Harmony Solar Project

Appendix J

2023 Wetland Delineation Report

Wetland Delineation Survey

Harmony Solar
Cass County, North Dakota

October 10, 2023

PRESENTED TO

Harmony Solar ND, LLC
8400 Normandale Boulevard, Suite 1200
Bloomington, Minnesota 55437

PRESENTED BY

Tetra Tech
2001 Killebrew Drive, Suite 141
Bloomington, Minnesota 55425
(612) 643-2200

EXECUTIVE SUMMARY

This report presents the findings of a wetland delineation survey for the proposed Harmony Solar project (Project) located approximately four miles northeast of Casselton in Cass County North Dakota. At this location, Harmony Solar ND, LLC proposes to develop the Project on an approximately 1,662-acre site (Project Area). The Project Area encompasses agricultural fields planted in wheat and soybeans.

Tetra Tech reviewed available desktop-level data to determine the potential for wetlands to be present in the Project Area and 20 potential wetland areas were identified. Each of the potential wetland areas was investigated during the field survey and three were determined to be wetland and were delineated as wetlands WA001, WA011, and WA015. The remaining 17 potential wetland areas were determined to be non-wetland during the field survey.

Wetland WA001 is 0.065 acre in size and was determined to be a PEMAf seasonally flooded wetland. Wetlands WA011 and WA015 were both classified as PEMCx shallow marsh wetland and are ephemeral portions of the Lower Branch of the Rush River and are 0.641 and 0.063 acre in size, respectfully.

An assessment of the waters of the U.S. (WOTUS) criteria and potential U.S. Army Corps of Engineers (USACE) jurisdiction for the delineated wetlands found that wetlands WA001, WA011, and WA015 do not appear to meet the criteria to be considered a WOTUS and would not, therefore, be regulated under Sections 404 and 401 of the Clean Water Act. However, only the USACE can make the final determination on the jurisdiction of wetlands.

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

1.0 INTRODUCTION

1.1 PURPOSE

Harmony Solar ND, LLC proposes to develop the Harmony Solar project (Project) on an approximately 1,662-acre site in Cass County, North Dakota (Project Area). This study was conducted to identify wetlands within the Project Area that may be regulated by federal and/or state agencies. This report describes the Project Area, methods used, survey results and conclusions, and references used to support the conclusions. Appendices include figures illustrating the Project and survey results and select reviewed reference materials.

1.2 SITE LOCATION AND ENVIRONMENTAL SETTING

The Project Area is located approximately four miles northeast of Casselton in Cass County, North Dakota (Appendix A: Figure 1). The Project Area includes approximately 1,662 acres of primarily wheat and soybean fields in Sections 10, 11, and 16 of Harmony Township (Township 140 North, Range 51 West).

Cass County is in the Central Lowland Province. The eastern portion of the county, including the Project Area, is in the Red River Valley (the Lake Agassiz Basin) physiographic division. The plain of Lake Agassiz is flat and nearly featureless. The Red River of the North flows along the eastern edge of the county and is the major stream in the area. Natural drainage in the lake plain is not well integrated, and a large part of the runoff is through manmade drains (USDA 1982). Land use in the vicinity of the Project Area is almost exclusively cultivated cropland. Surface water in the vicinity of the Project Area may collect in local depressions or flow into ditches or streams.

1.3 REGULATORY FRAMEWORK

1.3.1 U.S. Army Corps of Engineers

The USACE has regulatory jurisdiction over navigable waters under Section 10 of the Rivers and Harbors Act of 1899 (RHA) (33 U.S.C. 403) and waters of the U.S. (WOTUS) under Section 404 of the Clean Water Act (CWA) as defined by 33 CFR Part 328. The extent of the USACE regulatory jurisdiction over WOTUS was defined by the USACE and U.S. Environmental Protection Agency (EPA) in a final rule published in the Federal Register on January 18, 2023, which became effective on March 20, 2023 (88 FR 3004, January 18, 2023). EPA and USACE amended the 2023 definition of WOTUS to conform the definition with the U.S. Supreme Court's May 25, 2023 decision in the case of *Sackett v. EPA* in a final rule that was published in the Federal Register and became effective on September 8, 2023 (88 FR 61964, September 8, 2023).

The amended 2023 definition of WOTUS indicates that the USACE has regulatory jurisdiction over traditional navigable waters; tributaries of traditional navigable waters that are relatively permanent; and wetlands with a continuous surface connection to navigable waters and relatively permanent tributaries. Relatively permanent tributaries have flowing or standing water year-round or continuously during certain times of the year. Relatively permanent waters do not include surface waters with flowing or standing water for only a short duration in direct response to precipitation.

The USACE is the sole authority in determining whether federal jurisdiction extends to specific wetlands or waters. Suggestions regarding the USACE jurisdiction of wetlands and waters in this report are preliminary and based on Tetra Tech's interpretation of the guidance issued by the USACE and EPA, review of available desktop data, and evidence observed in the field. There are two types of jurisdictional determinations (JDs) that can be requested from USACE to determine the jurisdiction of wetlands and waters. A preliminary JD (PJD) is a nonbinding written indication that for purposes of calculating impacts and determining compensatory mitigation requirements all waters and wetlands in the review area are treated as jurisdictional WOTUS. An approved JD (AJD) is an official USACE determination that jurisdictional WOTUS are either present or absent in the review area. An AJD precisely identifies the limits of those wetlands and waters determined to be jurisdictional under the CWA.

The USACE determines the type of permit, if any, that may be required under the CWA for projects that affect WOTUS. The USACE authorizes certain activities in WOTUS with pre-issued Nationwide Permits (NWPs). Impacts of up to 0.5 acres for utility projects such as solar farms may be authorized by NWP 51 for Land-Based Renewable Energy Generation Facilities and/or NWP 57 for Electric Utility Line and Telecommunications Activities with mitigation usually being required if impacts exceed 0.1 acre. In order to use a NWP, all general and regional conditions must be met. The Omaha District, North Dakota Regulatory Office has regulatory jurisdiction over the Project Area.

1.3.2 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) Valley City Wetland Management District, manages wetland conservation easements on private lands in Cass County, North Dakota. The easements afford permanent protection to wetland basins that provide important wildlife habitat. Protected wetland basins on wetland easements are mapped by the USFWS at the time of the easement agreement. There are no USFWS wetland easement lands located within the Project Area (USFWS 2023a).

1.3.3 North Dakota Division of Water Quality

Section 401 of the CWA requires certification from the state that any discharge authorized by a NWP does not violate state water quality standards. In North Dakota, the Division of Water Quality (DoWQ) currently issues Water Quality Certifications (WQC) for NWPs. Previously the North Dakota Department of Health issued WQCs for NWPs and has granted water quality certification with conditions for NWP 51 and NWP 57 (North Dakota Department of Health 2017). An individual WQC from DoWQ would be required for any project authorized by a NWP that does not meet the conditions in the general WQC.

2.0 METHODS

2.1 EXISTING INFORMATION REVIEW

Tetra Tech reviewed available information to identify potential wetlands and waters within the Project Area. The following data sources were reviewed:

- National Wetlands Inventory (NWI) (USFWS 2023b);
- National Hydrography Dataset (NHD) (United States Geological Survey [USGS] 2022);
- Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) for Cass County, North Dakota (FEMA 2023);
- Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) Soils (NRCS 2022);
- Aerial photography from 2014, 2015, 2017, 2019, and 2021 from U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) National Agricultural Imagery Program (NAIP);
- Digital Elevation Model (DEM) from USGS (USGS 2013);
- Historical precipitation data from the NRCS Agricultural Applied Climate Information System (AgACIS) (NRCS 2023); and
- Stantec 2018 Wetland Delineation Report (Stantec 2018).

2.2 DESKTOP WETLANDS AND WATERS MAPPING

Tetra Tech reviewed aerial photographs, climate data, NWI, NHD, and SSURGO soils data to identify potential wetlands and waters in the Project Area. The locations of potential wetlands and waters were digitized using ArcGIS mapping software for reference during field surveys. Historical precipitation data was reviewed for each of the aerial photographs to determine if the antecedent precipitation was normal, wet, or dry. Antecedent precipitation conditions for the reviewed aerial photographs were evaluated using the methods described in technical guidance issued by the USDA (USDA 2015). Aerial photographs were reviewed for photo signatures that may indicate the presence of a wetland including:

- Crop stress – differences in vigor of planted crops often seen as a pale green or yellow color;
- Drowned out – cropped areas that appear to have been planted, but the crop has been drowned out;
- Soil Wetness Signature – in photographs taken when crops are not present (early spring or late fall) with dark photo tones in areas where soils are saturated;
- Standing water – visible surface water;
- Not cropped – visual evidence that an area with natural vegetative cover was planted around;
- Altered pattern – detectable differences in vegetation or cropping patterns resulting from delayed planting dates or other alterations to standard farming practices; and
- Wetland signature – changes in vegetation color and/or texture in non-cropped areas.

2.3 WETLANDS AND WATERS SURVEY

Tetra Tech delineated wetlands in the Project Area, if present, using the level two on-site routine determination method set forth in the Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0 (USACE 2010). Potential wetlands were identified based on the review of existing data and observations made at the time of the survey. Tetra Tech established a transect in a representative transition zone of each identified wetland. The transect consisted of one sample point in wetland and one point in non-wetland. Sample points were temporarily marked in the field using pink flagging. Vegetation, soils, and hydrology data were recorded on data forms. The wetland boundary was established based on the recorded sample point information. Wetland boundaries were established only within the Project Area. If the wetland boundary extended outside of the Project Area, only that portion of the boundary within the Project Area was delineated, and observations regarding that portion of the wetland extending outside of the Project Area were recorded. Tetra Tech photographed each wetland and classified it according to Cowardin (Federal Geographic Data Committee [FGDC] 2013) methods.

Plant species dominance at sample points was based on the percent cover visually estimated within a 5-foot radius of the sample point for the herbaceous layer, a 15-foot radius for the shrub layer, and a 30-foot radius for tree and vine layers. Nomenclature for vegetation identified in this report and on the attached data forms generally corresponds to that used in the National Wetland Plant List, Version 3.5 (USACE 2020).

Boundaries for non-wetland waters (i.e., ponds and streams) were established based on observations of the ordinary high water mark (OHWM) as defined by the USACE (51 FR 41250, November 13, 1986).

An Arrow 100 GPS receiver with sub-meter accuracy paired with a tablet running ESRI's Survey123 for ArcGIS application was used in the field to survey the locations of sample points, the wetland/non-wetland boundaries, and OHWM boundaries. Upon completion of the survey, the wetland specialist who captured the field data conducted a quality control review to ensure the spatial and attribute data of the features collected correspond with field observations.

3.0 RESULTS

3.1 EXISTING INFORMATION REVIEW AND DESKTOP MAPPING

3.1.1 National Wetlands Inventory (NWI) and National Hydrography Dataset (NHD)

There are three NWI-mapped wetlands and two NHD mapped waters in the Project Area (Appendix A: Figure 2). In the southwest portion of the project area, the NHD shows an unnamed intermittent streambed and the NWI has an R4SBA riverine wetland mapped in approximately the same location. In the central portion of the Project Area, the NHD shows the Lower Branch of the Rush River which is also mapped in the NWI as an R4SBCx riverine wetlands. A small farmed palustrine (Pf) wetland was also mapped in the NWI in the northeastern part of the Project Area.

Other mapped waters in the area include the Rush River mapped in the NHD and NWI (R2UBFx) databases directly to the north of the Project Area, a large wetland complex mapped in the NWI (PEM1Ah/Pf/PABFh/PFO1A) to the southeast, and a small wetland (Pf) and several excavated ponds (PUBKx) mapped in the NWI to the southeast.

3.1.2 Floodplains

A FEMA flood hazard study has not been completed for the Project Area to determine flood risk in the area (FEMA 2023). While FEMA maps can provide useful information about flood risk, they do not provide a complete picture of flood risk in the future due to changing land use and climate.

3.1.3 Soil Survey Geographic (SSURGO) Soils

The NRCS SSURGO soils data show that the soils mapped in the Project Area are classified as hydric or predominantly non-hydric (Table 1, Appendix A: Figure 3). These hydric soils determinations are taken from SSURGO and the National List of Hydric Soils (NRCS 2023a).

Table 1. Soil Types Mapped in the Survey Area

Symbol	Name	Hydric Class* (% Hydric)	Hydric Component Landform
I119A	Bearden silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric (10%)	Flats, depressions,
I229A	Fargo silty clay, 0 to 1 percent slopes	Hydric (100%)	Flats, drainageways
I233A	Fargo silty clay loam, 0 to 1 percent slopes	Hydric (100%)	Flats, depressions
I235A	Fargo silty clay, depressional, 0 to 1 percent slopes	Hydric (100%)	Depressions, flats, drainageways
I238A	Fargo-Hegne silty clays, 0 to 1 percent slopes	Hydric (100%)	Flats, drainageways, depressions
I371A	Bearden-Kindred silty clay loams, 0 to 2 percent slopes	Predominantly Non-Hydric (15%)	Depressions
I373A	Kindred-Bearden silty clay loams, 0 to 2 percent slopes	Predominantly Non-Hydric (10%)	Depressions
I383A	Overly silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric (5%)	Depressions
I482A	Overly-Bearden silt loams, 0 to 2 percent slopes	Predominantly Non-Hydric (10%)	Depressions

* Soils are categorized into the following five hydric classes:
Hydric – all soil components rated as hydric (100% hydric)
Predominantly Hydric – a majority (67 to 99%) of soil components are rated as hydric
Partially Hydric - a mix of hydric and non-hydric soil components with hydric rated components accounting for 34 to 66%
Predominantly Non-Hydric - a minority (1 to 33%) of soil components are rated hydric
Non-Hydric – all soil components are rated as non-hydric (0% hydric)

3.1.4 Previous Reports

A wetland delineation survey was completed for the Project Area by Stantec Consulting Services Inc. (Stantec) in 2018 (Stantec 2018). The Stantec survey confirmed the presence of the mapped Lower Branch Rush River in the Project Area and investigated an additional 12 locations that were determined to be non-wetlands.

The 2018 report was submitted to the USACE for an approved jurisdictional determination (AJD). The USACE response dated January 12, 2017 states that the identified stretch of the Lower Branch Rush River is a jurisdictional WOTUS. However, the AJD is no longer valid having expired five years after the date of the letter on January 12, 2022.

3.1.5 Desktop Wetlands and Waters Mapping

Aerial photographs in combination with antecedent precipitation data from the NRCS AgACIS (NRCS 2023), USGS DEM (USGS 2013), and the NWI were reviewed to identify potential wetlands and waters in the Project Area. Reviewed aerial photographs included images from August 2014 (USDA FSA APFO 2014), September 2015 (USDA FSA APFO 2015), July and August 2017 (USDA FSA APFO 2017), July 2019 (USDA FSA APFO 2019) and September 2021 (USDA FSA APFO 2021). The antecedent precipitation review showed that the 2014, August 2017, and 2021 photographs were taken during a period with dry antecedent precipitation, while the 2015, July 2017, and 2019 photographs were taken during a period with normal antecedent precipitation.

The desktop data review identified 20 potential wetlands in the Project Area (Appendix A: Figure 4). Four of the potential wetlands intersect both NWI and NHD mapped resources, and one potential wetland intersects only NWI mapped resources. The 15 remaining desktop potential wetland areas do not correspond with any previously mapped resources and were identified based on review of aerial photographs and elevation data.

3.2 WETLAND DELINEATION

The wetland delineation field survey was conducted on August 2 and 3, 2023, during a period with dry antecedent precipitation. The climate condition determination is based on methods described in technical guidance (USDA 2015) and data from AgACIS (NRCS 2023b). The closest weather station to the Project Area with adequate precipitation records was the Casselton Agronomy Farm, North Dakota station located approximately 6 miles southwest of the Project Area. Antecedent precipitation data are presented in Table 2.

All twenty desktop potential wetland areas within the Project Area were investigated during the site visit, but only three (WA001, WA011, and WA015) were determined to be wetland, and the remaining 17 areas were determined to be non-wetlands. Results from the site visit are described in detail below and shown on Figure 4 in Appendix A. Wetland determination data forms and photographs are provided in Appendix B. A key to the Cowardin wetland classification system is included as Appendix C.

Table 2. Antecedent Precipitation Analysis

Precipitation data for target wetland location:			
Station Name: Casselton Agronomy Farm, ND		**Site visit date: August 2-3, 2023**	
Score using 1981-2010 normal period			
Values are in inches Data missing in any month have an "M" flag	first prior month: **July 2023**	second prior month: **June 2023**	third prior month: **May 2023**
estimated precipitation total for this location:	**M0.35**	**3.77**	**3.13**
there is a 30% chance this location will have less than:	2.39	3.14	2.28
there is a 30% chance this location will have more than:	4.49	5.25	3.86
type of month: dry normal wet	**Dry**	**Normal**	**Normal**
monthly score	**3 * 1 = 3**	**2 * 2 = 4**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**9 (Dry)**		

Wetland WA001 was delineated adjacent to a ditch along the road on the northeast edge of the Project Area. The only vegetation recorded at this location was soybeans *(Glycine max)*. No primary hydrology indicators were observed, however, two secondary wetland hydrology indicators (D2: Geomorphic Position and B6: Surface Soil Cracks) were observed at this location. The delineated wetland was classified as a temporarily-flooded, farmed wetland (PEMAf) and is 0.065 acre in size.

Wetlands WA011 and WA015 were delineated in the central portion of the Project Area at the location mapped as the Lower Branch of the Rush River in the NHD (see Section 3.1.1). Vegetation at the wetland sample points primarily included narrowleaf cat-tail *(Typhus angustifolia)*, reed canary grass *(Phalaris arundinacea)*, and small amounts of careless weed *(Amaranthus palmeri)*. Documented vegetation at adjacent upland points included soybeans *(Glycine max)*, and wheat *(Triticum aestivum)*. A total of four primary hydrology indicators (B1: Water Marks, B2: Sediment Deposits, B7: Inundation Visible on Aerial Imagery, and C7: Thin Muck Surface), and four secondary wetland hydrology indicators (D2: Geomorphic Position, D5: FAC-Neutral Test, C9: Saturation Visible on Aerial Imagery and B10: Drainage Patterns) were observed at WA011 and WA015. Surface water was present at both locations with a depth of 3 to 12 inches. The delineated wetlands were classified as PEMCx excavated seasonally flooded shallow marsh and are 0.641 and 0.063 acre in size, respectfully. The wetlands are within an ephemeral portion of the Lower Branch Rush River.

Twenty-five non-wetland sample points were documented in the Project Area. Vegetation in these areas was limited due to the fields being in agricultural production. The only vegetation documented at non-wetland areas were soybeans *(Glycine max)* and wheat (*Triticum aestivum)*. Two secondary wetland hydrology indicators (D2: Geomorphic Position and B6: Surface Soil Cracks) were observed at the majority of these locations. No hydric soil indicators were documented at any of the non-wetland sample points.

3.3 REGULATORY IMPLICATIONS

Wetlands WA001, WA011, and WA015 do not appear to be relatively permanent waters nor are they adjacent to a relatively permanent water and, therefore, would not be WOTUS and would not likely be subject to USACE regulatory jurisdiction under Section 404 of the CWA (Appendix A: Figure 5). Only the USACE can make the final determination on the jurisdiction of wetlands.

4.0 LITERATURE CITED

FEMA. 2023. FEMA Flood Map Service Center. https://msc.fema.gov/portal/search accessed September 26, 2023.

Federal Geographic Data Committee (FGDC). 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

North Dakota Department of Health. 2017. Certification under Section 401 of the Clean Water Act. February 8.

NRCS. 2022. Gridded Soil Survey Geographic (gSSURGO) Database for North Dakota. Vector Digital Data. Published October 11, 2022 (FY202210 official release).

NRCS. 2023a. Lists of Hydric Soils. Cass County, North Dakota. Retrieved September 2023 from: https://www.nrcs.usda.gov/publications/query-by-ssa.html

NRCS. 2023b. Wetland Climate (WETS) Tables. Casselton Agronomy Farm, ND. Retrieved August 23, 2023, from: http://agacis.rcc-acis.org/?fips=38017.

Stantec. 2018. Wetland Delineation, Harmony Solar ND Project. May 2.

USACE. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2020. National Wetland Plant List, Version 3.5. Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH. https://wetland-plants.sec.usace.army.mil

USDA. 1982. Soil Survey of Cass County, North Dakota. U.S. Department of Agriculture Soil Conservation Service.

USDA. 2015. Hydrology Tools for Wetland Identification and Analysis. Chapter 19, Engineering Field Handbook. Fort Worth, Texas: U.S. Department of Agriculture.

USDA FSA APFO. NAIP digital ortho imagery. Raster Digital Data.
2014. Cass County, North Dakota. ortho_1-1_1n_s_nd017_2014_1
2015. Cass County, North Dakota. ortho_1-1_1n_s_nd017_2015_1
2017. Cass County, North Dakota. ortho_1-1_hn_s_nd017_2017_1
2019. Cass County, North Dakota. ortho_1-1_hn_s_nd017_2019_1
2021. Cass County, North Dakota. ortho_1-1_hn_s_nd017_2021_1

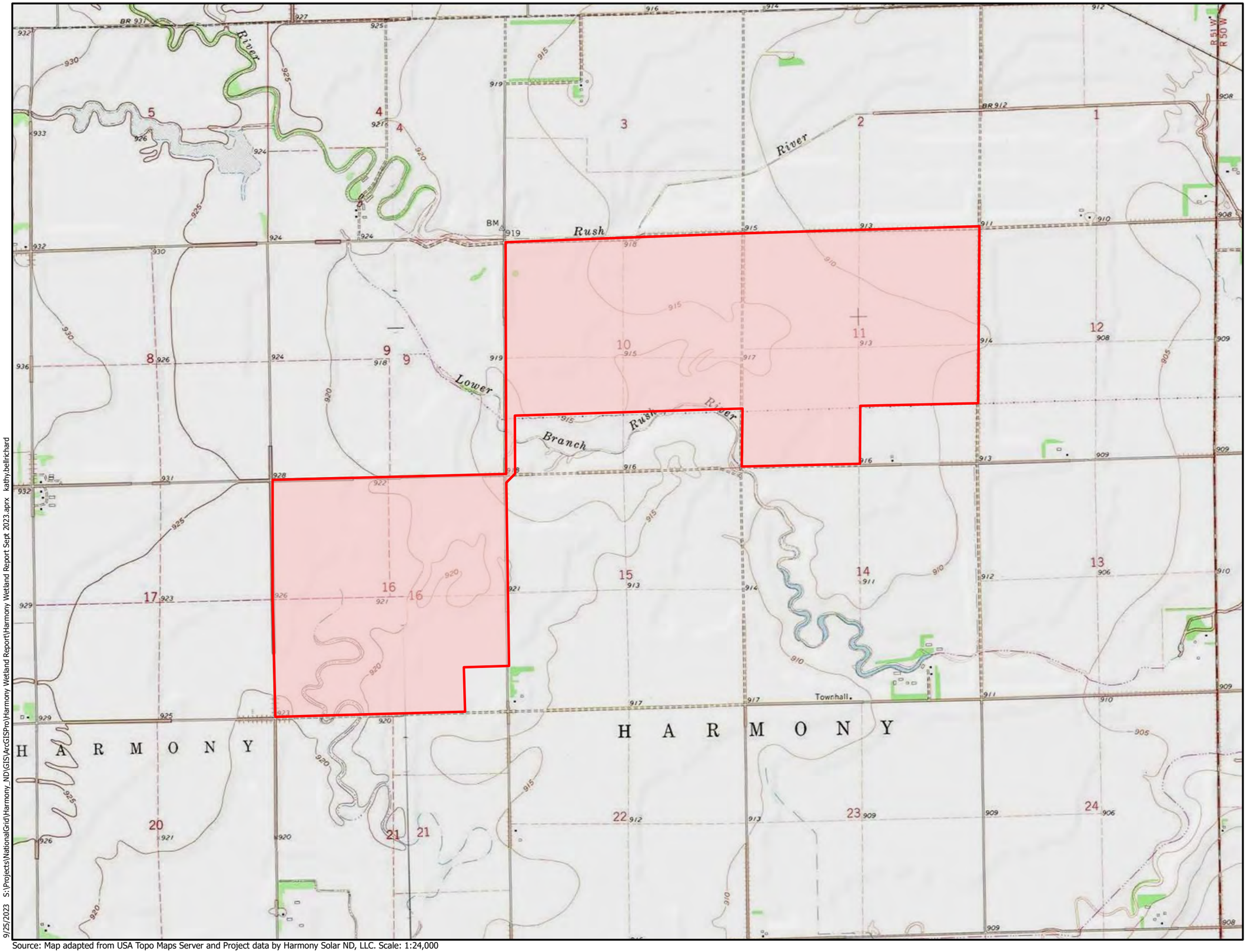
USFWS. 2023a. National Wetlands Inventory: Surface Waters and Wetlands Mapper. Available online https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper, accessed September 29, 2023.

USFWS. 2023b. National Wetlands Inventory. Vector Digital Data. Published May 26, 2023.

USGS. 2013. USGS 13 arc-second n47w098 1 x 1 degree: U.S. Geological Survey. Raster Digital Data.

USGS. 2022. National Hydrography Dataset Best Resolution (NHD) – North Dakota. Vector Digital Data. Published October 13, 2022.

APPENDIX A: FIGURES 1 – 5



Project Area

0 0.25 0.5 Mile

N

Figure 1
Project Area Location

Harmony Solar
Cass County
North Dakota

TETRA TECH

9/25/2023 S:\Projects\NationalGrid\Harmony_ND\GIS\ArcGISPro\Harmony Wetland Report\Harmony Wetland Report Sept 2023.aprx kathy.bellrichard

Source: Map adapted from USA Topo Maps Server and Project data by Harmony Solar ND, LLC. Scale: 1:24,000

Project Area

Desktop Potential Wetlands and Waters

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine
- Other

NHD Classification

- Intermittent Stream/River
- Connector

0 0.25 Mile

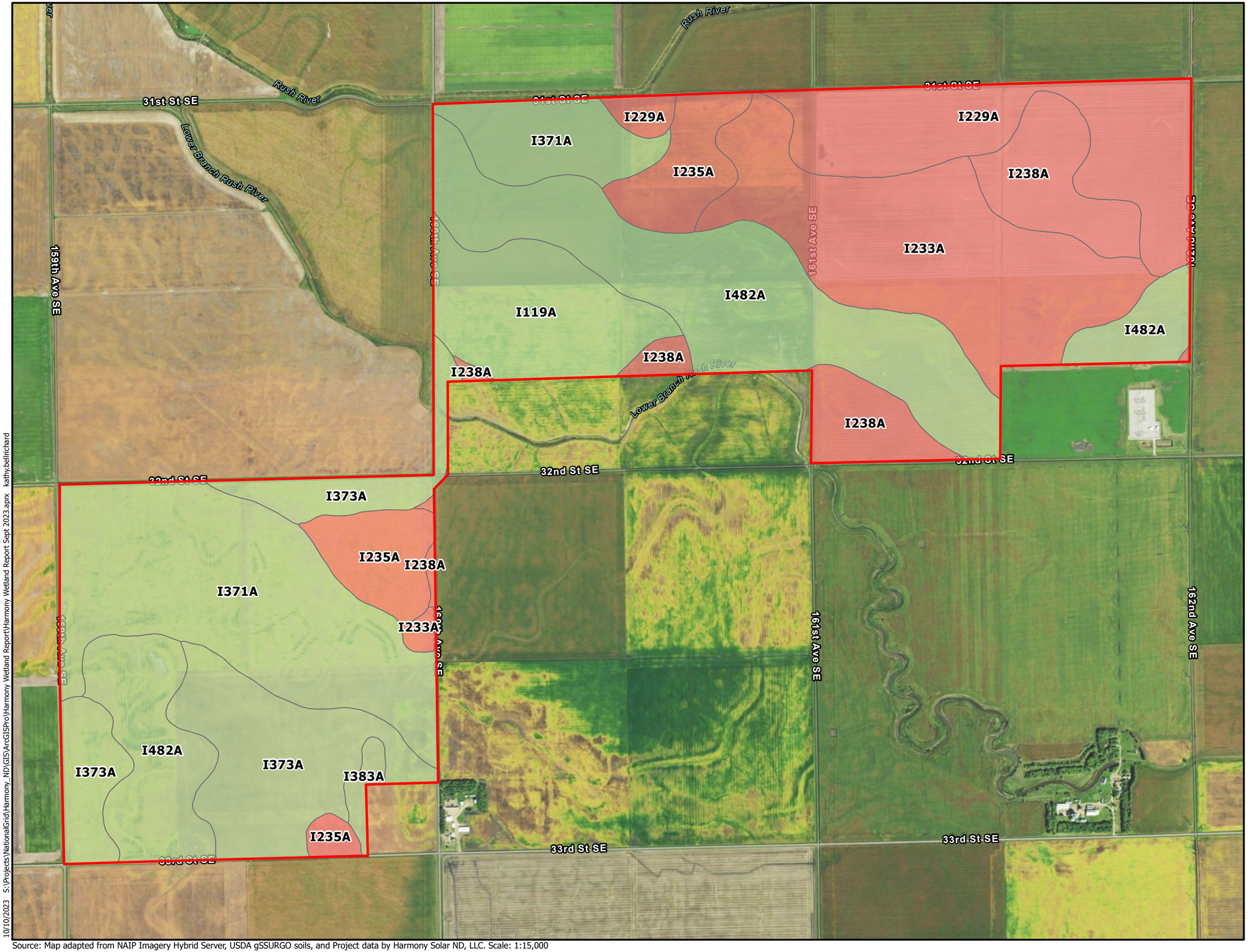
N

Figure 2
Desktop Wetlands and Waters Mapping
Harmony Solar
Cass County
North Dakota

TETRA TECH

Source: Map adapted from NAIP Imagery Hybrid Server, USGS NHD, USFWS NWI, IN DNR Best Available Flood Zones, FEMA Flood Zones, Tetra Tech desktop wetlands and waters, and Project data by Hoosier Solar, LLC. Scale: 1:15,000

9/25/2023 S:\Projects\NationalGrid\Harmony_ND\GIS\ArcGISPro\Harmony Wetland Report\Harmony Wetland Report Sept 2023.aprx kathy.bellrichard



Project Area

Hydric Classification

Hydric

Predominantly Non-Hydric

0 0.25 Mile

Figure 3
SSURGO Soils

Harmony Solar
Cass County
North Dakota

TETRA TECH

Source: Map adapted from NAIP Imagery Hybrid Server, USDA gSSURGO soils, and Project data by Harmony Solar ND, LLC. Scale: 1:15,000

10/10/2023 S:\Projects\NationalGrid\Harmony_ND\GIS\ArcGISPro\Harmony Wetland Report\Harmony Wetland Report Sept 2023.aprx kathy.bellrichard

Project Area

Non-Wetland Sample Point

Delineated Wetland

Desktop Potential Wetlands and Waters

0 500 1,000 1,500 2,000 Feet

N

Figure 4
Wetlands and Waters Survey Results
Harmony Solar
Cass County
North Dakota

TETRA TECH

9/26/2023 S:\Projects\NationalGrid\Harmony_NDGIS\ArcGISPro\Harmony Wetland Report\Harmony Wetland Report Sept 2023.aprx kathy.bellrichard

Source: Map adapted from NAIP Imagery Hybrid Server, Field Wetlands and Waters by Tetra Tech, and Project data by Harmony Solar ND, LLC. Scale: 1:15,000

Project Area

WOTUS - Section 404*

Non-Relatively Permanent Water / Non-Adjacent Wetland

* Suggestions regarding the jurisdiction of wetlands and waters are preliminary and must be verified by USACE.

0 500 1,000 1,500 2,000 2,500 Feet

N

Figure 5
Wetlands and Waters Jurisdiction
Harmony Solar
Cass County
North Dakota

TETRA TECH

10/10/2023 S:\Projects\NationalGrid\Harmony_ND\GIS\ArcGISPro\Harmony Wetland Report\Harmony Wetland Report Sept 2023.aprx kathy.bellrichard

Source: Map adapted from NAIP Imagery Hybrid Server, Field Wetlands and Waters by Tetra Tech, and Project data by Harmony Solar ND, LLC. Scale: 1:16,686

APPENDIX B: WETLAND DETERMINATION DATA FORMS AND PHOTOGRAPHS

OMITTED

APPENDIX C: WETLAND CLASSIFICATION KEY

Cowardin Wetland Classification System

Systems	Subsystems	System Specific Classes
L - Lacustrine	(1) Limnetic (2) Littoral	RB, UB, AB, RS, US, EM,
P - Palustrine	None	RB, UB, AB, US, ML, EM, SS, FO
R - Riverine	(1) Tidal (2) Lower Perennial (3) Upper Perennial (4) Intermittent	RB, UB, SB, AB, RS, US, EM
Classes	**Water Regimes**	**Special Modifiers**
RB - Rock Bottom **UB -** Unconsolidated Bottom **SB -** Streambed **AB -** Aquatic Bed **RS -** Rocky Shore **US -** Unconsolidated Shore **EM -** Emergent **ML -** Moss Lichen **SS -** Scrub Shrub **FO** - Forested	**A** – Temporarily flooded **B** – Seasonally saturated **C** – Seasonally flooded **D –** Continuously saturated **E** – Seasonally flooded/saturated **F** – Semi-permanently flooded **G** – Intermittently exposed **H** – Permanently flooded **J** – Intermittently flooded **K** – Artificially flooded	**b** – Beaver **d** – Partly drained/ditched **f** – Farmed **m –** Managed **h** – Diked/impounded **r** – Artificial substrate **s** – Spoil **x** – Excavated

Source: Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC. (FGDC 2013)