Line 5 Wisconsin Segment Relocation Project
Wetland and Waterbody Delineation Report

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February 2020

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ACRONYMS

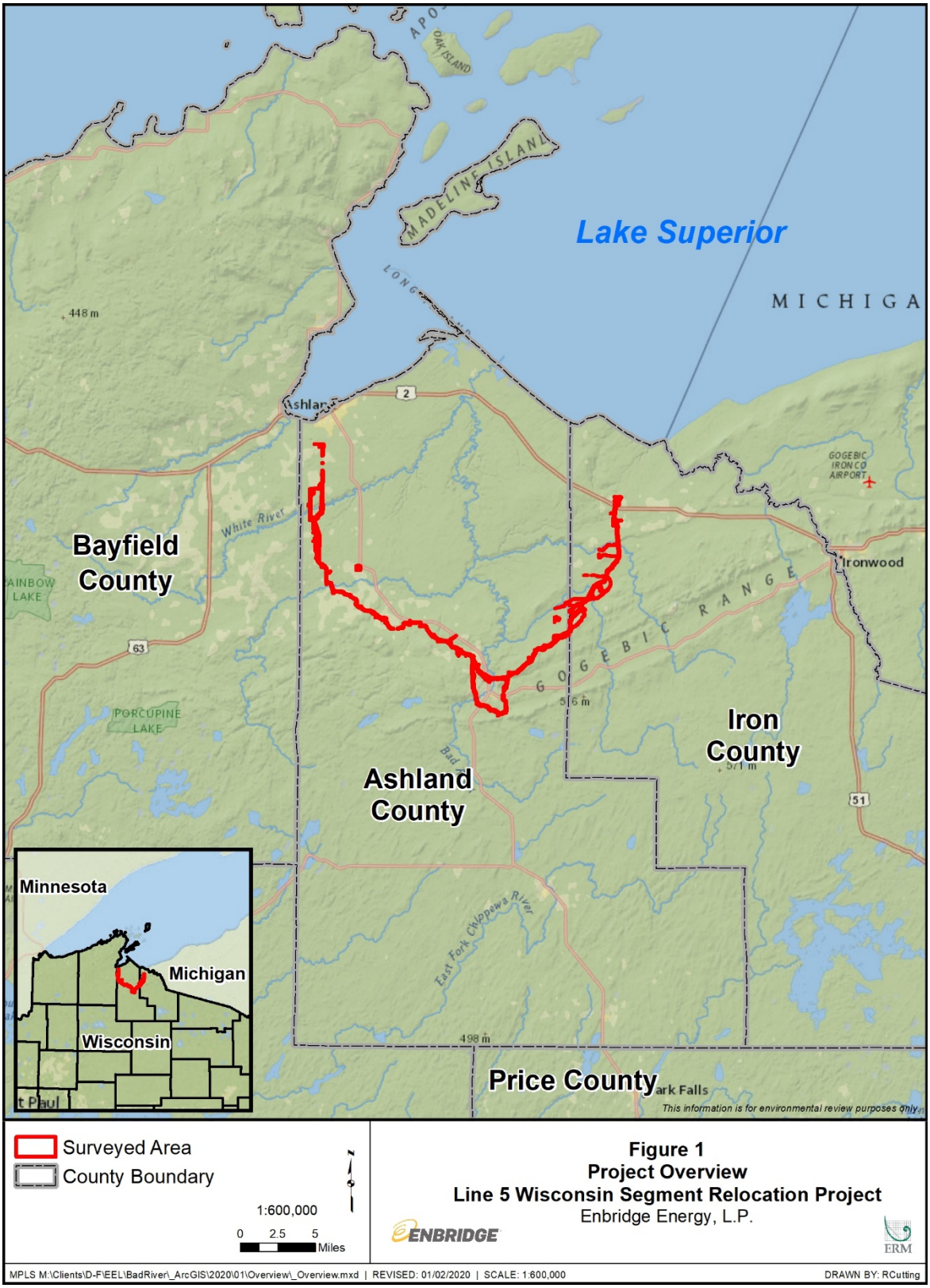
Enbridge	Enbridge Energy Company
ERM	Environmental Resource Management, Inc.
FAC	Facultative Plants
FACU	Facultative Upland Plants
FACW	Facultative Wetland Plants
GPS	Global Positioning System
MNR	Midwest Natural Resources
NHD	National Hydrography Dataset
NRCS	U.S. Department of Agriculture Natural Resources Conservation Services
NTCHS	National Technical Committee of Hydric Soils
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
OBL	Obligate Plants
OHWM	Ordinary High Water Mark
SSURGO	Soil Survey Geographic Database
TNW	Traditional Navigable Water
UPL	Upland Plants
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDNR	Wisconsin Department of Natural Resources
WETS	Wetlands Determination Tables
WOUS	Waters of the United States
WWI	Wisconsin Wetland Inventory

1.0 INTRODUCTION

Environmental Resource Management, Inc. (“ERM”), on behalf of Enbridge Energy, Limited Partnership (“Enbridge”), was contracted to oversee a comprehensive delineation and assessment of all wetlands and waterbodies as part of Enbridge’s Line 5 Wisconsin Segment Relocation Project (“Project”). The majority of the fieldwork was subcontracted to Midwest Natural Resources (“MNR”). The survey corridor is within the U.S. Army Corps of Engineers (“USACE”) St. Paul District.

Wetland and waterbody surveys were conducted along accessible tracts located in Iron and Ashland Counties, Wisconsin (Figure 1). Field investigations were conducted from 29 August to 25 October2019. The credentials of the lead delineators are included in Appendix A.

This report also provides an initial assessment of all wetlands, ponds, and streams identified within the survey corridor, based on MNR’s best professional judgment and 29 interpretation of the *USACE 1987 Wetland Delineation Manual* (Environmental Laboratory 1987) herein referred to as the *USACE 1987 Wetland Manual*; the *USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE 2012); herein referred to as the Northcentral and Northeast Regional Supplement*;* the *USACE Regulatory Guidance Letter regarding Ordinary High Water Mark Identification* (December 7, 2005); the *Guidance for Submittal of Delineation Reports to the St. Paul District USACE and Wisconsin Department of Natural Resources* (WDNR) (USACE & WDNR 2015); herein referred to as USACE/WDNR Guidance; and other USACE and United States guidance documents and regulations.


Lake Superior
MICHIGA
MADELINE ISLAND
OAK ISLAND
448 m
Ashland
2
GOGEBIC IRON CO AIRPORT
Ironwood
White River
Bayfield County
RAINBOW LAKE
63
PORCUPINE LAKE
GOGEBIC RANGE
516 m
Iron County
Ashland County
51
Bad
Minnesota
Michigan
Wisconsin
East Fork Chippewa River
498 m
Price County
ark Falls
t Paul
This information is for environmental review purposes only.
Surveyed Area
County Boundary
1:600,000
0 2.5 5 Miles
Figure 1
Project Overview
Line 5 Wisconsin Segment Relocation Project
Enbridge Energy, L.P.
ENBRIDGE
ERM
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2.0 SITE INVESTIGATION METHODS

2.1 Wetland Delineations

The delineation of wetlands was conducted using the method described in the USACE 1987 Wetland Manual, Northcentral or Northeast Regional Supplement and the USACE/WDNR Guidance (2015). The wetland boundaries, where present, were delineated using the routine onsite determination method described in the USACE regional supplement, accompanied by the 2016 *National Wetland Plant List* ("NWPL") (Lichvar et al. 2016), and the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979).

According to the USACE 1987 Wetland Manual, three criteria are required for an area to be considered a wetland: predominance of hydrophytic vegetation, indications of wetland hydrology, and the presence of hydric soils.

Hydrophytic Vegetation

The NWPL (Lichvar et al. 2016) defines the wetland indicator status of plants as follows:

- OBL (Obligate Wetland Plants): almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.

- FACW (Facultative Wetland Plants): usually occur in wetlands, but may occur in non-wetlands. These plants predominantly occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

- FAC (Facultative Plants): occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

- FACU (Facultative Upland Plants): usually occur in non-wetlands, but may occur in wetlands. These plants predominantly occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

- UPL (Upland Plants): almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

The location of hydrophytic vegetation boundaries were used to aid in locating the approximate wetland/upland boundary. The dominant vegetation was assessed for each strata

present (tree, shrub, and herbaceous). In most cases, plant dominance was determined using the USACE "50/20" rule in which dominant species from each stratum are chosen independently, and that individually or collectively make up more than 50 percent of the total cover in each stratum, plus any other species that account for at least 20 percent of the total cover in the stratum. According to the "50/20 Rule", the hydrophytic vegetation criterion is met when greater than 50 percent of the dominant plant species are classified as OBL, FACW, or FAC. Vegetation information was recorded on the appropriate USACE data forms.

Cowardin Classification

Wetland habitat types were broadly categorized by using the Cowardin (1979) classification system. Wetlands were placed in one of the following categories:

- Palustrine Emergent – A palustrine emergent (PEM) wetland is defined as a non-tidal wetland characterized by erect, rooted, hydrophytic herbaceous species. These wetland habitats are often dominated by perennial plants, where the vegetation is present for the majority of the growing season (Cowardin et al. 1979).

- Palustrine Scrub-Shrub – A palustrine scrub-shrub (PSS) wetland is defined as a non-tidal wetland consisting of woody vegetation that is less than 20 feet tall, including shrubs, young trees, and stunted trees or shrubs (Cowardin et al.1979).

- Palustrine Forested – A palustrine forested (PFO) wetland is defined as a non-tidal wetland characterized by dominant woody vegetation that is greater than 20 feet tall, with an understory of small trees and shrubs, as well as a herbaceous layer (Cowardin et al. 1979).

- Palustrine Aquatic Bed – A palustrine aquatic bed (PAB) wetland is defined as a non-tidal wetland dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years (Cowardin et al. 1979).

Wetlands identified using the Cowardin (1979) classification in Wisconsin were further classified by plant community as defined in *Wetland Plants and Plant Communities of Minnesota and Wisconsin, Third Edition* (Eggers and Reed 2011). The plant community (Eggers classification) was recorded at each sampling location within the wetland. If more than one Eggers classification was present within an existing Cowardin (1979) boundary at a given wetland complex, the boundaries of the different Eggers communities were collected using global position system (GPS) units. The table below summarizes the potential classification types identified during the survey.

TABLE 2.1-1

Wetland Classification Types

Cowardin Classification	Eggers Classification
PEM	Bog
	Deep Marsh
	Farmed Wetland
	Fresh Meadow
	Open Bog
	Seasonally Flooded Basin
	Sedge Meadow
	Shallow Marsh
	Shallow Open Water
	Wet Meadow
PSS	Alder Thicket
	Bog
	Coniferous Swamp
	Shrub-carr
PFO	Bog
	Coniferous Swamp
	Floodplain Forest
	Hardwood Swamp
PAB	Shallow Open Water

Wetland Hydrology

Indicators of wetland hydrology provide evidence that a site has a continuing wetland hydrologic regime, meaning that there is observable evidence of inundation or saturation that has lasted more than a few days and that has occurred repeatedly over several years. The Northcentral and Northeast Regional Supplement provides a list of hydrologic indicators that include primary and secondary indicators grouped as: A) Observation of Surface Water or Saturated Soils, B) Evidence of Recent Inundation, C) Evidence of Current or Recent Soil Saturation, and D) Evidence of Other Site Conditions or Data. One primary indicator or two or more secondary indicators are required to establish a positive indication of hydrology.

Wetland hydrology was determined by making field observations and recording evidence of site conditions such as standing water, high water table, saturation, water-stained leaves, drainage patterns, geomorphic position, or others. Hydrology information was recorded on the appropriate USACE data forms.

Hydric Soils

According to the National Technical Committee of Hydric Soils (“NTCH”S) (USDA NRCS 2010), hydric soils are formed when anaerobic conditions occur in the upper part of the profile for long enough during the growing season due to saturation, flooding, or ponding. In most cases, hydric soils exhibit certain distinctive characteristics that persist in the soil during both wet and dry periods which makes them particularly useful for field identification (USDA NRCS 2010). The hydric soil indicators described in the Northcentral and Northeast Region are a subset of hydric

soil indicators described in *Field Indicators of Hydric Soils in the United States,* Version 7.0 (USDA NRCS 2010).

Hydric soils were identified by digging a hole to a depth of approximately 20 inches and examining the soil profile. In some cases, the depth of the soil pit was shallower or deeper, depending on the indicators present. It is necessary to excavate to a depth sufficient for understanding the redoximorphic processes. The soils were then characterized to determine the color and texture of each soil horizon. Soil colors were identified using Munsell Soil-Color Charts (Munsell Color 2009). The completed soil profile was then compared to the soil features of each hydric soil indicator to determine which indicators were present in the soil. The soil was considered hydric if at least one of the approved indicators was present in the soil profile. Soil conditions and hydric soil indicators were recorded on the appropriate USACE data forms.

Wetland Sampling Protocol

At least two sampling points were taken for each wetland to document wetland and upland conditions, and to identify the wetland boundary. Areas inside the boundary met the three required criteria while areas outside the boundary lacked one or more of the three criteria. For wetland complexes with multiple habitat types (i.e., forested, shrub, or emergent), sampling points were taken to document each habitat type. Additional sampling points were taken at large wetland complexes to document continuity. Where data sampling locations were established along a wetland boundary, they are presented as paired data sheets, documenting the upland and wetland side of the wetland boundary. When wetland complexes were encountered that included multiple habitat types, multiple wetland data sheets may be paired with one upland data sheet. These data sheets provide documentation of how representative sample points meet or do not meet each of the three wetland criteria. Photos were taken at each sample point.

2.1.1 Naturally Problematic and Significantly Disturbed Wetlands

The Northcentral and Northeast Regional Supplement (2012) identifies situations in which conventional wetland indicators (hydrophytic vegetation, hydrology, or hydric soils) may be lacking due to natural variations (i.e., fire, flood, dry season, reduced precipitation, or drought conditions) or recent/historic site disturbance such as conversion of land for grazing or farming. Procedures described in the appropriate regional supplements were used to determine wetland boundaries in wetlands that were found to be either naturally problematic or significantly disturbed.

2.1.2 Global Position System Survey (GPS)

ERM and its subcontractors GPS-surveyed all data points, wetlands, ponds, lakes, streams, and non-water points using a Trimble® GeoExplorer® 6000 series GeoXH model GPS unit, capable of sub-meter accuracy after correction. The field data collection settings within the GPS units used available satellites, including four GPS satellites, to capture location data. Note that while ERM's GPS survey provides reasonably accurate spatial information regarding the wetlands, streams, and ponds delineated, it does not constitute the same accuracy as a professional land survey.

2.1.3 Farmed Wetlands

Cultivated land was delineated in accordance with the procedures outlined in the Northcentral and Northeast Regional Supplement (2012) and USACE/WDNR Guidance (2015).

2.2 Waterbody Delineations

Field determinations of linear waterbodies were identified as any channel that possessed an ordinary high water mark ("OHWM"). Waterbodies include linear features such as streams and rivers, and open waterbodies such as ponds and lakes. Delineations were conducted in accordance with the *Regulatory Guidance Letter No. 05-05 for Ordinary High Water Mark Identification* (USACE, 2005).

Linear waterbodies were classified into one of four regimes according to the definitions provided by the USACE for the Nationwide Permit Program in Code of Federal Regulations (CFR) 33 Part 330.

- Perennial Stream – A perennial stream has flowing water year round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
- Intermittent Stream – An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
- Ephemeral Stream – An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
- Connecting Swale – As described in *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook,* dated May 30, 2007; in accordance with the *Rapanos* Guidance (USEPA & USACE, 2008), certain geographic features (e.g., swales, ditches, pipes) may contribute to a surface hydrologic connection where the feature connects two Waters of the United States ("WOUS").

Data for ponds, lakes, or impoundments were also collected and recorded on waterbody data sheets. These waterbodies were classified into one of three water regimes according to modifiers described in the Cowardin (1979) classification system.

- Permanently Flooded – Flooded throughout the year in all years.
- Semipermanently Flooded – Flooded throughout the growing season in most years.
- Seasonally Flooded – Flooded for extended periods in the growing season, but surface water is usually absent by the end of the growing season.

Waterbody data was recorded using a project-specific data form developed by ERM. Connecting swales that lacked an OHWM, and therefore did not meet the definition of a waterbody, yet connected to wetlands or waterbodies were also characterized on the waterbody data forms. Photos were taken at each data point.

2.3 Non-Water Points

Non-Water points were collected with GPS units in areas that were expected to be wetland or stream habitat based on a desktop review of aerial signatures, Wisconsin Wetland Inventory ("WWI"), National Wetland Inventory ("NWI"), or National Hydrography Dataset ("NHD") mapped inventories. Photographs were taken within aerial signatures, NWI or WWI polygons, or along NHD lines to note that these areas are non-wetland or non-stream (i.e., upland habitat). USACE wetland delineation forms were used to record information for non-water points located within NWI, WWI, or suspected wetland areas. Documentation of such data points serves as a record that substantiates the discrepancy between observed field conditions and the widely referenced existing NWI, WWI, and NHD datasets.

2.4 Feature Naming Protocol

Features identified in the field were named according to the following protocol:

- Feature type: W (wetland), S (stream), O (open water), SP (spring/seep), NO (non-water point)
- County code: two letter code (table 2.4-1)
- Field crew letter: A, B, C…
- Feature number: 001, 002, 003…
- Feature segment: represents different sample points within a wetland complex (a, b, c)
- Data point type (for wetland data points only): W (wetland) or U (upland)

Table 2.4-1

Wisconsin Environmental Survey
Survey Corridor County Codes

State	County	County Code
Wisconsin	Ashland	AS
	Iron	IR

For example, a wetland polygon for a single wetland type would be identified as: W-ASG-001 while the wetland data point for this wetland would be identified as W-ASG-001_W. The associated upland data point would be identified as W-ASG-001_U. In this example, the feature is identified as a wetland located in Ashland County by Crew G, and was the first wetland identified in the county.

An example of a wetland complex polygon that included both PFO and PEM wetland types would be identified as: W-IRI-001 while the associated wetland and upland data points would be identified as W-IRI-014a_W, W-IRI-014b_W, and W-IRI-014_U. In this example, the feature was

a wetland identified in Iron County by Crew I, and was the fourteenth wetland located in Iron County.

An example of a stream feature would be identified as: S-ASD-001 indicating that this was the first stream identified by Crew D in Ashland County.

In cases where an NWI polygon, an NHD line, or an aerial signature indicates that a wetland, stream or waterbody is present, but no feature was identified in the field, a non-water point was taken. For example, NO-IRK-001 would indicate that this is the first non-water point identified by Crew K in Iron County.

2.5 Site Photographs

Representative photographs of the wetland, stream, pond, lake, upland features, and non-water points throughout the survey corridor are located with the appropriate data forms for each feature. These photographs depict site conditions at the time of the field survey. In most cases, four photos were taken (in each cardinal direction) to illustrate site conditions at each wetland and upland sampling point. For stream data, three photos were taken illustrating site conditions upstream, downstream and across the waterbody. One representative photo was taken at each non-water point.

3.0 BACKGROUND INFORMATION – SOURCES REVIEWED

The following sources of information were consulted to identify potential wetlands:

- U.S. Fish and Wildlife Service (“USFWS”) NWI Maps
- Wisconsin Department of Natural Resources (“WDNR”) Wetland Inventory Maps (“WWI”)
- U.S. Geological Survey (“USGS”) Topographic Maps
- USGS NHD
- U.S. Department of Agriculture Natural Resources Conservation Services (“NRCS”) Soil Survey Geographic Database (“SSURGO”)
- Google Earth Historical Imagery, Google Corp. accessed 2019
- Microsoft Aerial Imagery, Microsoft Corporation dated 2019

3.1.1 National Wetland Inventory & Wisconsin Wetland Inventory

NWI maps were created by using high altitude photography and, in most cases, did not include field verification by USFWS staff. WDNR provided its wetland data to the USFWS for inclusion in the National Geospatial Data Asset dataset. The WWI maps were also prepared from high altitude imagery in conjunction with soils surveys, topographic maps, previous wetland inventories and field work (WDNR 2013). Because ground conditions change and because the criteria used to identify wetlands for mapping purposes may be different than that currently required by the USACE, wetland maps can only be used as a guide to aide in identifying potential wetlands. This data was given to field crews to ensure accurate data collection and field verification.

3.1.2 Soil Survey

The NRCS Web Soil Survey (Soil Survey Staff, 2013) was used to obtain soil survey information for each county crossed by the survey corridor. The information obtained was the most current county soil information available. Existing soils maps can be used as a guide to identify locations of potential hydric soils. Field investigation is required to verify the presence of hydric soils. Soil types identified along the survey corridor are identified on maps located in Appendix I and listed in table B in Appendix B.

3.1.3 National Hydrography Dataset

The NHD (USGS, 2014a) depicts surface waters across the United States. The NHD represents some, but not all, rivers, streams, canals, lakes, ponds, and other information. The data is provided at a scale of 1:24,000 (i.e., one inch equals 2,000 feet on the ground). Not all water features are shown at this scale and those that are provide only a moderate level of detail. The NHD layer includes data for perennial, intermittent, and ephemeral streams as well as artificial paths, canal/ditch, coastline, connector, pipeline, and underground conduit (USGS 2019b). A description of NHD classifications is provided in table 3.1.3-1.

TABLE 3.1.3-1

Wisconsin Environmental Survey
Description of National Hydrography Dataset Feature Classification

NHD Classification	NHD Waterbody Classification Description [a]
Stream/River	A body of flowing water.
Perennial Stream	Contains water throughout the year, except for infrequent periods of severe drought.
Intermittent Stream	Contains water for only part of the year, but more than just after rainstorms and at snowmelt.
Ephemeral Stream	Contains water only during or after a local rainstorm or heavy snowmelt.
Underground Conduit	Subsurface drainage channels formed from the dissolution of soluble rocks in Karst terrain or in terrain similar to karst but formed in non-soluble rocks, as by melting of permafrost or ground ice; collapse after mining, and by outflow of liquid lava from beneath its solidified crust.
Artificial Path	An abstraction to facilitate hydrologic modeling through open water bodies to act as a surrogate for lakes and other water bodies.
Canal/Ditch	An artificial open waterway constructed to transport water, to irrigate or drain land, to connect two or more bodies of water, or to serve as a waterway for watercraft.
Connector	A known, but nonspecific, connection between two nonadjacent network segments.

[a] Obtained information from: USGS website http://nhd.usgs.gov/FeatureDirectory.pdf

3.1.4 Aerial Photography

Aerial photography was reviewed to assist in evaluating the project area for possible wetland signatures or agricultural wetlands. The use of aerial imagery can be used to identify indicators of hydrology as well as potential hydric indicators that may be present (and needing field verification) pursuant to the Northcentral and Northeast Regional Supplement (2012). Possible visual signatures include, but are not limited to, hydrophytic vegetation, surface water, varying color changes in vegetation, and isolated areas within farmland that are not successfully cropped due to poor drainage.

3.1.5 Precipitation Data

Long-term county-level monthly totals and precipitation averages were obtained from the NRCS Wetlands Determinations Tables (WETS) (USDA NRCS 2019) and compared to rainfall sums three months prior to field surveys, to determine if field conditions were to be considered dry, normal, or wet for that time of year (table 3.1.6-1). The methodology was taken from the NRCS Engineering Field Handbook (USDA NRCS 1997) utilizing a weighted calculation of both amount and relative age rainfall. These two factors are multiplied to give a numerical rating used to decide whether the month was within a "normal" range for precipitation. Weather stations were selected to represent counties along the route based upon proximity to the survey corridor and quality of WETS data.

TABLE 3.1.5-1

Precipitation Conditions by Weather Station

County/Weather Station	August 2019	September 2019	October 2019
Ashland/ Madeline Island, WI #475286	Normal	Normal	Normal
Iron/ Hurley, WI #473800	Normal	Normal	Normal

4.0 SITE DESCRIPTION AND RESULTS

4.1 General Site Conditions

As shown on Figure 1, the survey corridor generally begins south of Ashland, Wisconsin, extends south of Mellen, Wisconsin, and continues north just west of Cedar, Wisconsin. The area surveyed was between 300 and 500 feet wide.

The survey corridor is located within the Northern Lakes and Forest ecoregion (USEPA 2019). This region is a mosaic of forests, wetlands and lakes, cropland, pasture, and dairy operations.

4.1.1 Wetlands

A total of 733 wetlands were identified in the survey corridor. As noted in the Site Investigation Methods (section 2.0), when a wetland included multiple Cowardin and/or Eggers classifications within the same wetland system, polygons were established delineating each community type, and additional data points were collected resulting in a total of 843 features that were identified. Features are listed in table C-1 in Appendix C and include the county, wetland name, approximate lat./long. location, Cowardin classification, Eggers classification, and map page reference number. Data sheets and photographs for each wetland and upland sampling point are provided in Appendix D. Data sheets are generally organized west to east along the corridor. Maps showing the location of all wetlands located in the survey corridor are located in Appendix I.

4.1.2 Waterbodies

A total of 297 waterbodies were identified in the survey corridor. Waterbodies including rivers, streams, lakes, ponds, and impoundments identified within the survey corridor are identified in table E-1 located in Appendix E. The table includes the county, waterbody ID, approximate lat./long. location, waterbody name, regime, and map page reference number. Data sheets and photographs for waterbody sampling points are located in Appendix F. Maps showing the location of all waterbodies located on the project area are located in Appendix I.

4.1.3 Non-Water Points

A total of 66 non-water points were identified in the survey area. An USACE data form was completed and a photo was collected at each location identified as a WWI or NWI wetland, but where no wetland was present based on criteria described in section 2.0. For areas that were identified as streams on the NHD layer or that had a signature on aerial photography, but no stream was identified, a photo was collected. A table that includes the county, approximate lat./long. location, unique ID, reason the point was collected, and map page reference is located in Appendix G (table G-1). Non-water point data forms and photos are located in Appendix H.

5.0 SUMMARY AND CONCLUSIONS

ERM conducted a wetland and waterbody delineation and assessment of all wetlands and waterbodies that fell within the survey corridor where access was available from August to October, 2019. Wetland and waterbody boundaries were identified and mapped based on the parameters outlined in the 1987 Wetland Manual and the Northcentral and Northeast Regional Supplement.

Table 5-1 presents the total number of features that were identified within the survey corridor.

TABLE 5-1

Summary of Features Identified

Feature Category [a]	Number of Features
PEM Wetlands	398
PSS Wetlands	101
PFO Wetlands	344
Perennial Streams	58
Intermittent Streams	72
Ephemeral Streams	153
Ponds	11
Artificial Drainage Ditches	3

[a] Wetland types according to Cowardin et al. (1979):
PEM = palustrine emergent
PSS = palustrine scrub-shrub
PFO = palustrine forested

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