to avoid impacts to Mn/DNR Protected Wetland "26W" by passing just to the north of its northernmost edge. The northern portion of this Protected Wetland has been delineated as wetland "W-NI-28-9-1" and the southern portion of this Protected Wetland has been delineated as wetland "AW-NI-28-9-1".
- Alternative E-4 was designed to avoid an area mapped by NWI as a wetland in the southwest corner of Section 8, Range 28W, Nicollet Township. While it was found during fieldwork and the aerial slide review that this area did not meet the criteria of wetlands, avoidance of this area demonstrates attempts at wetland avoidance.

A more detailed account of alternatives screening and alignment adjustment pertinent to wetland avoidance can be found at the project website at http://www.dot.state.mn.us/d7/projects/14newulmtonmankato/

3.4.2 Wetland Impact Minimization

Several design strategies and Best Management Practices (BMPs) can beused to minimize unavoidable wetland impacts. Design strategies under consideration for the US 14 road improvement project include the following:

- **Use of existing US 14 alignment where possible.** Alternatives under consideration in the Draft EIS that use existing alignment are E-1 and W-1. Use of existing alignment has the potential to minimize wetland impacts because only the roadway width increase causes impacts.
- **Reduction in median width.** Median width reduction decreases the roadway footprint and thereby the potential for wetland impacts. Median reduction is not a safe strategy around intersections because the median provides a refuge for crossing and left turning vehicles; however, this strategy may be employed safely in non-intersection road sections. The west portion of alternative W-1 will have a reduced median to minimize impacts to the wetland and floodplain in the bottoms of the Minnesota River.
- **Increase in ditch slope.** Increasing the slope of the ditch adjacent to the outside lanes would reduce the footprint of the roadway. The typical rural cross section calls for 1:6 (vertical:horizontal) slopes. Thus, either, a 1:5 or 1:4 slope with additional unpaved shoulder width are acceptable strategies to minimize wetland impacts. Steeper slopes are not acceptable because of the hazard presented to drivers running off the road or hitting guard rail. Increased use of guard rail can also make roadway snow removal more difficult.
- **Reduction in elevation of road profile.** Lowering the road profile would reduce the footprint of the roadway. This strategy has limited application because the roadway should be at least 5 feet above the water table to prevent water damage to the roadbed, and in some areas, the roadway should be at least 4 feet above the adjacent ground to allow snow to blow off the road and decrease the hazard posed by drifting snow.
- **Construction of bridges.** Bridging over wetlands is applicable only where there are exceptional wetlands because of the cost of bridging and the reduction in safety. There are no such wetlands in the US 14 Project Area Polygon, therefore bridge construction is not an appropriate minimization strategy.

Best Management Practices (BMPs) that may serve to minimize wetland impacts for the US 14 road improvement project includeproperly installed silt fences, establishment of no intrusion areas during road construction, rapid-revegetation of side slopes with anti-erosion cover crops with techniques such as hydro-seeding or seed drills, and the use of appropriate anti-erosion technologies such as jute mats or hay-disking. Efforts to minimize wetland impacts per delineated wetland in the US 14 Project Area Polygon will be documented in updates to this Preliminary Draft Wetland Technical Report, after a Preferred Alternative has been selected.

3.4.3 Wetland Mitigation

Abundant opportunities for wetland mitigation are present within the US 14 Project Area Polygon. Drained hydric soils, nearly ubiquitous in the eastern portion of the US 14 Project Area Polygon, have high potential for successful wetland restoration. It is anticipated that wetland mitigation required for the US 14 road improvement project will be accomplished in conjunction with the long-term acquisition goals of the Swan Lake Wildlife Management Area, state land managed by the Minnesota Department of Natural Resources (MnDNR). Landowners willing to sell parcels suitable for wetland mitigation will be identified through a dialogue with the MnDNR and the Nicollet County Soil and Water Conservation District (SWCD). An analysis of potential parcels with respect to their suitability for wetland mitigation and availability for acquisition will be prepared after a preferred alternative has been identified and will be documented in the update to this Wetland Technical Report, after a Preferred Alternative has been selected.

3.5 Preliminary Estimate of Wetland Impacts per Alternative

The design of the proposed US 14 alternatives are currently in an early phase of engineering. Wetland impacts reported in the following tables are intended to serve as preliminary estimates. In this preliminary phase of roadway engineering, it is assumed that the preliminary ROW is a 300 foot wide band uniform in width across the entire length of an alternative. For purposes of this Report, it is assumed that any portion of a delineated wetland that lies within this 300 foot wide band will be considered an impact. More exact roadway footprints will not be known until the vertical alignment has been established. Wetland impacts will be updated in the "Final" version of this Report, after a Preferred Alternative has been selected. **Figure 2** and **Figure 3** (Appendix D) show the location of the proposed US 14 alternatives.

Wetland impacts are summarized for the western section of the US 14 Project Area Polygon (See **Table 8**), the eastern section of the US 14 Project Area Polygon (See **Table 9**), and finally the whole US 14 Project Area Polygon (See **Table 10**). The western section of the US 14 Project Area Polygon (containing three proposed alternatives) is from the western project terminus to roughly County Road 12 (west of Courtland). The eastern section of the US 14 Project Area Polygon (containing four proposed alternatives) is from roughly County Road 12 eastward to the eastern project terminus and includes bypasses of the Cities of Courtland and Nicollet. The dividing line between the western and eastern sections of the US 14 Project Area Polygon is depicted as a dashed white line on **Figure 3** (Appendix D).

TABLE 8

Summary of Wetland Impacts by Wetland Type in Western Section of the US 14 Project Area Polygon

Wetland Type (Circ. 39)	Impacts per Proposed Alternative – ac [1] *								
	Alt W1			Alt W2			Alt W3		
	Known	Require Field Verify	Total	Known	Require Field Verify	Total	Known	Require Field Verify	Total
Type 1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Type 2	1.2	0.0	1.2	1.3	0.0	1.3	1.3	0.0	1.3
Type 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 5	0.0	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5
Type 6	1.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0
Type 7	5.8	0.0	5.8	0.0	0.0	0.0	7.4	0.0	7.4
Type 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**8.0**	**0.1**	**8.1**	**1.8**	**0.0**	**1.8**	**10.2**	**0.0**	**10.2**

Note: These data are based on impact calculation on January 18, 2005.

[1] Alternatives as reported in this table are depicted on Figure 3 (Appendix D).

* Impacts associated with all interchanges in the Western Segment are included in the acreages above.

TABLE 9
Summary of Wetland Impacts by Wetland Type in Eastern Section of Project Area Polygon

Wetland Type- Circ. 39	Impacts per Proposed Alternative – ac (ha) [1] *											
	Alt E1			Alt E2			Alt E3			Alt E4		
	Known	Require Field Verify	Total	Known	Require Field Verify	Total	Known	Require Field Verify	Total	Known	Require Field Verify	Total
Type 1	5.3	0.5	5.8	4.4	2.3	6.7	17.8	0.1	17.9	4.7	0.0	4.7
Type 2	4.8	0.0	4.8	3.3	0.0	3.3	1.2	0.0	1.2	1.2	0.0	1.2
Type 3	2.3	0.0	2.3	5.0	0.0	5.0	0.1	0.0	0.1	0.1	0.0	0.1
Type 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 7	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Type 8	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**	**0.0**	0.0	0.0	0.0
Total	**12.5**	**0.5**	**13.0**	**12.8**	**2.3**	**15.1**	**19.1**	**0.1**	**19.2**	**6.0**	**0.0**	**6.0**

Note: These data are based on impact calculation on January 18, 2005.

[1] Alternatives as reported in this table are depicted on Figure 3 (Appendix D).

* There would be no wetland impacts associated with the Hwy 99 Interchange for any proposed alternative. However, selection of the Hwy 99 Interchange would preclude some wetland impacts associated with the Hwy 23 Interchange for alternatives E1, E2, and E3. Specifically, the Hwy 99 Interchange would preclude 0.5 acres wetland impacts associated with E1, 0.2 acres with E2, and 4.1 acres with E3.

TABLE 10
Summary of Potential Wetland Impacts for Combined Eastern and Western Sections of the US 14 Project Area Polygon

Wetland Type (Circular 39)	Range of Potential Wetland Impacts for Western Segment – ac	Range of Potential Wetland Impacts for Eastern Segment– ac	Range of Total Potential Wetland Impacts (western and eastern Segment) – ac
Type 1	0.0-0.1	4.4-17.8	4.4-17.9
Type 2	1.2-1.3	1.2-4.8	2.4-6.1
Type 3	0.0-0.0	0.1-5.0	0.1-5.0
Type 4	0.0-0.0	0.0-0.0	0.0-0.0
Type 5	0.0-0.5	0.0-0.0	0.0-0.5
Type 6	1.0-1.0	0.0-0.0	1.0-1.0
Type 7	0.0-7.4	0.0-0.1	0.0-7.5

TABLE 10

Summary of Potential Wetland Impacts for Combined Eastern and Western Sections of the US 14 Project Area Polygon

Wetland Type (Circular 39)	Range of Potential Wetland Impacts for Western Segment – ac	Range of Potential Wetland Impacts for Eastern Segment– ac	Range of Total Potential Wetland Impacts (western and eastern Segment) – ac
Type 8	0.0-0.0	0.0-0.0	0.0-0.0
Total	2.2-10.3	5.7-27.7	7.9-38.0

Note: These data are based on impact calculation on January 18, 2005.

3.6 Potential Incidental Wetlands in the US 14 Project Area Polygon

Incidental wetlands are those wet areas formed as a result of beaver activity, culvert blockage, and other activities not intended to create or restore wetlands. Incidental Wetlands are exempt from jurisdiction under the Minnesota Wetland Conservation Act though not necessarily under the Clean Water Act. If Mn/DOT and wetland regulatory agencies are in agreement that certain wetlands in the project area are Incidental, then Mn/DOT should prepare a Certificate of Exemption for each of these wetlands. Certificates of Exemption should be submitted as part of the permitting phase of the project.

One potential Incidental Wetland in the US 14 Project Area Polygon is "W-NU-30-21-2". This wetland is in part a ditch on the north side of US 14 near the western project terminus. The ditch bottom has been unmaintained and trees there are approximately 15-20 years old.

4.0 Conclusions

This Preliminary Draft Wetland Technical Report is submitted to Mn/DOT and appropriate wetland regulatory agencies (state and federal) prior to the wetland permitting phase of the US 14 road improvement project. This Report is submitted to wetland regulatory agencies early in the planning process in order to provide ample time for their review and comment.

Wetland impacts per proposed alternative as summarized in this Wetland technical report are only the best estimate possible given the current preliminary engineering phase of road design. It is expected that final engineering phases for this road improvement project will allow a more refined and precise analysis of wetland impacts per proposed alternative. Further, a preferred alternative will be selected during the Final Environmental Impact Statement (FEIS) phase of this project. Wetland impacts associated with the preferred alternative will be known to a degree of precision and accuracy appropriate for submittal of wetland permitting.

List of References

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Appendix A: Routine On-site Wetland Delineation Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9-20-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer saccharinum*	T		9.		
2. *Fraxinus pennsylvanicus*	SH		10.		
3. *Acer negundo*	SH		11.		
4. *Phalaris arundinacea*	H		12.		
5. *Vitis riparia*	Vine		13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: Disturbances in floodplain as a result of dumping (concrete rubble, etc.)

HYDROLOGY

_____ Recorded Data (Describe in Remarks):	Wetland Hydrology Indicators:
_____ Stream, Lake or Tide Gauge	Primary Indicators:
_____ Aerial Photographs	_____ Inundated
_____ Other	_____ Saturated in Upper 12 Inches
_____ No Recorded Data Available	_____ Water Marks
	X Drift Lines
Field Observations:	X Sediment Deposits
	_____ Drainage Patterns in Wetlands
Depth of Surface Water: _____ (in.)	Secondary Indicators (2 or more required):
	_____ Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit: _____ (in.)	X Water-Stained Leaves
	_____ Local Soil Survey Data
Depth to Saturated Soil _____ (in.)	_____ FAC-Neutral Test
	_____ Other (Explain in Remarks)

Remarks: Drift lines of large woody debris observed on forest floor. Drift lines of herbaceous vegetation observed at 3 feet above forest floor.

SOILS

Map Unit Name (Series and Phase): Nishna silty clay loam

Drainage Class: Poorly Drained

Taxonomy (Subgroup): Cumulic Haplaquolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 3/1	None	None	Sandy loam
4-15	A	10YR 3/1	10YR 3/3	Few / small	Silty clay loam
			10YR 2/1	Organic streaking	

Hydric Soil Indicators:

	Histosol		Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor	X	Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low chroma matrix and redox concentrations in combination with a low-lying landscape position are evidence of hydric soils. Soils in this sampling pit meet hydric soil criteria.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: All three mandatory criteria of wetlands are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9-20-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Coronilla varia*	H	UPL	9.		
2. *Cirsium arvense*	H	FACU	10.		
3. *Phalaris arundinacea*	H	FACW+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: (in.)

Depth to Free Water in Pit: (in.)

Depth to Saturated Soil (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase):	Terril loam (94B)	Drainage Class:	Moderately well-drained
Taxonomy (Subgroup):	Cumulic Hapludolls	Field Observations Confirm Mapped Type?	Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-6	A	2.5Y 5/4	None	--	Sandy clay
6-12	B	10YR 3/2	None	--	Clayey sand

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: The matrix of the B horizon was low chroma,; however redox concentrations were not observed and the landscape position was relatively high at this sampling pit. Soils at this sampling pit do not meet the criteria of hydric soils per definitions in the *1987 Manual* or in the *Field Indicators of Hydric Soils.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit does not meet any of the three mandatory criteria of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9-20-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 2
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Ambrosia trifida*	H	FAC+	9.		
2. *Ambrosia artemisiifolia*	H	FACU	10.		
3. *Oenothera biennis*	H	FACU	11.		
4. *Solidago gigantea*	H	FACW	12.		
5. *Setaria glauca*	H	FAC	13.		
6. *Fraxinus pennsylvanica*	H	FACW	14.		
7. *Rudbeckia hirta*	Hz	FACU	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 57 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None	(in.)
Depth to Free Water in Pit:	None	(in.)
Depth to Saturated Soil	>15	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: The criterion of wetland hydrology was not met at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Nishna (575) silty clay loam

Drainage Class: Poorly

Taxonomy (Subgroup): Cumulic Haplaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-15	A	10YR 2/1	None	--	Fine sandy clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: Soils at this sampling pit meet the criterion of hydric soils per the definition in the *1987 Manual*. Whether soils here meet the definition of hydric soils per *Field Indicators* is inconclusive because of the thick A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit meets 2 out of the 3 mandatory parameters of wetlands; therefore this sampling pit is not wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9-22-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 2
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer saccharinum*	T	FACW	9.		
2. *Salix exigua*	Sh	OBL	10.		
3. *Xanthium strumarium*	H	FAC	11.		
4. *Bidens aristosus*	H	FACW	12.		
5. *Rumex crispus*	H	FAC+	13.		
6. *Ambrosia trifida*	H	FAC+	14.		
7. *Setaria faberi*	H	FACU+	15.		
8. *Polygonum amphibium*	H	OBL	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 63 %

Remarks: A predominance of hydrophytic plants are present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	1	(in.)
Depth to Saturated Soil	0	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: The criterion of wetland hydrology is met at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Nishna silty clay loam (575)

Drainage Class: Poorly drained

Taxonomy (Subgroup): Cumulic Haplaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-15	A	10YR 2/1	None	--	Silty clay

Hydric Soil Indicators:

	Histosol		Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: Soils at this sampling pit meet the criterion of hydric soils per the definition in the *1987 Manual*. Whether soils here meet the definition of hydric soils per *Field Indicators* is inconclusive because of the thick A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets all 3 mandatory criteria of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9 / 22 / 2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 3
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer negundo*	T	FACW-	9.		
2. *Rudbeckia laciniata*	H	FACW+	10.		
3. *Laportea canadensis*	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Indicators of wetland hydrology were not observed at this site.

SOILS

Map Unit Name (Series and Phase):	Terril loam (94B)	Drainage Class:	Moderately well drained
Taxonomy (Subgroup):	Cumulic Hapludoll	Field Observations Confirm Mapped Type?	**Yes** / No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/1	None	--	Fine sandy silt loam
12-16	C	10YR 3/2	10YR 4/3	Common, small	Fine sand
			10YR 4/1	Common, small	

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low chroma matrix in conjunction with a low-lying landscape position and redox concentrations and redox depletions in the rooting zone are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit meets 2 of the 3 mandatory parameters of wetlands. This sampling pit is not within wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 3
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Fraxinus pennsylvanica*	T	FACW	9.		
2. *Acer saccharinum*	T	FACW	10.		
3. *Laportea canadensis*	H	FACW	11.		
4. *Pilea pumila*	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other

____ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: >14 (in.)

Depth to Saturated Soil >14 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 Inches
- ____ Water Marks
- X Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: Driftlines of herbaceous vegetation and woody debris are indicative of flooding. Bare areas devoid of vegetation were observed at this sampling pit; indicative of standing water during the growing season. This sampling pit meets the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Nishna silty clay loam (575)

Drainage Class: Poorly drained

Taxonomy (Subgroup): Cumulic Haplaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-14	A	10YR 2/1	7.5YR 3/4	Common/small	Sandy clay loam
14+	A	10YR 2/1	7.5YR 3/4	Common/small	Fine sand
			10 YR 4/1	Common/small	

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low chroma matrix in conjunction with redox concentrations and redox delpetions and a low-lying landscape position is evidence of hydric soils. Soil at this sampling pit meets the definition of hydric soil in the *1987 Manual* and in *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-21-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus deltoides*	T		9.		
2. *Salix exigua*	Sh		10.		
3. *Phalaris arundinacea*	H		11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-2	(in.)
Depth to Free Water in Pit:	0	(in.)
Depth to Saturated Soil	0	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Culvert outlet at west end. This site is inundated or saturated to the surface for a long duration during the growing season. This sampling pit meets the criterion of wetland hydrology. This site is a roadside ditch that has been unmaintained (trees within ditch are approximately 30 feet in height).

SOILS

Map Unit Name (Series and Phase): Undetermined

Drainage Class: Undetermined

Taxonomy (Subgroup): Orthents (disturbed from road work)

Field Observations Confirm Mapped Type? Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
Undet					

Hydric Soil Indicators:

_____ Histosol	_____ Concretions (Redox concentrations)
_____ Histic Epipedon	_____ High Organic Content in Surface Layer in Sandy Soils
_____ Sulfidic Odor	_____ Organic Streaking in Sandy Soils
_____ Aquic Moisture Regime	_____ Listed on Local Hydric Soils List
_____ Reducing Conditions	_____ Listed on National Hydric Soils List
_____ Gleyed or Low-Chroma Colors	_____ Other (Explain in Remarks)

Remarks: Soils disturbed from road earthmoving, soil profile undetermined. Conditions are favorable for the formation of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This site clearly meets the criteria of wetland hydrology and hydrophytic vegetation. Presence of hydric soils has not been determined as a result of historical roadwork earthmoving; however conditions are favorable for the formation of hydric soils. This site is a roadside ditch and as such may be considered "incidental" and exempt from WCA jurisdiction.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)			Date:	
Applicant / Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstances exist on the site?		**Yes**	No	Community ID:	W-NU-30-21-2
Is the site significantly disturbed (Atypical Situation)?		Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)		Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Bromis inermis*	H	UPL	9.		
2. *Soghastrum nutans*	H	FACU+	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: This sampling pit does not have a predominance of hydrophytic vegetation. This sampling pit does not meet the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>15	(in.)
Depth to Saturated Soil	>15	(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit. This sampling pit does not meet the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Undetermined

Drainage Class: Undetermined

Taxonomy (Subgroup): Orthents

Field Observations Confirm Mapped Type? Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
Undet.					

Hydric Soil Indicators:

_____ Histosol	_____ Concretions (Redox concentrations)
_____ Histic Epipedon	_____ High Organic Content in Surface Layer in Sandy Soils
_____ Sulfidic Odor	_____ Organic Streaking in Sandy Soils
_____ Aquic Moisture Regime	_____ Listed on Local Hydric Soils List
_____ Reducing Conditions	_____ Listed on National Hydric Soils List
_____ Gleyed or Low-Chroma Colors	_____ Other (Explain in Remarks)

Remarks: Soil profile not described at this sampling pit as a result of historical roadwork earthmoving. This pit is located at a steeply sloping embankment of US 14; conditions here are not favorable for the formation of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit does not meet any of the 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-27-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Ulmus americana*	T	FACW-	9.		
2. *Fraxinus pennsylvanicus*	T	FACW	10.		
3. *Salix nigra*	T	OBL	11.		
4. *Ribes missouriense*	Sh	UPL	12.		
5. *Rhamnus catharticus*	Sh	FACU	13.		
6. *Vitis riparia*	Vine	FACW-	14.		
7. *Phalaris arundinacea*	H	FACW+	15.		
8. *Carex sp.*	H	--	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 71 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the definition of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other

____ No Recorded Data Available

Field Observations:

Depth of Surface Water: 3 (in.)

Depth to Free Water in Pit: 0 (in.)

Depth to Saturated Soil 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: This sampling pit is inundated or saturated to the surface for a long duration during the growing season. This sampling pit meets the definition of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Tilfer silty clay loam (321)

Drainage Class: Very poorly to poorly drained

Taxonomy (Subgroup): Typic Haplaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-15	10YR 2/1	None	--	--	loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. This sampling pit meets the definition of hydric soils in the *1987 Manual*. Whether this soil meets the definition of hydric soils per *Field Indicators* is inconclusive as a result of the thick A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit clearly meets 2 of the 3 mandatory criteria for wetlands. The presence of hydric soils is assumed, though inconclusive as a result of a thick A horizon.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-27-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Solidago gigantea*	H	FACW	9.		
2. *Solidago canadensis*	H	FACU	10.		
3. *Poa pratensis*	H	FAC-	11.		
4. *Carex sp.*	H	--	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50 %

Remarks: The *Carex* sp. was not identifiable to species; though, it was assumed in this case to be hydrophytic. A situation where 50% of the dominants are hydrophytic does not meet the definition of a predominance of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	--	(in.)
Depth to Saturated Soil	--	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Copaston – rock outcrop complex (923)

Drainage Class: Well drained

Taxonomy (Subgroup): Lithic Hapludolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 3/2	None	--	Sandy loam
5-12	A	10YR 3/2	None	--	Loamy coarse sand
>12	bedrock	--	--	--	--

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: While a low-chroma matrix was observed, redox concentrations and redox depletions were not observed. This sampling pit does not meet the definition of hydric soils in the *1987 Manual* or *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit does not meet any of the 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-34-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Ulmus americana*	T	FACW-	9.		
2. *Acer negundo*	T	FACW-	10.		
3. *Phalaris arundinacea*	H	FACW+	11.		
4. *Glechoma hederacea*	H	FACU	12.		
5. *Aster sp.*	H	--	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other

____ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 8 (in.)

Depth to Saturated Soil 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- X Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- X Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: This sampling pit meets the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Copaston – rock outcrop complex (923)

Drainage Class: Well drained

Taxonomy (Subgroup): Lithic Hapludolls

Field Observations Confirm Mapped Type? Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 3/2	10YR 4/3	Few / small	Loamy fine sand
			10YR 5-1	Few / small	
8-10	C	Red gravel	--	--	gravel

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: Soils in this sampling pit meet the definition of hydric soils in the *1987 Manual* and in *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for all 3 mandatory parameters of wetlands are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-34-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Fraxinus pennsylvanicus*	T	FACW	9.		
2. *Ulmus americana*	T	FACW-	10.		
3. *Salix nigra*	T	OBL	11.		
4. *Rhamnus catharticus*	Sh	FACU	12.		
5. *Rubus allegheniensis*	Sh	FACU+	13.		
6. *Ribes missouriense*	Sh	UPL	14.		
7. *Ribes cynosbati*	Sh	UPL	15.		
8. *Hydrophyllum virginianum*	H	FACW-	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: 50% of the dominant plant species are hydrophytic; therefore, a predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: >18 (in.)

Depth to Saturated Soil >18 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit. This sampling pit does not meet the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Copaston – rock outcrop complex (923)

Drainage Class: Well drained

Taxonomy (Subgroup): Lithic Hapludolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 4/3	10YR 3/2	Few / small	Loamy sand
4-18	A	10YR 3/2	10YR 4/3	Few / small	Loamy sand

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position is evidence of hydric soils. This soil meets the definition of hydric soils in the *1987 Manual* and in *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit meets only 1 of the 3 mandatory parameters of wetlands; therefore, this sampling pit is not within wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-34-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix exigua*	Sh	OBL	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3. *Solidago gigantea*	H	FACW	11.		
4. *Solidago canadensis*	H	FACU	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. Vegetation at this sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	None	(in.)
Depth to Free Water in Pit:	>10	(in.)
Depth to Saturated Soil	>10	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: This depression is an old stream channel of Heyman's Creek and is approximately 6-12 inches above the elevation of the existing flowing creek channel. In our professional opinion, this sampling pit is inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Hawick sandy loam (611F)

Drainage Class: Excessively drained

Taxonomy (Subgroup): Entic Hapludoll

Field Observations Confirm Mapped Type? Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 2/1	None	--	Sandy loam
5-10	A	N/2.5	None	--	Sandy loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This site meets the criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-34-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix exigua*	Sh	OBL	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3. *Solidago gigantea*	H	FACW	11.		
4. *Monarda fistulosa*	H	FACU	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. Vegetation at this sampling pit meets the criteria of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	None	(in.)
Depth to Free Water in Pit:	>10	(in.)
Depth to Saturated Soil	>10	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: This depressional area is adjacent to the current channel of Heyman's Creek. Soil were moist to the soil surface though not saturated. In our professional opinion, this site is inundated or saturated to the surface for period long enough during the growing season to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Hawick sandy loam (611F)

Drainage Class: Excessively drained

Taxonomy (Subgroup): Entic Hapludoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 2/1	None	--	Sandy loam
5-10	A	N/2.5	None	--	Sandy loam

Hydric Soil Indicators:

	Histosol		Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*. Soils at this sampling pit have been disturbed as a result of historical roadwork and stream realignment.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This site meets the criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-36-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus fluviatilis*	H	OBL	9.		
2. *Eleocharis erythropoda*	H	OBL	10.		
3. *Glycine max*	H	UPL	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 66 %

Remarks: A predominance of hydrophytic plant species are present at this sampling pit. This sampling pit meets the definition of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 4 (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- X Other (Explain in Remarks)

Remarks: Standing water was observed in tire ruts at this sampling pit. In our professional opinion, this sampling pit is inundated or saturated to the surface for a period long enough during the growing season to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase):	Harps clay loam (112) and Glencoe silty clay loam (114)	Drainage Class:	Harps (very Poorly Drained), Glencoe silty clay loam (114)
Taxonomy (Subgroup):	Typic Calciaquolls (112), Cumulic Haplaquolls (114)	Field Observations Confirm Mapped Type?	**Yes** / No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 2 / 1	None	--	Clay loam
5-11	A	N / 2.5	None	--	Clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This site meets criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-36-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus deltoides*	T	FAC+	9.		
2. *Salix exigua*	Sh	OBL	10.		
3. *Typha angustifolia*	H	OBL	11.		
4. *Scirpus fluviatilis*	H	OBL	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic species is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 0 (in.)

Depth to Saturated Soil 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- X Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: This site is a depression in an agricultural landscape that is too wet to farm. This site meets the criteria for wetland hydrology.

SOILS

Map Unit Name (Series and Phase):	Nicollet clay loam (130)	Drainage Class:	Moderately-well to somewhat-poorly drained
Taxonomy (Subgroup):	Aquic Hapludolls	Field Observations Confirm Mapped Type?	**Yes** / No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-35	A	N / 2.5	None	--	Clay
35-42	B	2.5Y 5 / 2	10YR 4 / 4	Few / small	Clay

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix inconjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-36-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Carex sp.*	H	--	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3. *Poa pratensis*	H	FAC-	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: Though we could not identify the *Carex* to species, it was assumed in this landscape position to be hydrophytic. A predominance of hydrophytic species were present at this site. Vegetation at this site meets the definition of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 12 (in.)

Depth to Saturated Soil 6 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- X Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Low areas near the sampling pit were saturated to the surface. At the sampling pit, soils were saturated at a depth of 6 inches from the soil surface. This sampling pit meets the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase):	Webster clay loam (113), Okoboji silty clay loam (134)	Drainage Class:	(113) Poorly drained, (134) – Very poorly drained
Taxonomy (Subgroup):	(113) – Typic Haplaquoll, (134) Cumulic Haplaquoll	Field Observations Confirm Mapped Type?	**Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-32	A	N / 2.5	None	--	Clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. Soils at this sampling site meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-35-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix exigua*	Sh	OBL	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3. *Urtica dioica*	H	FAC+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: >28 (in.)

Depth to Saturated Soil >28 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit. In our professional opinion, this site is not inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Plainfield loamy sand (283A)

Drainage Class: Excessively drained

Taxonomy (Subgroup): Typic Udipsamments

Field Observations Confirm Mapped Type? Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 2/1	None	--	Clayey sand
4-28	A	N/2.5	7.5YR 4/4	Common / small	Sandy clay
			(At 8 inches)		

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This site meets the criteria for only 2 of the 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-35-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Urtica dioica*	H	FAC+	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this site. This sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	None	(in.)
Depth to Free Water in Pit:	36	(in.)
Depth to Saturated Soil	20	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: In our professional opinion, this site is inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Webster clay loam (113)

Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic Haplaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-14	A	N / 2.5	None	--	Silt
14-42	A	N / 2.5	10YR 4 / 4	Common / small	Clayey sand

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
X	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone, a sulfidic odor, and a low-lying landscape position.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This site meets all three mandatory criteria of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NU-30-36-4
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phalaris arundinacea*	H	FACW+	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this site. This site meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other

____ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: >15 (in.)

Depth to Saturated Soil >15 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: This site is an excavated pond which receives drainage from a larger area of drained hydric soil. The pond is approximately 3 feet deep at its deepest point – areas surrounding the pond were not inundated the time of the wetland delineation. In our professional opinion, the area outside of the pond but inside the delineated wetland boundary is saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Delft clay loam (336)

Drainage Class: Poorly Drained

Taxonomy (Subgroup): Cumulic Haplaquolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 2/1	None	--	Clay loam
10-20	A	N/2.5	None	--	Clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. This soils meets the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This site meets the criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-6-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phalaris arundinacea*	H	FACW+	9.		
2. *Eleocharis erythropoda*	H	OBL	10.		
3. *Carex* sp.	H	--	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: The *Carex* was not identifiable to species; however, based on the landscape position in which it was growing, it was assumed to be hydrophytic. A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>25	(in.)
Depth to Saturated Soil	>25	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: While soil saturation was not observed in the upper 25 inches – the delineation was performed late in the growing season, so this is to be expected. Further the percolation rate in this silty clay loam soil is quite low. In our professional opinion, this site is inundated or saturated to the surface for a period during the growing season for a period long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Delft clay loam (336)

Drainage Class: Poorly drained

Taxonomy (Subgroup): Cumulic Haplaqolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-25	A	N / 2.5	None	--	Silty clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low landscape position is evidence of hydric soils. Soils at this sampling pit meets the definition of hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets the criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-6-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Glycine max*	H	UPL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit. This sampling pit does not meet the criteria of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>36	(in.)
Depth to Saturated Soil	>36	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-9	A	10YR 3 / 2	10YR 4 / 3	Few / small	Sandy loam
9-36	A (buried)	10 YR 3 / 1	None	--	Loam
		N / 2.5			

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: This sampling pit meets the criteria of only 1 of 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-9-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix nigra*	T	OBL	9.		
2. *Acer saccharinum*	T	FACW	10.		
3. *Sambucus canadensis*	Sh	FACU-	11.		
4. *Urtica dioica*	H	FAC+	12.		
5. *Phalaris arundinacea*	H	FACW+	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 80 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	3	(in.)
Depth to Saturated Soil	0	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: This sampling pit meets the criterion for wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Lester loam (106B)

Drainage Class: Well drained

Taxonomy (Subgroup): Mollic Hapludalfs

Field Observations Confirm Mapped Type? Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 2/1	None	--	Silt loam
5-16	A	N/2.5	7.5YR 4/4	Common / small	Silt loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-9-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Bromus inermis*	H	UPL	9.		
2. *Poa pratensis*	H	FAC-	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>12	(in.)
Depth to Saturated Soil	>12	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Lester loam (106C2)

Drainage Class: Well drained

Taxonomy (Subgroup): Mollic Hapludalfs

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/2	None	--	Silt loam
12-15	B	10YR 4/2	None	--	Silty clay loam
15+					Gravel

Hydric Soil Indicators:

	Histosol		Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: While soil chroma is low at this sampling pit, it is not low enough to meet the definition of hydric soils in the *1987 Manual* or *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: None of the criteria for any of the 3 mandatory parameters of wetlands were met at this site.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-10-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit (also W-CO-29-10-2)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phalaris arundinacea*	H	FACW+	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling meets the criterion for hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>27	(in.)
Depth to Saturated Soil	>27	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- X Other (Explain in Remarks)

Remarks: Deep tire ruts were observed at this site, indicative of surface saturation or inundation. In our professional opinion, this sampling pit is inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-27	A	N / 2.5	10YR 4 / 4	Common / small	Silty clay loam
27+	B	N / 2.5	5Y 5 / 2	Common / large	Clay loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and redox depletions in the upper soil profile and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for all 3 mandatory parameters of wetlands are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-10-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit (also W-CO-29-10-2)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Zea mays* (harvested)	H	UPL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: >27 (in.)

Depth to Saturated Soil >27 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this site. In our professional opinion, this sampling pit is not inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-27	A	N / 2.5	10YR 4 / 4	Common / small	Silty clay loam
27+	B	N / 2.5	5Y 5 / 2	Common / large	Clay loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and redox depletions in the upper soil profile and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: Criteria for only 1 of 3 mandatory parameters of wetlands are met at this site.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-10-3
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phalaris arundinacea*	H	FACW+	9.		
2. *Hordeum jubatum*	H	FAC+	10.		
3. *Aster pilosus*	H	FACU-	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 66 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other

____ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 20 (in.)

Depth to Saturated Soil 15 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- X Other (Explain in Remarks)

Remarks: In our professional opinion, this sampling pit is inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-22	A	N / 2.5	None	--	Silty clay loam
22+	B	10YR 5 / 2	None	--	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma or depleted matrix in the upper soil profile in conjunction with a low-lying landscape position. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria are met for all 3 mandatory parameters of wetlands at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-10-3
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Bromus inermis*	H	UPL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this site.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>22	(in.)
Depth to Saturated Soil	>22	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit. This sampling pit does not meet the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-11	A	N / 2.5	None	--	Silty clay loam
11+	B	10YR 4 / 2	None	--	Silty clay loam

Hydric Soil Indicators:

	Histosol		Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: Criteria for only 1 of 3 mandatory parameters of wetlands are present at his sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-11-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phalaris arundinacea*	H	FACW+	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other

____ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 14 (in.)

Depth to Saturated Soil 11 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: This sampling pit meets the criteria of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Okoboji silty clay loam (386)

Drainage Class: Very poorly drained

Taxonomy (Subgroup): Cumulic Haplaquolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-16	A	N / 2.5	10YR 4 / 4	Common / medium	Silt loam
16-20	A	N / 2.5	10YR 4 / 4	Common / medium	Silty clay loam
20+	B	10YR 4 / 2	10YR 4 / 4	Common / medium	Clay loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit met criteria for all three parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-CO-29-11-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Row-cropped land	H	UPL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: (in.)

Depth to Free Water in Pit: (in.)

Depth to Saturated Soil (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Okoboji silty clay loam (386)

Drainage Class: Very poorly drained

Taxonomy (Subgroup): Cumulic Haplaquolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 2/1	10YR 4/4	Few / small	Silt loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: Criteria for only 1 of 3 mandatory parameters of wetlands are met at this site. This sampling pit is not within wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NI-28-6-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit (also W-NI-28-6-1)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phalaris arundinacea*	H	FACW+	9.		
2. *Urtica dioica*	H	FAC+	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	14	(in.)
Depth to Saturated Soil	11	(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: This sampling pit meets the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-21	A	N / 2.5	7.5YR 4 / 4	Common / small	Silt loam
21+	B / C	10YR 4 / 2	7.5YR 4 / 4	Common / Small	Clayey sand

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix inconjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for all 3 mandatory parameters of wetlands are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant / Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstances exist on the site?		**Yes**	No	Community ID:	W-NI-28-6-2
Is the site significantly disturbed (Atypical Situation)?		Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)		Yes	**No**	Plot ID:	Upland Pit (also W-NI-28-6-1)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Bromus inermis*	H	UPL	9.		
2. *Trifolium repens*	H	FACU+	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic plants is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: (in.)

Depth to Free Water in Pit: (in.)

Depth to Saturated Soil (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 2/1	None	--	Clay loam
12+	A	10YR 2/1	7.5YR 4/4	Common / small	Clay loam

Hydric Soil Indicators:

____	Histosol	X	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: Criteria for only 1 of 3 mandatory parameters of wetland are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NI-28-6-3
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus fluviatilis*	H	OBL	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	16	(in.)
Depth to Saturated Soil	12	(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: The criterion for wetland hydrology is met at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-16	A	N / 2.5	None	--	Clay loam
16+	A	N / 2.5	7.5YR 4 / 4	Few / small	Clay

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for all 3 mandatory parameters of wetlands are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NI-28-6-3
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Schizachyrium scoparium*	H	FACU-	9.		
2. *Andopogon gerardii*	H	FAC-	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: (in.)

Depth to Free Water in Pit: (in.)

Depth to Saturated Soil (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Undet.

Drainage Class: Undet.

Taxonomy (Subgroup): Undet.

Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-11	A	10YR 2/1	None	--	Silty clay loam
11+	B	2.5Y 4/2	7.5YR 4/4	Few / small	Clayey sand

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix or depleted matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	Yes	**No**

Remarks: Criteria for only 1 of 3 mandatory parameters of wetlands are met at this sampling pit.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NI-28-9-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus fluviatilis*	H	OBL	9.		
2. *Phalaris arundinacea*	H	FACW+	10.		
3. *Urtica dioica*	H	FAC+	11.		
4. *Ambrosia trifida*		FAC+	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominace of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>34	(in.)
Depth to Saturated Soil	>34	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: In our professional opinion, this sampling is inundated or saturated to the surface for a long enough period during the growing season to satisfy the criterion of wetland hydrology. Free water accumulates slowly in sampling pits augered in soils of such high clay content.

SOILS

Map Unit Name (Series and Phase):	Okoboji silty clay loam (134) and Glencoe silty clay loam (114)	Drainage Class:	Very poorly drained (134 and 114)
Taxonomy (Subgroup):	Cumulic Haplaquolls	Field Observations Confirm Mapped Type?	**Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-13	A	N / 2.5	7.5YR 4 / 4	Common / small	silt
13-24	A	N / 2.5	7.5YR 4 / 4	Common / small	Clay loam
24-34	A	10YR 2 / 1	None	--	Clay loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rootinf zone and a low-lying landscape position. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets criteria for all 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-NI-28-9-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Glycine max*	H	UPL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: (in.)

Depth to Free Water in Pit: (in.)

Depth to Saturated Soil (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed in this sampling pit.

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations Confirm Mapped Type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-25	A	10YR 2/1	7.5YR 4/4	Few / small	Silt loam

Hydric Soil Indicators:

___	Histosol	X	Concretions (Redox concentrations)
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soils
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: This sampling pit meets criteria for only 1 of 3 mandatory parameters of wetlands.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-19-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-BE-27-30-2
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Rumex crispus*	H	FAC+	9.		
2. *Polygoinum amphibium*	H	OBL	10.		
3. *Panicum virgatum*	H	FAC+	11.		
4. *Hordeum jubatum*	H	FAC+	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This small wet depression lies within a native prairie planting.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 30 (in.)

Depth to Saturated Soil 25 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: In our professional opinion this sampling pit is inundated or saturated to the surface for a period long enough to satisfy the criterion of wetland hydrology. Free water accumulates slowly in a sampling pit augered in soil with such high clay content.

SOILS

Map Unit Name (Series and Phase): Canisteo clay loam (86)

Drainage Class: Very poorly drained

Taxonomy (Subgroup): Typic Haplaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-15	A	N / 2.5	None	--	Clay loam
15-35	A	N / 2.5	7.5YR 4 / 4	Few / small	Clay loam
			10YR 5 / 2		

Hydric Soil Indicators:

____	Histosol	X	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. This soil meets the difinition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for all 3 parameters of wetlands were met at this site.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-20-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-BE-27-4-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Wetland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Polygonum amphibium*	H	OBL	9.		
2. *Echinochloa crus-galli*	H	FACW	10.		
3. *Rumex crispus*	H	FAC+	11.		
4. *Eleocharis erythropoda*	H	OBL	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>12	(in.)
Depth to Saturated Soil	>12	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- X Other (Explain in Remarks)

Remarks: Bare areas devoid of vegetation were observed at this sampling pit – indicative of standing water during the growing season. Cracked mud was observed indicative of drying and wetting cycles. In our professional opinion, this site is inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

SOILS

Map Unit Name (Series and Phase): Cordova clay loam (109)

Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic Argiaquoll

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-5	A	N / 2.5	None	--	Clay loam
5-12	A	N / 2.5	7.5YR 4 / 4	Common / small	Clay loam

Hydric Soil Indicators:

	Histosol	X	Concretions (Redox concentrations)
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for all 3 parameters of wetlands are met at this site.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project / Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-20-2004
Applicant / Owner:	MN DOT District 7	County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)	State:	Minnesota

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	W-BE-27-4-1
Is the site significantly disturbed (Atypical Situation)?	Yes	**No**	Transect ID:	Transect 1
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes	**No**	Plot ID:	Upland Pit

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Zea mays*	H	UPL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0	(in.)
Depth to Free Water in Pit:	>24	(in.)
Depth to Saturated Soil	>24	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology were observed at this sampling pit.

SOILS

Map Unit Name (Series and Phase): Cordova clay loam (109)

Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic Argiaquolls

Field Observations Confirm Mapped Type? **Yes** No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-10	A	N / 2.5	None	--	Clay loam
10-12	A	N / 2.5	7.5YR 4 / 4	Common / small	Clay loam

Hydric Soil Indicators:

____	Histosol	X	Concretions (Redox concentrations)
____	Histic Epipedon	____	High Organic Content in Surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the *1987 Manual* and *Field Indicators*.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**			
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No

Remarks: Criteria for only 1 of 3 mandatory parameters of wetlands are present at this sampling pit.

Appendix B: Aerial Slide Review Data Sheets

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Belgrade)	27	30

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
64: AW-BE-27-30-1	no	no	yes	yes	yes	yes	yes	no	yes	no	yes	7/11	64%	Yes	No	Meets definition of wetland per off-site delineation methods.
n/a	yes	yes	yes	no	no	no	no	no	no	no	yes	4/11	36%	na	na	na
n/a	no	no	yes	yes	no	no	no	no	yes	no	yes	4/11	36%	na	na	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Belgrade)	27	19

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
58: AW-BE-27-19-3	yes	yes	yes	yes	yes	no slide yes		no	yes	no	no	7 / 10	70%	Yes	No	Meets definition of wetland per off-site delineation methods.
60: AW-BE-27-19-2	yes	yes	yes	no	no	no slide yes		yes	yes	no	no	6 / 10	60%	Yes	No	Meets definition of wetland per off-site delineation methods.
62: AW-BE-27-19-1	yes	yes	yes	yes	yes	no slide yes		yes	yes	yes	yes	10 / 10	100%	Yes	No	Meets definition of wetland per off-site delineation methods.
59: AW-BE-27-19-4	no	no	yes	yes	no	no slide no		no	no	yes	yes	4 / 10	40%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	yes	yes	no	no	yes	no slide yes		no	no	no	no	4 / 10	40%	No	No	na
n/a	yes	yes	yes	no	no	no slide no		yes	no	no	no	4 / 10	40%	No	No	na
n/a	yes	yes	yes	no	no	no slide no		no	yes	no	yes	5 / 10	50%	No	No	na
n/a	no	no	yes	no	no	no slide yes		no	yes	no	no	3 / 10	30%	No	No	na
n/a	no	no	yes	no	no	no slide yes		no	yes	no	yes	4 / 10	40%	No	No	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	6

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
12: AW-CO-29-6-3	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	9 / 11	82%	No	No	Field verify
13: AW-CO-29-6-2	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes	8 / 11	73%	No	No	Field verify
n/a	yes	no	yes	no	yes	no	yes	no	yes	no	yes	6 / 11	55%	No	No	Deleted from wetland list.
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	No	No	
n/a	yes	yes	no	no	no	no	yes	no	yes	yes	yes	6 / 11	55%	No	No	
n/a	yes	no	no	no	no	no	no	no	no	no	yes	2 / 11	18%	No	No	
n/a	yes	no	no	yes	no	no	yes	yes	no	no	yes	5 / 11	45%	No	No	
n/a	no	yes	no	no	no	no	no	no	no	no	yes	2 / 11	18%	No	No	

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	31

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
AW-CO-29-31-1	yes	yes	no	yes	yes	no	yes	no	yes	no	yes	7/11	64%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
n/a	no	no	no	no	no	no	yes	no	no	no	yes	2/11	18%	na	na	na
n/a	yes	yes	yes	no	no	no	yes	no	no	no	no	4/11	36%	na	na	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	8

Scale 1"=364 feet

Wetland Identifier	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
AW-CO-29-8-1	missing	no	missing	no	no	yes	yes	missing	yes	yes	yes	5/8	63%	No	No	Field Verify. Outside of US 14 Project Area Polygon (PAP)

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	5

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
15: AW-CO-29-5-1	missing	yes	missing	yes	yes	yes	no	missing	yes	yes	yes	7 / 8	88%	Yes	No	Meets definition of wetland per off-site delineation methods.
AW-CO-29-5-2	missing	yes	missing	yes	no	yes	yes	missing	yes	yes	yes	7 / 8	88%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	missing	yes	missing	no	no	no	yes	missing	no	no	no	2 / 8	25%	na	na	Outside of US 14 Project Area Polygon (PAP)
n/a	missing	no	missing	no	no	yes	no	missing	no	no	yes	2 / 8	25%	na	na	
n/a	missing	yes	missing	yes	no	no	yes	missing	no	yes	no	4 / 8	50%	na	na	

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	32

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
AW-CO-29-32-1	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-32-2	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-32-3	no	yes	no	yes	yes	no	yes	no	yes	no	yes	6 / 11	65%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	4

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
AW-CO-29-4-1	Missing	yes	no	no	no	no	yes	yes	no	yes	yes	5 / 10	50%	Yes	?	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-2	Missing	yes	no	no	yes	no	yes	no	yes	no	yes	5 / 10	50%	Yes	?	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-3	Missing	yes	no	yes	no	yes	no	no	no	no	yes	4 / 10	40%	Yes	?	Field Verify. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-4	Missing	yes	no	no	yes	yes	no	no	yes	no	yes	5 / 10	50%	Yes	?	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-5	Missing	yes	no	yes	yes	yes	yes	no	yes	no	yes	7 / 10	70%	Yes	?	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
n/a	Missing	yes	yes	no	no	yes	yes	yes	yes	yes	yes	8 / 10	80%	na	na	na
n/a	Missing	yes	yes	yes	no	yes	yes	yes	no	yes	yes	8 / 10	80%	na	na	na
n/a	Missing	yes	no	no	no	no	no	no	no	no	yes	2 / 10	20%	na	na	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	9

Scale 1"=364 feet

Wetland Identifier	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
n/a	missing	no	no	no	no	yes	no	yes	yes	no	no	3 / 10	30%	na	na	na
n/a	missing	no	no	no	no	yes	no	no	no	yes	yes	3 / 10	30%	na	na	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	3

Scale 1"=364 feet

Wetland Identifier	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
AW-CO-29-3-2	no	yes	yes	no	no	no	yes	yes	no	no	yes	5 / 11	45%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-3-1	no	no	yes	no	no	yes	yes	yes	no	no	yes	5 / 11	45%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of PAP.
AW-CO-29-3-4	no	no	yes	no	no	yes	no	no	yes	yes	yes	5 / 11	45%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of PAP.
AW-CO-29-3-3	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	10 / 11	91%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of PAP.
n/a	no	no	yes	no	no	no	yes	no	no	no	yes	3 / 11	27%	na	na	na
n/a	no	no	yes	no	no	no	no	no	no	no	yes	2 / 11	18%	na	na	na
n/a	no	no	yes	no	no	no	no	no	no	no	yes	2 / 11	18%	na	na	na
n/a	yes	no	yes	no	no	no	no	no	no	no	yes	2 / 11	18%	na	na	na
n/a	no	no	yes	no	no	no	no	no	no	no	yes	2 / 11	18%	na	na	na
n/a	no	yes	yes	no	no	no	no	no	no	no	yes	3 / 11	27%	na	na	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	10

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
19: AW-CO-29-10-2	yes	yes	yes	yes	no	yes	yes	no	no	yes	yes	8 / 11	73%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
20: AW-CO-29-10-1	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	no	9 / 11	82%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
22: AW-CO-29-10-3	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	na	na	
n/a	no	no	no	yes	no	no	yes	yes	no	no	yes	4 / 11	36%	na	na	
n/a	no	yes	no	yes	yes	yes	no	no	yes	no	no	5 / 11	45%	na	na	
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2 / 11	18%	na	na	

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	12

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
27: AW-CO-29-12-1	yes	yes	no	yes	no	yes	no	no	no	no	yes	5 /11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
28: AW-CO-29-12-	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	7 / 11	64%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
29: AW-CO-29-12-	no	yes	yes	yes	no	yes	no	no	no	no	yes	5 / 11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
30: AW-CO-29-12-	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
31: AW-CO-29-12-	yes	yes	yes	yes	no	yes	yes	no	no	yes	yes	8 / 11	73%	Yes	No	Meets definition of wetland per off-site delineation methods.
34: AW-CO-29-12-	no	yes	yes	yes	no	yes	yes	yes	no	yes	yes	8 / 11	73%	Yes	No	Meets definition of wetland per off-site delineation methods.
AW-CO-29-12-8	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	9 / 11	82%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon.
n/a	yes	yes	no	yes	no	no	no	no	no	no	yes	4 / 11	36%	n/a	n/a	n/a
n/a	yes	yes	yes	no	no	yes	yes	no	no	no	yes	5 / 11	45%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	yes	no	no	no	no	yes	3 / 11	27%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	11

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
23: AW-CO-29-11-1	NO	YES	YES	YES	NO	YES	YES	NO	YES	YES	YES	8 / 11	64%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
23: AW-CO-29-11-1	NO	YES	YES	NO	YES	YES	YES	NO	NO	NO	YES	6 / 11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
26: AW-CO-29-11-1	NO	YES	YES	YES	NO	YES	NO	NO	NO	NO	YES	5 / 11	45%	Yes	No	Field Verify
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO	1 / 11	9%	na	na	na
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	2 / 11	18%	na	na	na
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	2 / 11	18%	na	na	na
n/a	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	2 / 11	18%	na	na	na
n/a	NO	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO	3 / 11	27%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	1 / 11	9%	na	na	na

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	2

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
25: AW-CO29-2-2	NO	YES	YES	YES	NO	NO	NO	NO	YES	NO	YES	5 / 11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
AW-CO29-2-1	NO	YES	NO	YES	NO	NO	YES	YES	YES	YES	YES	7 / 11	64%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP).
AW-CO29-2-3	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO	NO	4 / 11	36%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of (PAP).
n/a	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	4 / 11	36%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Courtland)	29	1

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
32: AW-CO-29-12-4	yes	yes	yes	yes	no	yes	yes	no	no	no	yes	7 / 11	64%	Yes	No	Meets definition of wetland per off-site delineation methods.
33: AW-CO-29-12-5	yes	yes	yes	no	no	yes	yes	no	no	yes	yes	7 / 11	64%	Yes	No	Meets definition of wetland per off-site delineation methods.
AW-CO-29-1-1	yes	yes	yes	no	no	yes	no	no	no	no	yes	5 / 11	45%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon(PAP).
AW-CO-29-1-2	yes	yes	yes	no	no	no	yes	no	yes	no	yes	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of PAP.
AW-CO-29-1-3	yes	no	yes	no	no	yes	yes	no	no	yes	yes	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of PAP.
n/a	yes	no	no	no	no	no	yes	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	yes	no	no	no	no	no	yes	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	n/a	n/a	n/a
n/a	yes	no	no	no	no	no	no	no	no	no	no	1 / 11	9%	n/a	n/a	n/a
n/a	no	no	no	no	no	no	yes	no	yes	no	yes	3 / 11	27%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	6

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
n/a	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	11 / 11	100%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	10 / 11	91%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	YES	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	3 / 11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	3 / 11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	7

Scale 1"=364 feet

Wetland Identifier	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
37: AW-NI-28-7-2	no	yes	yes	no	no	no	yes	no	yes	no	yes	5 / 11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
39: AW-NI-28-7-3	no	yes	yes	yes	no	no	no	no	no	no	yes	4 / 11	36%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
40: AW-NI-28-7-1	no	no	yes	no	no	no	no	yes	yes	yes	no	4 / 11	36%	Yes	No	Field Verify
n/a	no	no	yes	no	no	no	yes	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	no	no	yes	yes	no	no	yes	no	no	no	no	3 / 11	27%	n/a	n/a	n/a
n/a	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	10 / 11	91%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	8

Scale 1"=364 feet

Wetland Identifier	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
44: AW-NI-28-8-3	YES	YES	YES	YES	NO	YES	YES	NO	NO	YES	NO	7 / 11	64%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
45: AW-NI-28-8-2	YES	YES	YES	YES	NO	YES	NO	NO	NO	NO	YES	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods.
46: AW-NI-28-8-1	NO	NO	NO	NO	YES	YES	NO	YES	YES	YES	YES	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods.
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	YES	NO	YES	NO	NO	YES	NO	NO	YES	NO	YES	5 / 11	45%	n/a	n/a	n/a
n/a	NO	NO	NO	YES	NO	YES	NO	NO	NO	NO	YES	3 / 11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	YES	NO	YES	NO	NO	YES	NO	NO	4 / 11	36%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	4

Scale 1"=364 feet

Wetland Identifier	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
49: AW-NI-28-4-2	no	yes	yes	yes	no	yes	no	no	no	no	yes	5 / 11	45%	Yes	No	Meets definition of wetland per off-site delineation methods.
52: AW-NI-28-4-3	no	yes	yes	yes	no	yes	yes	no	no	no	yes	6 / 11	54%	Yes	No	Meets definition of wetland per off-site delineation methods.
AW-NI-28-4-1	no	no	no	yes	no	yes	yes	no	yes	no	yes	5 / 11	45%	Yes	No	Field Verify. Outside of US14 Project Area Polygon.
n/a	no	yes	yes	yes	no	yes	no	no	no	no	yes	4 / 11	36%	n/a	n/a	n/a
n/a	no	yes	yes	no	no	yes	no	no	no	yes	no	3 / 11	27%	n/a	n/a	n/a
n/a	no	no	yes	no	no	yes	no	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	yes	no	no	no	no	yes	3 / 11	27%	n/a	n/a	n/a
n/a	no	yes	yes	no	no	no	no	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	5

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
42: AW-NI-28-5-2	No	yes	yes	yes	No	yes	No	No	No	No	No	4 / 11	36%	Yes	No	Field Verify.
43: AW-NI-28-5-3	no	yes	No	No	No	yes	yes	yes	No	No	yes	5 / 11	45%	Yes	No	Field Verify.
41: AW-NI-28-5-1	yes	No	yes	yes	No	yes	No	No	No	No	No	4 / 11	36%	Yes	No	Field Verify.
n/a	No	No	No	No	No	yes	No	No	No	No	No	1 / 11	9%	n/a	n/a	n/a
n/a	No	No	yes	No	No	No	No	No	No	No	No	1 / 11	9%	n/a	n/a	n/a
n/a	No	No	No	yes	No	No	No	No	No	No	yes	1 / 11	9%	n/a	n/a	n/a
n/a	No	No	No	No	No	yes	No	No	No	No	No	1 / 11	9%	n/a	n/a	n/a
n/a	yes	No	yes	No	No	yes	yes	No	No	No	yes	5 / 11	45%	n/a	n/a	n/a
n/a	No	No	yes	No	No	No	yes	No	No	No	yes	4 / 11	36%	n/a	n/a	n/a
n/a	No	yes	No	No	No	No	No	No	No	No	No	1 / 11	9%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	9

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
48: AW-NI-28-9-1	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	9 / 11	82%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
51: AW-NI-28-9-2	no	no	yes	yes	yes	yes	yes	no	no	yes	no	6 / 11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
53: AW-NI-28-9-3	yes	yes	yes	yes	no	yes	yes	yes	no	yes	yes	6 / 11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
50: AW-NI-28-9-4	yes	no	yes	no	no	yes	no	no	yes	yes	yes	6 / 11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	yes	no	yes	no	no	no	no	no	no	no	yes	3 / 11	27%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	yes	no	no	no	no	no	no	no	yes	no	no	3 / 11	27%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	10

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
54: AW-NI-28-10-1	no	no	yes	no	yes	yes	yes	no	yes	yes	no	6 / 11	55%	No	No	Field Verify
n/a	no	no	no	no	no	no	no	no	no	no	no	0 / 11	0%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	n/a	n/a	n/a
n/a	no	no	no	yes	no	no	yes	yes	yes	no	no	3 / 11	27%	n/a	n/a	n/a
n/a	no	no	no	no	no	no	yes	no	yes	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	no	yes	yes	no	no	no	no	no	no	no	no	3 / 11	27%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2 / 11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	n/a	n/a	n/a
n/a	no	no	no	no	no	no	no	no	yes	no	no	1 / 11	9%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	yes	2 / 11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	yes	yes	no	no	yes	4 / 11	36%	n/a	n/a	n/a
n/a	no	no	no	no	no	yes	no	no	no	no	yes	2 / 11	18%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	11

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
AW-NI-28-11-1	NO	YES	YES	NO	NO	YES	YES	NO	NO	NO	YES	5 / 11	45%	Yes	No	Field Verify. Outside of US14 Project Area Polygon.
n/a	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	YES	NO	NO	NO	NO	YES	NO	YES	NO	NO	3 / 11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	14

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
55: AW-NI-28-14-1	NO	YES	YES	YES	NO	NO	YES	NO	NO	YES	YES	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods.
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	3 / 11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	3 / 11	27%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	YES	NO	NO	3 / 11	27%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	24

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
57: AW-NI-28-24-1	NO	NO	YES	NO	NO	YES	YES	NO	NO	YES	YES	5 / 11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	YES	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	3 / 11	27%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	13

Scale 1"=364 feet

	Year											Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2002**					
56: AW-NI-28-13-1	YES	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	4 / 11	36%	Yes	No	Field Verify
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	Yes	No	n/a
n/a	YES	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	2 / 11	18%	n/a	n/a	n/a
n/a	YES	NO	NO	NO	YES	YES	YES	NO	NO	NO	NO	4 / 11	9%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

US 14: Aerial Slide Review
Years 1991-2000, 2002

Township	Range	Sect.
109 (Nicollet)	28	16

Scale 1"=364 feet

Wetland Identifier	Year 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
n/a	yes	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a

YES indicates that a wet signature was present in a given year,
NO indicates absence of wet signature or other signs of wetness, such as crop stress

Appendix C: Minnesota Routine Assessment Method (MnRAM v.3) Forms

	Date - 8/2004	Wetland name / ID TH14 Functional Group A Wetlands	Wetland name / ID _____	Wetland name / ID _____	Wetland name / ID _____
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~		~ Describe each community type individually below ~		
Plant Community #1	Community Type (wet meadow, marsh)	13B Shallow Marsh	- -	- -	- -
	Community Proportion (% of total)	40%			
	Dominant Vegetation / Cover Class	Hybrid Cattail / 4 River Bulrush / 2 Water Smartweed / 1 Willow Species / 2 Hardstem Bulrush / 2 Giant Goldenrod / 1 Carex species / 1			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 2			
	Community Quality (E, H, M, L)	- 0.5	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)	15B Wet Meadow	- -	- -	- -
	Community Proportion (% of total)	60%			
	Dominant Vegetation / Cover Class	Reed Canary Grass / 5 Stinging Nettle / 2 Giant Goldenrod / 2 Sandbar Willow / 1 Carex species / 2 Eleocharis sp. / 1			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 5			
	Community Quality (E, H, M, L)	- 0.1	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		0.5 Medium	0 -	0 -	0 -
Average vegetative diversity/integrity:		0.30 Low	- -	- -	- -
Weighted Average veg. diversity/integrity:		0.26 Low	0.00 -	0.00 -	0.00 -
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.0 Digital Worksheet, Side 2

		Question Description	User entry	Rating				
	1	Veg. Table 2, Option 4		0.26				
		TOTAL VEG Rating	0.26	L				
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next				
	5	Rare community or habitat?	n	next				
	6	Pre-European-settlement conditions?	n	next				
	7	hydrogeo & topo	I	Depressional/Isolated				
	8	Water depth (inches)	36					
		Water depth (% inundation)	50%					
	9	Local watershed/immedita drainage (acres)	30					
	10	Existing wetland size	8					
	11	SOILS: Up/Wetland (survey classification + site)	ollet/Glencoe					
	12	Outlet characteristics for flood retention	b	0.5				
	13	Outlet characteristics for hydrologic regime	b	0.5				
	14	Dominant upland land use (within 500 ft)	c	0.1	1			
	15	Soil condition (wetland)	a	1				
	16	Vegetation (% cover)	NA	H	1			
	17	Emerg. veg. flood resistance	NA	ter valid choice				
	18	Sediment delivery	b	0.5				
	19	Upland soils (based on soil group)	b	0.5				
	20	Stormwater runoff pretreatment & detention	a	1	0.1			
	21	Subwatershed wetland density	a	1				
	22	Channels/sheet flow	a	1				
	23	Upland naturalized buffer average width (feet)	20	L	WQ	0.1	L	0.1
	24	Upland Area Management: % Full	10%	0.1	3	**0.21**		
		up area mgmt: % Manicured	5%	0.025				
		up area mgmt: % Bare	85%	0.085				
	25	Upland Area Diversity & Structure: % Native	2%	0.02	3	**0.17**		
		up area diversity: % Mixed	13%	0.065				
		up area diversity: % Sparse/Inv./Exotic	85%	0.085				
	26	Upland Area Slope: % Gentle	75%	0.75	3	**0.855**		
		up area slope: % Moderate	20%	0.1				
		up area slope: % Steep	5%	0.005				
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	b	0.5				
	28	Nutrient loading	b	0.5				
	29	Shoreline wetland?	n	N				
	30	Rooted shoreline vegetation (%cover)	NA	1				
	31	Wetland in-water width (in feet, average)	NA	1				
	32	Emergent vegetation erosion resistance	NA	ter valid choice				
	33	Shoreline erosion potential	NA	ter valid choice				
	34	Bank protection/upslope veg.	NA	ter valid choice				
	35	Rare Wildlife	n	N				
	36	Scarce/Rare/S1/S2 local community	n	N				
	37	Vegetation interspersion cover (see diagram 1)	1	L	0.1			
	38	Community interspersion (see diagram 2)	3	H	1			
	39	Wetland detritus	b	0.5				
	40	Wetland interspersion on landscape	c	0.1				
	41	Wildlife barriers	b	0.5				
	42	Amphibian breeding potential-hydroperiod	I	1				
	43	Amphibian breeding potential--fish presence	a	1				
	44	Amphibian & reptile overwintering habitat	c	0.1	1	"=MIN(D51,D52)		
	45	Wildlife species (list)	pheasant					
	46	Fish habitat quality	c	0.1				
	47	Fish species (list)	none					
	48	Unique/rare educ./cultural/rec.opportunity	n	N				
	49	Wetland visibility	b	0.5				
	50	Proximity to population	y	1				
	51	Public ownership	b	0.5				
	52	Public access	b	0.5				
	53	Human influence on wetland	c	0.1				
	54	Human influence on viewshed	c	0.1				
	55	Spatial buffer	c	0.1				
	56	Recreational activity potential	b	0.5				
	57	Commercial crop--hydrologic impact	n/a	N/A				

This comes in from Side 1 automatically.

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations

Additional questions

58	*GW - Wetland soils*	r	R or D	0.1	
59	*GW - Subwatershed land use*	d	R or D	1	
60	*GW - Wetland size and soil group*	d	R or D	1	
61	GW - Wetland hydroperiod	r	R or D	0.1	
62	GW - Inlet/Outlet configuration	r	R or D	0.1	
63	GW - Surrounding upland topographic relief	d	R or D	1	
64	Restoration potential w/o flooding	na	Y or N	3.3	
65	*Landowners affected by restoration*	na	*E a b c*	Enter valid choice	
66 A	*Existing wetland size (acres) [from #10]*	8	__ acres		
66 B	Total wetland restoration size (acres)	4.3	__ acres		
66 C	Potential new wetland area (acres)=B-A	-3.7	__ acres		
67	Average width of naturalized upland buffer (poten	10	__ feet		
68	Ease of potential restoration	b	a b c	0.5	
69	Hydrologic alteration type	tile	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)	2	1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater	b	E a b c		
72	Additional stormwater treatment needs	b	a b c		

Functional Rating Summary

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.26	L	
Hydrology - Characteristic		0.43	Med	
Flood Attenuation		#VALUE!	######	
Water Quality--Downstream		#VALUE!	######	
Water Quality--Wetland		0.43	Med	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.37	0.37	Med	
Maintenance of Characteristic Fish Habitat	0.25	0.25	Low	
Maintenance of Characteristic Amphibian Habitat		0.17	Low	
Aesthetics/Recreation/Education/Cultural	0.41	0.41	Med	
Commercial use		N/A	N/A	0
Special Features listing:		-		

Groundwater Interaction — indeterminate GW source

Groundwater Functional Index — no special indicators

Restoration Potential (draft formula) #VALUE!

Stormwater Sensitivity (not active)

		Wetland name / ID	Wetland name / ID	Wetland name / ID	Wetland name / ID
	Date - 8/2004	TH14 Functional Group B & C Wetlands	_____	_____	_____
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3		~ Describe each community type individually below ~		~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	13B Shallow Marsh	- -	- -	- -
	Community Proportion (% of total)	10%			
	Dominant Vegetation / Cover Class	Reed Canary Grass / 2 River Bulrush / 1 Stinging Nettle / 2 Rumex Species / 1			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 5			
	Community Quality (E, H, M, L)	- 0.1	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)	no vegetation	- -	- -	- -
	Community Proportion (% of total)	90%			
	Dominant Vegetation / Cover Class	Corn / Variously Cropped			
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		0.1 Low	0 -	0 -	0 -
Average vegetative diversity/integrity:		0.05 Low	- -	- -	- -
Weighted Average veg. diversity/integrity:		0.01 -	0.00 -	0.00 -	0.00 -
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.0 Digital Worksheet, Side 2

This comes in from Side 1 automatically.

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations

		Question Description	User entry	Rating			
	1	Veg. Table 2, Option 4		0.01			
		TOTAL VEG Rating	0.01	L			
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next			
	5	Rare community or habitat?	n	next			
	6	Pre-European-settlement conditions?	n	next			
	7	hydrogeo & topo	I	Depressional/Isolated			
	8	Water depth (inches)	12				
		Water depth (% inundation)	10%				
	9	Local watershed/immedita drainage (acres)	20				
	10	Existing wetland size	5.6				
	11	SOILS: Up/Wetland (survey classification + site)	oster/ Clarion				
	12	Outlet characteristics for flood retention	c	0.1			
	13	Outlet characteristics for hydrologic regime	c	0.1			
	14	Dominant upland land use (within 500 ft)	c	0.1	1		
	15	Soil condition (wetland)	c	0.1			
	16	Vegetation (% cover)	NA	H	1		
	17	Emerg. veg. flood resistance	NA	ter valid choice			
	18	Sediment delivery	b	0.5			
	19	Upland soils (based on soil group)	b	0.5			
	20	Stormwater runoff pretreatment & detention	a	1	0.1		
	21	Subwatershed wetland density	a	1			
	22	Channels/sheet flow	c	0.1			
	23	Upland naturalized buffer average width (feet)	0	ter valid cho	WQ -	-	-
	24	Upland Area Management: % Full	10%	0.1	3	**0.21**	
		up area mgmt: % Manicured	5%	0.025			
		up area mgmt: % Bare	85%	0.085			
	25	Upland Area Diversity & Structure: % Native	2%	0.02	3	**0.17**	
		up area diversity: % Mixed	13%	0.065			
		up area diversity: % Sparse/Inv./Exotic	85%	0.085			
	26	Upland Area Slope: % Gentle	75%	0.75	3	**0.855**	
		up area slope: % Moderate	20%	0.1			
		up area slope: % Steep	5%	0.005			
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	b	0.5			
	28	Nutrient loading	c	0.1			
	29	Shoreline wetland?	n	N			
	30	Rooted shoreline vegetation (%cover)	NA	1			
	31	Wetland in-water width (in feet, average)	NA	1			
	32	Emergent vegetation erosion resistance	NA	ter valid choice			
	33	Shoreline erosion potential	NA	ter valid choice			
	34	Bank protection/upslope veg.	NA	ter valid choice			
	35	Rare Wildlife	n	N			
	36	Scarce/Rare/S1/S2 local community	n	N			
	37	Vegetation interspersion cover (see diagram 1)	1	L	0.1		
	38	Community interspersion (see diagram 2)	3	H	1		
	39	Wetland detritus	c	0.1			
	40	Wetland interspersion on landscape	b	0.5			
	41	Wildlife barriers	b	0.5			
	42	Amphibian breeding potential-hydroperiod	d	0			
	43	Amphibian breeding potential--fish presence	a	1			
	44	Amphibian & reptile overwintering habitat	N/A	N/A	0	"=MIN(D51,D52)	
	45	Wildlife species (list)	pheasant				
	46	Fish habitat quality	c	0.1			
	47	Fish species (list)	none				
	48	Unique/rare educ./cultural/rec.opportunity	n	N			
	49	Wetland visibility	c	0.1			
	50	Proximity to population	y	1			
	51	Public ownership	c	0.1			
	52	Public access	c	0.1			
	53	Human influence on wetland	c	0.1			
	54	Human influence on viewshed	c	0.1			
	55	Spatial buffer	c	0.1			
	56	Recreational activity potential	c	0.1			
	57	Commercial crop--hydrologic impact	c	0.1			

	58	*GW - Wetland soils*	r	R or D	0.1	
	59	*GW - Subwatershed land use*	d	R or D	1	
	60	*GW - Wetland size and soil group*	d	R or D	1	
Additional questions	61	GW - Wetland hydroperiod	r	R or D	0.1	
	62	GW - Inlet/Outlet configuration	d	R or D	1	
	63	GW - Surrounding upland topographic relief	d	R or D	1	
	64	Restoration potential w/o flooding	y	Y or N	4.2	
	65	*Landowners affected by restoration*	b	*E a b c*	0.5	
	66 A	*Existing wetland size (acres) [from #10]*	5.6	__ acres		
	66 B	Total wetland restoration size (acres)	4.3	__ acres		
	66 C	Potential new wetland area (acres)=B-A	-1.3	__ acres		
	67	Average width of naturalized upland buffer (poten	10	__ feet		
	68	Ease of potential restoration	b	a b c	0.5	
	69	Hydrologic alteration type	tile, ditch	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
	70	Potential wetland type (Circ. 39)	3	1, 2, 3, 4, 5, 6, 7, 8		
	71	Wetland sensitivity to stormwater	c	E a b c		
	72	Additional stormwater treatment needs	c	a b c		

Functional Rating Summary

Function Name	Raw score	Final Rating	Rating Category
Vegetative Diversity/Integrity		0.01	L
Hydrology - Characteristic		0.10	Low
Flood Attenuation		#VALUE!	######
Water Quality--Downstream		#VALUE!	######
Water Quality--Wetland		#VALUE!	######
Shoreline Protection		N/A	N/A
Characteristic Wildlife Habitat Structure	######	#VALUE!	######
Maintenance of Characteristic Fish Habitat	0.19	0.19	Low
Maintenance of Characteristic Amphibian Habitat		0.00	Low
Aesthetics/Recreation/Education/Cultural	0.21	0.21	Low
Commercial use		0.10	Low
Special Features listing:		-	

Formula shown to the right.

0.1

Groundwater Interaction	discharge
Groundwater Functional Index	no special indicators

Restoration Potential (draft formula) 2.50

Stormwater Sensitivity (not active)

	Date - 8/2004	Wetland name / ID TH14 Functional Group D Wetlands	Wetland name / ID _____	Wetland name / ID _____	Wetland name / ID _____
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, **3B**, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	3B Hardwood Swamp	- -	- -	- -
	Community Proportion (% of total)	100%			
	Dominant Vegetation / Cover Class	Green Ash / 3 American Elm / 3 Black Willow / 1 Reed Canary Grass / 2 Unidentified Sedge Species / 1 Riverbank Grape / 1 Box Elder / 2			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 2			
	Community Quality (E, H, M, L)	m 0.5	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)		- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	-	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		0.5 Medium	0 -	0 -	0 -
Average vegetative diversity/integrity:		0.50 Medium	- -	- -	- -
Weighted Average veg. diversity/integrity:		0.50 Medium	0.00 -	0.00 -	0.00 -
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.0 Digital Worksheet, Side 2

This comes in from Side 1 automatically.

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations

		Question Description	User entry	Rating			
	1	Veg. Table 2, Option 4		0.50			
		TOTAL VEG Rating	0.5	Medium			
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next			
	5	Rare community or habitat?	n	next			
	6	Pre-European-settlement conditions?	n	next			
	7	hydrogeo & topo	I	Depressional/Isolated			
	8	Water depth (inches)	12				
		Water depth (% inundation)	25%				
	9	Local watershed/immedita drainage (acres)	8				
	10	Existing wetland size	2				
	11	SOILS: Up/Wetland (survey classification + site)	aston / Tilfer				
	12	Outlet characteristics for flood retention	b	0.5			
	13	Outlet characteristics for hydrologic regime	b	0.5			
	14	Dominant upland land use (within 500 ft)	c	0.1	1		
	15	Soil condition (wetland)	b	0.5			
	16	Vegetation (% cover)	N/A	N/A	N/A		
	17	Emerg. veg. flood resistance	NA	ter valid choice			
	18	Sediment delivery	b	0.5			
	19	Upland soils (based on soil group)	b	0.5			
	20	Stormwater runoff pretreatment & detention	b	0.5	0.5		
	21	Subwatershed wetland density	a	1			
	22	Channels/sheet flow	b	0.5			
	23	Upland naturalized buffer average width (feet)	100	H	WQ	1 M	0.5
	24	Upland Area Management: % Full	10%	0.1	3	**0.21**	
		up area mgmt: % Manicured	5%	0.025			
		up area mgmt: % Bare	85%	0.085			
	25	Upland Area Diversity & Structure: % Native	2%	0.02	3	**0.17**	
		up area diversity: % Mixed	13%	0.065			
		up area diversity: % Sparse/Inv./Exotic	85%	0.085			
	26	Upland Area Slope: % Gentle	20%	0.2	3	**0.54**	
		up area slope: % Moderate	65%	0.325			
		up area slope: % Steep	15%	0.015			
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	b	0.5			
	28	Nutrient loading	b	0.5			
	29	Shoreline wetland?	n	N			
	30	Rooted shoreline vegetation (%cover)	NA	1			
	31	Wetland in-water width (in feet, average)	NA	1			
	32	Emergent vegetation erosion resistance	NA	ter valid choice			
	33	Shoreline erosion potential	NA	ter valid choice			
	34	Bank protection/upslope veg.	NA	ter valid choice			
	35	Rare Wildlife	n	N			
	36	Scarce/Rare/S1/S2 local community	n	N			
	37	Vegetation interspersion cover (see diagram 1)	3	M	0.5		
	38	Community interspersion (see diagram 2)	1	L	0.1		
	39	Wetland detritus	a	1			
	40	Wetland interspersion on landscape	b	0.5			
	41	Wildlife barriers	b	0.5			
	42	Amphibian breeding potential-hydroperiod	d	0			
	43	Amphibian breeding potential--fish presence	a	1			
	44	Amphibian & reptile overwintering habitat	c	0.1	0	"=MIN(D51,D52)	
	45	Wildlife species (list)	deer				
	46	Fish habitat quality	c	0.1			
	47	Fish species (list)	none				
	48	Unique/rare educ./cultural/rec.opportunity	n	N			
	49	Wetland visibility	b	0.5			
	50	Proximity to population	y	1			
	51	Public ownership	c	0.1			
	52	Public access	b	0.5			
	53	Human influence on wetland	b	0.5			
	54	Human influence on viewshed	c	0.1			
	55	Spatial buffer	c	0.1			
	56	Recreational activity potential	b	0.5			
	57	Commercial crop--hydrologic impact	N/A	N/A			

	58	*GW - Wetland soils*	r	R or D	0.1	
	59	*GW - Subwatershed land use*	d	R or D	1	
	60	*GW - Wetland size and soil group*	d	R or D	1	
Additional questions	61	GW - Wetland hydroperiod	r	R or D	0.1	
	62	GW - Inlet/Outlet configuration	r	R or D	0.1	
	63	GW - Surrounding upland topographic relief	r	R or D	0.1	
	64	Restoration potential w/o flooding	N/A	Y or N	2.4	
	65	*Landowners affected by restoration*	N/A	*E a b c*	Enter valid choice	
	66 A	*Existing wetland size (acres) [from #10]*	2	__ acres		
	66 B	Total wetland restoration size (acres)	4.3	__ acres		
	66 C	Potential new wetland area (acres)=B-A	2.3	__ acres		
	67	Average width of naturalized upland buffer (poten	10	__ feet		
	68	Ease of potential restoration	N/A	a b c	Enter valid choice	
	69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
	70	Potential wetland type (Circ. 39)	7	1, 2, 3, 4, 5, 6, 7, 8		
	71	Wetland sensitivity to stormwater	b	E a b c		
	72	Additional stormwater treatment needs	b	a b c		

Functional Rating Summary

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.50	Med	
Hydrology - Characteristic		0.40	Med	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.45	Med	
Water Quality--Wetland		0.45	Med	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.45	0.45	Med	
Maintenance of Characteristic Fish Habitat	0.32	0.32	Low	
Maintenance of Characteristic Amphibian Habitat		0.00	Low	
Aesthetics/Recreation/Education/Cultural	0.41	0.41	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction — recharge

Groundwater Functional Index — no special indicators

Restoration Potential (draft formula) #VALUE!

Stormwater Sensitivity (not active)

	Date - 8/2004	Wetland name / ID TH14 Functional Group E Wetlands	Wetland name / ID _____	Wetland name / ID _____	Wetland name / ID _____
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, **8B**, 10A, 13A, 13B, 12B, 14A, **15A**, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	15A Wet Meadow	- -	- -	- -
	Community Proportion (% of total)	80%			
	Dominant Vegetation / Cover Class	Reed Canary Grass / 4 Giant Goldenrod / 2 Canada Goldenrod / 2 Sandbar Willow / 3			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 4			
	Community Quality (E, H, M, L)	M 0.5	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)	8B Shrub-carr	- -	- -	- -
	Community Proportion (% of total)	20%			
	Dominant Vegetation / Cover Class	Sandbar Willow / 5 Reed Canary Grass / 4			
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	L 0.1	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		0.5 Medium	0 -	0 -	0 -
Average vegetative diversity/integrity:		0.30 Low	- -	- -	- -
Weighted Average veg. diversity/integrity:		0.42 Medium	0.00 -	0.00 -	0.00 -
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.0 Digital Worksheet, Side 2

This comes in from Side 1 automatically.

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations

		Question Description	User entry	Rating				
	1	Veg. Table 2, Option 4		0.42				
		TOTAL VEG Rating	0.42	Medium				
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next				
	5	Rare community or habitat?	n	next				
	6	Pre-European-settlement conditions?	n	next				
	7	hydrogeo & topo	Flood	Floodplain				
	8	Water depth (inches)	0					
		Water depth (% inundation)	0%					
	9	Local watershed/immedita drainage (acres)	5					
	10	Existing wetland size	0.5					
	11	SOILS: Up/Wetland (survey classification + site)	paston/Tilfer					
	12	Outlet characteristics for flood retention	N/A	N/A				
	13	Outlet characteristics for hydrologic regime	N/A	ter valid choice				
	14	Dominant upland land use (within 500 ft)	b	0.5	0.5			
	15	Soil condition (wetland)	b	0.5				
	16	Vegetation (% cover)	95%	H	1			
	17	Emerg. veg. flood resistance	a	1				
	18	Sediment delivery	b	0.5				
	19	Upland soils (based on soil group)	b	0.5				
	20	Stormwater runoff pretreatment & detention	b	0.5	0.5			
	21	Subwatershed wetland density	a	1				
	22	Channels/sheet flow	c	0.1				
	23	Upland naturalized buffer average width (feet)	200	H	WQ	1	M	0.5
	24	Upland Area Management: % Full	85%	0.85	2	**0.865**		
		up area mgmt: % Manicured	0%	0				
		up area mgmt: % Bare	15%	0.015				
	25	Upland Area Diversity & Structure: % Native	75%	0.75	3	**0.835**		
		up area diversity: % Mixed	15%	0.075				
		up area diversity: % Sparse/Inv./Exotic	10%	0.01				
	26	Upland Area Slope: % Gentle	10%	0.1	3	**0.35**		
		up area slope: % Moderate	40%	0.2				
		up area slope: % Steep	50%	0.05				
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	a	1				
	28	Nutrient loading	b	0.5				
	29	Shoreline wetland?	y	Y				
	30	Rooted shoreline vegetation (%cover)	95%	1				
	31	Wetland in-water width (in feet, average)	2	0.1				
	32	Emergent vegetation erosion resistance	a	1				
	33	Shoreline erosion potential	a	1				
	34	Bank protection/upslope veg.	c	0.1				
	35	Rare Wildlife	n	N				
	36	Scarce/Rare/S1/S2 local community	n	N				
	37	Vegetation interspersion cover (see diagram 1)	2	L	0.1			
	38	Community interspersion (see diagram 2)	1	L	0.1			
	39	Wetland detritus	b	0.5				
	40	Wetland interspersion on landscape	b	0.5				
	41	Wildlife barriers	b	0.5				
	42	Amphibian breeding potential-hydroperiod	d	0				
	43	Amphibian breeding potential--fish presence	b	0.5				
	44	Amphibian & reptile overwintering habitat	c	0.1	0	"=MIN(D51,D52)		
	45	Wildlife species (list)	none					
	46	Fish habitat quality	b	0.5				
	47	Fish species (list)	none					
	48	Unique/rare educ./cultural/rec.opportunity	n	N				
	49	Wetland visibility	b	0.5				
	50	Proximity to population	y	1				
	51	Public ownership	b	0.5				
	52	Public access	b	0.5				
	53	Human influence on wetland	b	0.5				
	54	Human influence on viewshed	b	0.5				
	55	Spatial buffer	b	0.5				
	56	Recreational activity potential	b	0.5				
	57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	r	R or D	0.1	
59	*GW - Subwatershed land use*	d	R or D	1	
60	*GW - Wetland size and soil group*	r	R or D	0.1	
61	GW - Wetland hydroperiod	r	R or D	0.1	
62	GW - Inlet/Outlet configuration	d	R or D	1	
63	GW - Surrounding upland topographic relief	d	R or D	1	
64	Restoration potential w/o flooding	N/A	Y or N	3.3	
65	*Landowners affected by restoration*	N/A	*E a b c*	Enter valid choice	
66 A	*Existing wetland size (acres) [from #10]*	0.5	__ acres		
66 B	Total wetland restoration size (acres)	4.3	__ acres		
66 C	Potential new wetland area (acres)=B-A	3.8	__ acres		
67	Average width of naturalized upland buffer (poten	10	__ feet		
68	Ease of potential restoration	N/A	a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater	b	E a b c		
72	Additional stormwater treatment needs	b	a b c		

Functional Rating Summary

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.42	Med	
Hydrology - Characteristic		#VALUE!	######	
Flood Attenuation		0.61	Med	
Water Quality--Downstream		0.87	High	
Water Quality--Wetland		0.51	Med	
Shoreline Protection		0.64	Med	
Characteristic Wildlife Habitat Structure	######	#VALUE!	######	
Maintenance of Characteristic Fish Habitat	0.50	0.50	Med	
Maintenance of Characteristic Amphibian Habitat		0.00	Low	
Aesthetics/Recreation/Education/Cultural	0.56	0.56	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction — indeterminate GW source

Groundwater Functional Index — no special indicators

Restoration Potential (draft formula) — #VALUE!

Stormwater Sensitivity (not active)

	Date - 8/2004	Wetland name / ID TH14 Functional Group F Wetlands	Wetland name / ID _____	Wetland name / ID _____	Wetland name / ID _____
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	**3A**, 3B, 4A, 4B, 7A, 7B, 8A, **8B**, 10A, 13A, **13B,** 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	3A Floodplain Forest	- -	- -	- -
	Community Proportion (% of total)	70%			
	Dominant Vegetation / Cover Class	Green Ash / 4 Silver Maple / 4 Box Elder / 3 River Grape / 1 Reed Canary Grass / 2 Wood Nettle / 2			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 2			
	Community Quality (E, H, M, L)	m 0.5	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)	13B Shallow Marsh	- -	- -	- -
	Community Proportion (% of total)	20%			
	Dominant Vegetation / Cover Class	Hybrid Cattail / 4 Reed Canary Grass / 3 River Bulrush / 2			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 2 Hybrid Cattail / 4			
	Community Quality (E, H, M, L)	m 0.5	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	8B Shrub-Carr	- -	- -	- -
	Community Proportion (% of total)	10%			
	Dominant Vegetation / Cover Class	Sandbar Willow / 5 Red Osier Dogwood / 2 Reed Canary Grass / 3 Carex species / 2			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 3			
	Community Quality (E, H, M, L)	m 0.5	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
	Highest rated community veg. div./integ:	0.5 Medium	0 -	0 -	0 -
	Average vegetative diversity/integrity:	0.50 Medium	- -	- -	- -
	Weighted Average veg. diversity/integrity:	0.50 Medium	0.00 -	0.00 -	0.00 -
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.0 Digital Worksheet, Side 2

		Question Description	User entry	Rating			
	1	Veg. Table 2, Option 4		0.50			This comes in from Side 1 automatically.
		TOTAL VEG Rating	0.5	Medium			
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next			
	5	Rare community or habitat?	n	next			
	6	Pre-European-settlement conditions?	n	next			
	7	hydrogeo & topo	Flood	Floodplain			
	8	Water depth (inches)	36				
		Water depth (% inundation)	20%				
	9	Local watershed/immedita drainage (acres)					Enter data starting here. Yellow boxes are used in calculations.
	10	Existing wetland size	650				
	11	SOILS: Up/Wetland (survey classification + site)	rril / Nishra				
	12	Outlet characteristics for flood retention	NA	ter valid choice			
	13	Outlet characteristics for hydrologic regime	a	1			
	14	Dominant upland land use (within 500 ft)	b	0.5	0.5		
	15	Soil condition (wetland)	a	1			
	16	Vegetation (% cover)	95%	H	1		
	17	Emerg. veg. flood resistance	a	1			
	18	Sediment delivery	b	0.5			
	19	Upland soils (based on soil group)	b	0.5			
	20	Stormwater runoff pretreatment & detention	b	0.5	0.5		
	21	Subwatershed wetland density	b	0.5			
	22	Channels/sheet flow	c	0.1			
	23	Upland naturalized buffer average width (feet)	100	H	WQ	1 M	0.5
	24	Upland Area Management: % Full	70%	0.7	3	**0.81**	
		up area mgmt: % Manicured	20%	0.1			
		up area mgmt: % Bare	10%	0.01			
	25	Upland Area Diversity & Structure: % Native	70%	0.7	3	**0.81**	
		up area diversity: % Mixed	20%	0.1			
		up area diversity: % Sparse/Inv./Exotic	10%	0.01			
	26	Upland Area Slope: % Gentle	20%	0.2	3	**0.44**	
		up area slope: % Moderate	40%	0.2			
		up area slope: % Steep	40%	0.04			
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	a	1			
	28	Nutrient loading	b	0.5			
	29	Shoreline wetland?	y	Y			
	30	Rooted shoreline vegetation (%cover)	80%	1			
	31	Wetland in-water width (in feet, average)	0	0.1			
	32	Emergent vegetation erosion resistance	b	0.5			
	33	Shoreline erosion potential	a	1			
	34	Bank protection/upslope veg.	c	0.1			
	35	Rare Wildlife	n	N			
	36	Scarce/Rare/S1/S2 local community	n	N			
	37	Vegetation interspersion cover (see diagram 1)	3	M	0.5		
	38	Community interspersion (see diagram 2)	2	M	0.5		
	39	Wetland detritus	b	0.5			
	40	Wetland interspersion on landscape	b	0.5			
	41	Wildlife barriers	b	0.5			
	42	Amphibian breeding potential-hydroperiod	I	1			
	43	Amphibian breeding potential--fish presence	b	0.5			
	44	Amphibian & reptile overwintering habitat	c	0.1	0.5	"=MIN(D51,D52)	
	45	Wildlife species (list)	deer				
	46	Fish habitat quality	b	0.5			
	47	Fish species (list)	none				
	48	Unique/rare educ./cultural/rec.opportunity	n	N			
	49	Wetland visibility	a	1			
	50	Proximity to population	y	1			
	51	Public ownership	b	0.5			
	52	Public access	b	0.5			
	53	Human influence on wetland	b	0.5			
	54	Human influence on viewshed	b	0.5			
	55	Spatial buffer	b	0.5			
	56	Recreational activity potential	a	1			
	57	Commercial crop--hydrologic impact	N/A	N/A			

Scroll down to answer more questions and see formula calculations

Additional questions

58	*GW - Wetland soils*	r	R or D	0.1	
59	*GW - Subwatershed land use*	d	R or D	1	
60	*GW - Wetland size and soil group*	d	R or D	1	
61	GW - Wetland hydroperiod	r	R or D	0.1	
62	GW - Inlet/Outlet configuration	d	R or D	1	
63	GW - Surrounding upland topographic relief	d	R or D	1	
64	Restoration potential w/o flooding	N	Y or N	4.2	
65	*Landowners affected by restoration*	N/A	*E a b c*	Enter valid choice	
66 A	*Existing wetland size (acres) [from #10]*	650	__ acres		
66 B	Total wetland restoration size (acres)		__ acres		
66 C	Potential new wetland area (acres)=B-A	-650	__ acres		
67	Average width of naturalized upland buffer (poten	10	__ feet		
68	Ease of potential restoration	N/A	a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)	3	1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater	b	E a b c		
72	Additional stormwater treatment needs	b	a b c		

Functional Rating Summary

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.50	Med	
Hydrology - Characteristic		0.75	High	
Flood Attenuation		#VALUE!	######	
Water Quality--Downstream		#VALUE!	######	
Water Quality--Wetland		0.54	Med	
Shoreline Protection		0.54	Med	
Characteristic Wildlife Habitat Structure	0.57	0.57	Med	
Maintenance of Characteristic Fish Habitat	0.49	0.49	Med	
Maintenance of Characteristic Amphibian Habitat		0.22	Low	
Aesthetics/Recreation/Education/Cultural	0.69	0.69	High	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction: discharge

Groundwater Functional Index: no special indicators

Restoration Potential (draft formula): N/A

Stormwater Sensitivity (not active)

		Wetland name / ID TH14 Functional Group G Wetlands	Wetland name / ID _____	Wetland name / ID _____	Wetland name / ID _____
	Date - 8/2004				
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	16A Open Water	- -	- -	- -
	Community Proportion (% of total)	75%			
	Dominant Vegetation / Cover Class	No vegetation in Open Water			
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	L 0.1	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)	15B Wet Meadow	- -	- -	- -
	Community Proportion (% of total)	25%			
	Dominant Vegetation / Cover Class	Reed Canary Grass / 6 Cottonwood / 1			
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 6			
	Community Quality (E, H, M, L)	L 0.1	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
	Highest rated community veg. div./integ:	0.1 Low	0 -	0 -	0 -
	Average vegetative diversity/integrity:	0.10 Low	- -	- -	- -
	Weighted Average veg. diversity/integrity:	0.10 Low	0.00 -	0.00 -	0.00 -
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.0 Digital Worksheet, Side 2

This comes in from Side 1 automatically.

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations

		Question Description	User entry	Rating			
	1	Veg. Table 2, Option 4		0.10			
		TOTAL VEG Rating	0.1	L			
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next			
	5	Rare community or habitat?	n	next			
	6	Pre-European-settlement conditions?	n	next			
	7	hydrogeo & topo	I	Depressional/Isolated			
	8	Water depth (inches)	60				
		Water depth (% inundation)	75%				
	9	Local watershed/immedita drainage (acres)	10				
	10	Existing wetland size	2				
	11	SOILS: Up/Wetland (survey classification + site)	Delft(wet)				
	12	Outlet characteristics for flood retention	b	0.5			
	13	Outlet characteristics for hydrologic regime	a	1			
	14	Dominant upland land use (within 500 ft)	b	0.5	0.5		
	15	Soil condition (wetland)	a	1			
	16	Vegetation (% cover)	N/A	N/A	N/A		
	17	Emerg. veg. flood resistance	NA	ter valid choice			
	18	Sediment delivery	b	0.5			
	19	Upland soils (based on soil group)	b	0.5			
	20	Stormwater runoff pretreatment & detention	b	0.5	0.5		
	21	Subwatershed wetland density	a	1			
	22	Channels/sheet flow	a	1			
	23	Upland naturalized buffer average width (feet)	30	M	WQ	0.5 L	0.1
	24	Upland Area Management: % Full	50%	0.5	2	**0.75**	
		up area mgmt: % Manicured	50%	0.25			
		up area mgmt: % Bare	0%	0			
	25	Upland Area Diversity & Structure: % Native	20%	0.2	3	**0.58**	
		up area diversity: % Mixed	75%	0.375			
		up area diversity: % Sparse/Inv./Exotic	5%	0.005			
	26	Upland Area Slope: % Gentle	50%	0.5	2	**0.75**	
		up area slope: % Moderate	50%	0.25			
		up area slope: % Steep	0%	0			
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	b	0.5			
	28	Nutrient loading	b	0.5			
	29	Shoreline wetland?	y	Y			
	30	Rooted shoreline vegetation (%cover)	80%	1			
	31	Wetland in-water width (in feet, average)	<5	1			
	32	Emergent vegetation erosion resistance	b	0.5			
	33	Shoreline erosion potential	c	0.1			
	34	Bank protection/upslope veg.	b	0.5			
	35	Rare Wildlife	n	N			
	36	Scarce/Rare/S1/S2 local community	n	N			
	37	Vegetation interspersion cover (see diagram 1)	8	L	0.1		
	38	Community interspersion (see diagram 2)	1	L	0.1		
	39	Wetland detritus	c	0.1			
	40	Wetland interspersion on landscape	c	0.1			
	41	Wildlife barriers	a	1			
	42	Amphibian breeding potential-hydroperiod	I	1			
	43	Amphibian breeding potential--fish presence	a	1			
	44	Amphibian & reptile overwintering habitat	a	1	1	"=MIN(D51,D52)	
	45	Wildlife species (list)	Canada Geese				
	46	Fish habitat quality	c	0.1			
	47	Fish species (list)	unknown				
	48	Unique/rare educ./cultural/rec.opportunity	n	N			
	49	Wetland visibility	c	0.1			
	50	Proximity to population	y	1			
	51	Public ownership	c	0.1			
	52	Public access	b	0.5			
	53	Human influence on wetland	c	0.1			
	54	Human influence on viewshed	b	0.5			
	55	Spatial buffer	c	0.1			
	56	Recreational activity potential	b	0.5			
	57	Commercial crop--hydrologic impact	b	0.5			

	58	*GW - Wetland soils*	r	R or D	0.1	
	59	*GW - Subwatershed land use*	d	R or D	1	
	60	*GW - Wetland size and soil group*	d	R or D	1	
Additional questions	61	GW - Wetland hydroperiod	d	R or D	1	
	62	GW - Inlet/Outlet configuration	d	R or D	1	
	63	GW - Surrounding upland topographic relief	d	R or D	1	
	64	Restoration potential w/o flooding	N/A	Y or N	5.1	
	65	*Landowners affected by restoration*	N/A	*E a b c*	Enter valid choice	
	66 A	*Existing wetland size (acres) [from #10]*	2	__ acres		
	66 B	Total wetland restoration size (acres)	4.3	__ acres		
	66 C	Potential new wetland area (acres)=B-A	2.3	__ acres		
	67	Average width of naturalized upland buffer (poten	10	__ feet		
	68	Ease of potential restoration	N/A	a b c	Enter valid choice	
	69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
	71	Wetland sensitivity to stormwater	c	E a b c		
	72	Additional stormwater treatment needs	b	a b c		

Functional Rating Summary	Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
	Vegetative Diversity/Integrity		0.10	L	
	Hydrology - Characteristic		0.75	High	
	Flood Attenuation		0.70	High	
	Water Quality--Downstream		0.53	Med	
	Water Quality--Wetland		0.41	Med	
	Shoreline Protection		0.62	Med	
	Characteristic Wildlife Habitat Structure	0.42	0.42	Med	
	Maintenance of Characteristic Fish Habitat	0.59	0.59	Med	
	Maintenance of Characteristic Amphibian Habitat		0.53	Med	
	Aesthetics/Recreation/Education/Cultural	0.36	0.36	Med	
	Commercial use		0.50	Med	0.5
	Special Features listing:			-	

Groundwater Interaction	discharge
Groundwater Functional Index	no special indicators
Restoration Potential (draft formula)	#VALUE!
Stormwater Sensitivity (not active)	

Appendix D: Exhibits

Appendix E: Summary Table for Non-Agricultural Wetlands

TABLE 11

Summary of Non-Agricultural Wetlands in the US 14 Project Area Polygon

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Cowardin Wetland Type (as seen in field)	Soil Series	Mapped Hydric Soils?(Y or N)		Area of Wetland within US 14 Project Area Polygon (acres)	Notes
					Mapped	Containing Inclusions		
65: W-BE-27-4-1	far NW corner of Section 4	1	PEMA	109-Cordova clay loam	Y		0.0	Tiny wetland in corner of road
63: W-BE-27-30-1	north boundary of section 30	3	PEMC	114-Glencoe silty clay loam	Y		2.1	South of large farmed wetland, separated by driveway
61: W-BE-27-30-2	Just south of TH-14	2	PEMB	113-Webster clay loam	Y		0.1	small basin surrounded by native grass planting
47: W-NI-28-9-1	in middle of agricultural field, southwest of Nicollet. NW 1/4 of Sect.9	3	PEMC	114-Glencoe silty clay loam, 386-Okoboji mucky silty clay loam	Y		11.7	obligate wetland species, ringed with grass/shrub fringe
36: W-NI-28-6-1	adjacent to Hwy 14. Just north of Basin 2	2	PEMB	1075-Klossner and Muskego soils ponded	Y		2.8	this has been altered by road construction
35: W-NI-28-6-2	adjacent to Hwy 14. Just south of road	3	PEMC	1075-Klossner and Muskego soils ponded	Y		26.8	obligate wetland species, ringed with grass/shrub fringe -- non-farmed with some hay
38: W-NI-28-6-3	just north of Hwy. 14, in WMA area	6	PSSC1	86-Canisteo clay loam	Y		0.7	small basin surrounded by native grasses-non-farmed
24: W-CO-29-11-1	just north of Hwy. 14, NE 1/4 of Sect. 11	2	PEMB	386-Okoboji mucky silty clay loam	Y		2.6	
20: W-CO-29-10-1	north of Hwy. 14	2	PEMB	114-Glencoe silty	Y		1.9	connected to W-CO-29-10-

TABLE 11

Summary of Non-Agricultural Wetlands in the US 14 Project Area Polygon

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Cowardin Wetland Type (as seen in field)	Soil Series	Mapped Hydric Soils?(Y or N)		Area of Wetland within US 14 Project Area Polygon (acres)	Notes
					Mapped	Containing Inclusions		
				clay loam				2
19: W-CO-29-10-2	south of HWY 14, NE 1/4 Sect. 10	3	PEMC	114-Glencoe silty clay loam	Y		2.8	was connected to W-CO-29-10-1 historically.
22: W-CO-29-10-3	south of HWY 14, NE 1/4 Sect. 10	2	PEMB	978-Cordova-Rolfe complex	Y		0.6	small basin surrounded by native grasses
16: W-CO-29-9-1	south of HWY 14,in NW 1/4 of section 9	7	PFO1A	106B- Lester silt loam	N		1.8	area was excavated a long time ago, now a forested swamp
14: W-CO-29-6-1	north of Hwy 14, just west of a county road	2	PEMB	336-Delft clay loam	Y		3.0	sedge meadow/hayfield
11: W-NU-30-36-4	Northwest of the Town of Courtland	5	PEMC	336 – Delft clay loam	Y		2.9	Dominated by *Phalaris arundinacea*
7: W-NU-30-35-1	South of US 14 near MN Valley Lutheran High School	2	PEMC	283A – Plainfield loamy sand	N		1.7	*Phalaris arundinacea, Urtica dioica, and Salix exigua* are dominant
9: W-NU-30-36-1	North of US 14, east of Township Road 150	3	PEMA/ PEMC	130 – Nicollet clay loam	Y		0.9	*Populus deltoides, Salix exigua*, emergent vegetation are dominant
10: W-NU-30-36-2	North of US 14, east of Township Road 150	2	PEMA/ PEMC	130 – Nicollet clay loam	Y		2.1	*Scirpus fluviatilis, Eleocharic erythropoda,* and *Glycine max* are dominant
6: W-NU-30-35-2	Right in front of	3	PEMC	134- Okoboji silty	Y		8.4	marsh in front of MN Valley

TABLE 11

Summary of Non-Agricultural Wetlands in the US 14 Project Area Polygon

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Cowardin Wetland Type (as seen in field)	Soil Series	Mapped Hydric Soils?(Y or N)		Area of Wetland within US 14 Project Area Polygon (acres)	Notes
					Mapped	Containing Inclusions		
	high school, north of Hwy. 14			clay loam				Lutheran H.S.
4: W-NU-30-34-2	South of US 14 at Heyman's Creek	7	PFO1A	Orthents – disturbed from road work	N		0.3	Former channel of Heyman's Creek
3: W-NU-30-27-2	South of US 14 and west of Hwy 37	7	PFO1A	321 – Tilfer silty clay loam	Y		0.3	Standing water on small floodplain forest
5: W-NU-30-34-1	North of US 14 at Heyman's Creek	2	PEMC	611F – Hawick sandy loam	N		0.1	Small depressions and former channel of Heyman's Creek
2: W-NU-30-21-2	Ditch north of US 14 near the western project terminus	6	PSS1A /PFO1A	Orthents – disturbed from road work	Undet.		1.1	Ditch just north of US 14
1: W-NU-30-21-1	along Minnesota River east of New Ulm, south to Hwy 37	7	PFO1A	575-Nishna silty clay loam, 1917, Nishna ponded	Y		68.8	Large bottomland forested wetland along Minnesota River

Note: These data are based on analysis of data on January 20, 2005.

Appendix F: Summary Table for Agricultural Wetlands

TABLE 12

Summary of Agricultural Wetlands in the US 14 Project Area Polygon

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Mapped by NWI?	Mapped Soil Series	Hydric Soils? (Y or N)		Wetland Area within US 14 Project Area Polygon (ac)	Notes
					Mapped	Containing Inclusions		
64: AW-BE-27-30-1	North of Hwy 14. In SE 1/4 section 30	Type 1	Not mapped	134- Okoboji silty clay loam	Y		2.6	7 of 11 years with wet signature
62: AW-BE-27-19-1	North of Hwy 14. In SW 1/4 section 19	Type 1	Not Mapped	386-Okoboji mucky silty clay loam	Y		2.8	10 of 10 years with wet signature
60: AW-BE-27-19-2	South of Hwy 14. In SW 1/4 section 19	Type 1	Not mapped	113-Webster clay loam	Y		2.3	6 of 10 years with wet signature
58: AW-BE-27-19-3	South of Hwy 14. In extreme SW 1/4 section 19	Type 1	Not mapped	114-Glencoe silty clay loam; 86-Canisteo clay loam	Y		0.9	7 of 10 years with wet signature
59: AW-BE-27-19-4	North of Hwy 14. In SW 1/4 section 19, borders county road	Type 1	Yes	386-Okoboji mucky silty clay loam	Y		0.5	4 of 10 years with wet signature
57: AW-NI-28-24-1	north of Hwy 14, in SE 1/4 of Section 24	Type 1	Yes	539-Klossner Muck	Y		1.5	5 of 11 years with wet signature
56: AW-NI-28-13-1	South of Hwy 14, in SW 1/4 of Section 13	Type 1	Not mapped	114-Glencoe silty clay loam; 86-Canisteo clay loam	Y		1.1	4 of 11 years with wet signature
55: AW-NI-28-14-1	South of Hwy 14, in NW 1/4 of Section 14	Type 1	Not Mapped	525-Muskego muck	Y		2.5	6 of 11 years with wet signature. Right next to Hwy. 14.
54: AW-NI-28-10-1	south of Hwy 14, along ditch in SW 1/4 of Section 10	Type 1	Not Mapped	336 - Delft clay loam, 102B Clarion Loam	Partly		2.5	6 of 11 years with wet signature. Small spot next to ditch

TABLE 12

Summary of Agricultural Wetlands in the US 14 Project Area Polygon

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Mapped by NWI?	Mapped Soil Series	Hydric Soils? (Y or N)		Wetland Area within US 14 Project Area Polygon (ac)	Notes
					Mapped	Containing Inclusions		
48: AW-NI-28-9-1	large basin in middle of agricultural field. NW 1/4 of Section 9	Type 1	Yes	386-Okoboji mucky silty clay loam, 86-Canisteo clay loam	Y		12.4	9 of 11 years with wet signature. Big, clear basin. Northern half of basin was delineated and GPSed-see delineated wetland list.
51: AW-NI-28-9-2	basin in middle of agricultural field. NE 1/4 of Section 9	Type 1	Yes	1075-Klossner and Muskego soils, ponded	Y		12.0	6 of 11 years with wet signature. West of site is farmed.
53: AW-NI-28-9-3	large basin in agricultural field. NE 1/4 of Section 9	Type 1	Yes	386-Okoboji mucky silty clay loam, 539-Klossner Muck	Y		19.3	9 of 11 years with wet signature. NWI wetland, non-farmed many years.
50: AW-NI-28-9-4	middle of agricultural field on southwest Edge of section 9	Type 1	Yes	386-Okoboji mucky silty clay loam	Y		1.1	6 of 11 years with wet signature; very wet, unfarmed some years.
49: AW-NI-28-4-2	round basin in middle of agricultural field. SW 1/4 of S.4	Type 1	Yes	114-Glencoe silty clay loam, 386-Okoboji mucky silty clay loam	Y		0.3	5 of 11 years with wet signature. Large wet spot in middle of ag field.
52: AW-NI-28-4-3	south of Nicollet, Hwy 14 in SE 1/4 of S. 4	Type 1	Not Mapped	114-Glencoe silty clay loam; 86-Canisteo clay loam	Y		0.4	6 of 11 years with wet signature. large wet spot in middle of ag field.
41: AW-NI-28-5-1	south of Hwy 14 in SW 1/4 of S. 5	Type 1	Not Mapped	109-Cordova clay loam	Y		4.9	4 of 11 years with wet signature. Near TH-14.
42: AW-NI-28-5-2	south of Hwy 14 in SW 1/4 of S. 5. South of AW-NI-28-5-1	Type 1	Not Mapped	109-Cordova clay loam	Y		3.6	4 of 11 years with wet signature.
43: AW-NI-28-5-3	south of Hwy 14 in SE 1/4 of S. 5. In	Type 1	Not Mapped	109-Cordova clay loam, 86-Canisteo	Y		4.3	5 of 11 years with wet signature, Conglomeration of dark spots in

TABLE 12

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Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Mapped by NWI?	Mapped Soil Series	Hydric Soils? (Y or N)		Wetland Area within US 14 Project Area Polygon (ac)	Notes
					Mapped	Containing Inclusions		
	middle of field			clay loam				middle of field.
46: AW-NI-28-8-1	NE 1/4 of Section 8	Type 1	Not Mapped	113-Webster clay loam	Y		1.6	6 of 11 years with wet signature.
45: AW-NI-28-8-2	NE 1/4 of Section 8	Type 1	Not Mapped	114-Glencoe silty clay loam, 386-Okoboji mucky silty clay loam	Y		4.2	6 of 11 years with wet signature.
44: AW-NI-28-8-3	NE 1/4 of Section 8	Type 1	Yes	109-Cordova clay loam	Y		7.5	7 of 11 years with wet signature.
40: AW-NI-28-7-1	extreme NE 1/4 of Section 7	Type 1	Not Mapped	109-Cordova clay loam	Y		4.1	4 of 11 years with wet signature.
37: AW-NI-28-7-2	middle of agricultural field. NE 1/4 of Section 7	Type 1	Yes	114-Glencoe silty clay loam; 86-Canisteo clay loam	Y		1.9	5 of 11 years with wet signature. Was a very dark spot in field.
39: AW-NI-28-7-3	middle of agricultural field. NE & SE 1/4 of Section 7	Type 1	Yes	386-Okoboji mucky silty clay loam	Y		5.1	4 of 11 years with wet signature, was a very dark spot in field.
28: AW-CO-29-12-1	NW 1/4 of section 12	Type 1	Yes	386-Okoboji mucky silty clay loam	Y		3.3	7 of 11 years with wet signature. Small dark depression in corner of sections 1, 12 and 11.
27: AW-CO-29-12-2	NW 1/4 of section 12. South of basin 1	Type 1	Yes	386-Okoboji mucky silty clay loam	Y		2.7	5 of 11 years with wet signature. Small kidney-shaped basin just south of above basin.
30: AW-CO-29-12-3	NW 1/4 of section 12	Type 1	Yes	539-Klossner Muck	Y		15.0	11 of 11 years with wet signature large, wet area, may be unfarmed
32: AW-CO-29-12-4	NW 1/4 of section 12	Type 1	Not mapped	978-Cordova-Rolfe complex	Y		1.9	7 of 11 years with wet signature. Distinct basin near farmstead.

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					Mapped	Containing Inclusions		
33: AW-CO-29-12-5	NE 1/4 of section 12	Type 1	Not Mapped	956-Canisteo-Glencoe complex	Y		4.3	7 of 11 years with wet signature. Dark spot north of farmhouse, along drive.
34: AW-CO-29-12-6	NE 1/4 of section 12	Type 1	Not Mapped	978-Cordova-Rolfe complex	Y		3.2	8 of 11 years with wet signature. Highly variable drown-out along driveway.
29: AW-CO-29-12-7	NW 1/4 of section 12	Type 1	Yes	114-Glencoe silty clay loam;	Y		2.7	5 of 11 years with wet signature. distinct dark depression.
31: AW-CO-29-12-9	SW 1/4 of section 12	Type 1	Not Mapped	956-Canisteo-Glencoe complex	Y		0.0	8 of 11 years with wet signature. Near south end of project limit.
26: AW-CO-29-11-1	NW 1/4 of section 11. Just south of Hwy. 14	Type 1	Not mapped	386-Okoboji mucky silty clay loam	Y		1.9	5 of 11 years with wet signature. Drown-out in field, near corner of county road.
23: AW-CO-29-11-2	SE 1/4 of section 11	Type 1	Yes	134- Okoboji silty clay loam	Y		13.4	8 of 11 years with wet signature. Dark spot/drown-out in cornfield.
17: AW-CO-29-10-1	just north of Hwy 14 in North-central section 10	Type 1	Yes	386-Okoboji mucky silty clay loam	Y		4.2	9 of 11 years with wet signature. Consistent wet spot in field. Some forested area.
21: AW-CO-29-10-2	NE 1/4 of Sect.10	Type 1	Yes	114-Glencoe silty clay loam; 978-Cordova-Rolfe complex	Y		3.1	8 of 11 years with wet signature. Consistently wet. Located on section line. Lower basin was delineated in field.
18: AW-CO-29-10-3	NE 1/4 of Sect.10. North of Hwy. 14 by 800 meters	Type 1	Yes	978-Cordova-Rolfe complex	Y		7.8	11 of 11 years with wet signature. Consistent basin in ag. field, some trees.
15: AW-CO-29-5-1	middle of agricultural field in section 5. North of Courtland	Type 1	Not Mapped	134- Okoboji silty clay loam	Y		4.9	7 of 8 years with wet signature. large drown-out in middle of field.

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					Mapped	Containing Inclusions		
	about 1000 meters							
13: AW-CO-29-6-2	along county road. East boundary section 6	Type 1	Not mapped	336-Delft clay loam	Y		1.7	8 of 11 years with wet signature. Large wet spot at corner of two roads varies in size a lot.
12: AW-CO-29-6-3	south of Hwy 14. SW 1/4 of section 6	Type 3	Not Mapped	1030-Udorthents-Pits, gravel complex	N		0.8	9 of 11 years with wet signature. Excavated spot appears every year after 1993 - just south of TH 14.

Note: These data are based on analysis on January 20, 2005.