







WETLAND DELINEATION REPORT

ELK CREEK SOLAR ROJECT

Magnolia, Rock County, Minnesota May 28, 2019

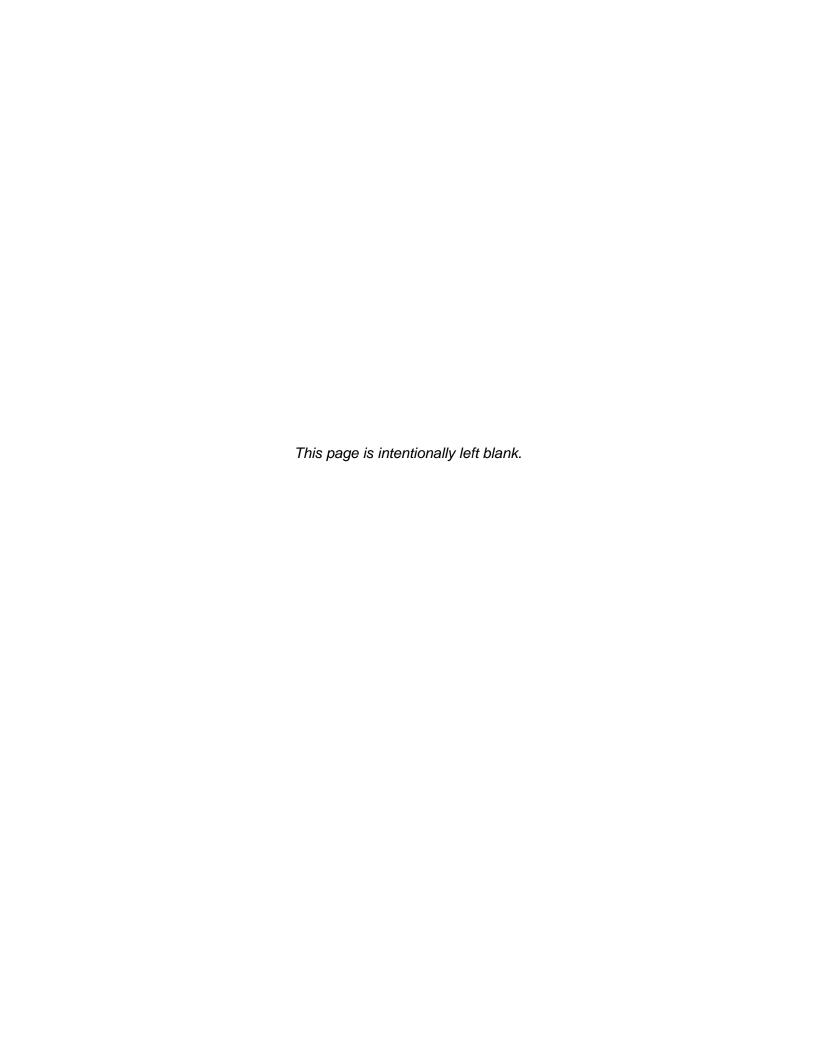


Table of Contents

| 1.0 Introduction | 1 |
|---|---|
| 2.0 Methods | 1 |
| 3.0 Site Description | 1 |
| 3.1 Climate Data | 2 |
| 3.2 Historical Climate Data | 2 |
| 3.3 Soils | 2 |
| 4.0 Results | 3 |
| 5.0 Conclusions | 6 |
| 6.0 References | 6 |
| List of Tables | |
| Table 1. Historical Aerial Photography Information | 2 |
| Table 2. Mapped Soil Types within Project Area | 3 |
| Table 3. Historical Aerial Photography Interpretation Results | 4 |
| Table 4. Delineated Wetlands | 6 |

List of Figures

Figure 1 Project Location Map

Figure 2 Historical Aerial Photography Review

Figure 3 Delineated Wetlands

List of Appendices

Appendix A. USACE Routine Wetland Delineation Data Forms

Appendix B. Ground Level Photography

Appendix C. Minnesota Climatology Working Group Antecedent Precipitation Data

Appendix D. USDA Web Soil Survey Hydric Rating by Map Unit

1.0 Introduction

Elk Creek Solar LLC is proposing to develop a new solar energy production facility in Rock County, Minnesota. The 970 acre Project Area is located in Section 27, 26, and 35 of Township 103 Range 44 in Rock County, Minnesota (Figure 1). HDR completed a wetland delineation to identify wetlands and other Waters of the U.S. within the Project Area on May 6, 2019.

2.0 Methods

An initial desktop evaluation for the presence of wetlands and wetland hydrology within the Project Area was performed using protocols defined in the July 2016 Minnesota Board of Water and Soil Resources (BWSR) and U.S. Army Corps of Engineers (USACE) *Guidance for Offsite Hydrology/Wetland Determinations* (USACE 2016). Potential wetland areas were identified based on aerial photography interpretation and historical aerial photography review, National Wetland Inventory (NWI), hydric soil map units, 2 foot light detection and ranging (LiDAR) contours, and 2 foot digital elevation models (DEM). These areas were then visited in the field to confirm the presence or absence of wetland characteristics. Onsite wetland delineations were conducted in accordance with methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2)* (USACE 2010). The USACE defines areas as wetlands based on the following:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas [33 CFR 328 3.b].

Wetland delineations are based on the presence of the following three parameters:

- Indicators of wetland hydrology
- Predominance of hydrophytic vegetation
- Presence of hydric soils

"Atypical" or "problem areas" may be missing one or more of the three parameters, and still be classified as wetlands but must be justified using USACE criteria.

3.0 Site Description

The Project Area is located in eastern Rock County, approximately 1 mile northwest of Magnolia, Minnesota within the Prairie Parkland – Inner Coteau Subsection as defined by The Minnesota Department of Natural Resources (MNDNR) (MNDNR, 2005). This area is described as thick to thin loess deposits over glacial till. The Inner Coteau consists of highly dissected moraines of pre-Wisconsin drift, capped by thick wind-blown silt deposits. (MNDNR, 2005). Presettlement vegetation was tallgrass prairie (MNDNR 2005). The Project Area has been in crop production since at least 2003 based on historical aerial photography review.

3.1 Climate Data

The Minnesota Climatology Working Group (MNCWG, 2018) has an online calculator that provides a multi-month precipitation score for any date selected from a calendar. Scores of 6 to 9 are considered "dry", 10 to 14 "normal", and 15 to 18 "wet". For the time of the on-site delineation, precipitation for the Project Area was considered "wet" with a score of 18 from MNCWG.

3.2 Historical Climate Data

A review of historical climate data for the Project Area was performed against the dates of historical aerial photos readily available through the Minnesota Historical Aerial Photographs Online (MHAPO) program and Farm Service Agency National Agriculture Imagery Program (NAIP) and Google Earth. USACE guidance states that historical photographs should be reviewed for indicators of wetland hydrology when normal precipitation conditions are present (USACE 2016). This review of historical aerial photography was used in identifying offsite wetland hydrology indicators. Of the publically available aerial photos; 2003, 2004, 2005, 2008, 2009, 2010, 2015, and 2017 had normal precipitation multi-month scores and therefore were selected for use in the historical aerial photography review. Additionally 2006 and 2013 which had a dry multi-month score were also included in the review (Table 1). All historic aerial photographs reviewed are included as Figure 2. MNCWG precipitation reports for the aerial photos reviewed are included as Appendix C.

Table 1. Historical Aerial Photography Information

| Year of Photo | Date of Photo | Source of Photo | MNCWG Multi- Month Score |
|---------------|---------------|-----------------|-----------------------------|
| 2003 | August 15 | NAIP | 12 - Normal |
| 2004 | August 9 | NAIP | 14 - Normal |
| 2005 | September 12 | NAIP | 10- Normal |
| 2006 | August 11 | NAIP | 8 - Dry |
| 2008 | July 4 | NAIP | 14 - Normal |
| 2009 | September 17 | NAIP | 12 - Normal |
| 2010 | June 24 | NAIP | 11 - Normal |
| 2013 | September 25 | NAIP | 8 – Dry |
| 2015 | July 15 | NAIP | 13 - Normal |
| 2017 | September 1 | NAIP | 13 – Normal |

3.3 Soils

A summary of the soil map units that occur onsite and their corresponding hydric ratings are listed in Table 2. Soil map units are included in Figures 2 and 3. USDA Web soil survey hydric rating map for the Project Area is included as Appendix D.

Table 2. Mapped Soil Types within Project Area

| Map Unit Symbol | Map Unit name | Hydric Rating | Acres within Project Area |
|--------------------|---|------------------|------------------------------------|
| P48A | Allendorf silty clay loam, 0 to 2 percent slopes | 0% | 0.2 |
| P12B | Everly silty clay loam, 2 to 6 percent slopes | 0% | 26.3 |
| P14B | Flandreau silt loam, 2 to 6 percent slopes | 0% | 77.9 |
| P15B | Galva silty clay loam, 2 to 5 percent slopes | 0% | 17.2 |
| P55A | Kato silty clay loam, 0 to 2 percent slopes | 90% | 9.6 |
| P21A | Marcus silty clay loam, 0 to 2 percent slopes | 95% | 49.2 |
| P27A | Primghae silty clay loam, 1 to 3 percent slopes | 8% | 220.0 |
| P28A | Ransom silty clay loam ,1 to 3 percent slopes | 8% | 29.9 |
| P29A | Rushmore silty clay loam, 0 to 2 percent slopes | 90% | 54.7 |
| P30B | Sac silty clay loam, loam substratum, 2 to 5 percent slopes | 0% | 330.2 |
| P31A | Spicer silty clay loam, 0 to 2 percent slopes | 100% | 6.0 |
| P38B | Thurman sandy loam, 2 to 6 percent slopes | 0% | 9.2 |
| P42A | Whitewood silty clay loam, 0 to 2 percent slopes | 80% | 119.7 |
| P43A | Wilmonton silty clay loam, 1 to 3 percent slopes | 5% | 20.3 |

4.0 Results

Offsite review of historical aerial photography resulted in the identification of 21 locations of hydrology signatures (Table 3). In accordance with USACE guidance, of the 21 locations identified, *Signature 10*, tested positive for wetland hydrology and was verified as a wetland in the field. *Signature 1*, 2, 11, 12, 13, 14, and 17 tested positive for wetland hydrology based on historical aerial photography review and required field verification. During field investigation none of these signatures were confirmed to be wetlands. *Signature 3*, 16, 18, 19, 26, 27, 34, 35, 36, 44, 45, 46, 47, and 49 tested negative for wetland hydrology and did not require field verification.

Table 3. Historical Aerial Photography Interpretation Results

| Signature ID | 2003 | | 2004 | 2006 (Dry) | 2008 | 2009 | 2010 | 2013 (Dry) | 2015 | 2017 | % Years Wetland Hydro Sig | Hydric Soil | NWI |
|-----------------|------|----|----------|------------|------|------|------|------------|------|------|---------------------------------|----------------|-----|
| Signature 1 | SS | SS | <u>-</u> | - | SS | SS | - | - | - | SS | 62.5% | Yes | Yes |
| Signature 2 | SS | - | - | SS | SS | SS | SS | SS | - | - | 50% | Yes | No |
| Signature 3 | - | - | - | - | - | | - | SS | SS | SS | 25% | Yes | Yes |
| Signature 10 | WS | WS | WS | WS | WS | WS | WS | WS | WS | WS | 100% | Yes | Yes |
| Signature 11 | - | SS | - | - | SS | - | SS | - | - | - | 37.5% | Yes | Yes |
| Signature 12 | - | - | - | SS | SS | - | - | - | - | - | 12.5% | Yes | Yes |
| Signature 13 | - | - | <u>-</u> | - | SS | - | - | SS | SS | SS | 37.5% | Yes | No |
| Signature 14 | - | - | - | - | - | - | SS | - | - | - | 12.5% | Yes | Yes |
| Signature 16 | - | - | - | - | SS | - | - | SS | - | - | 12.5% | Yes | No |
| Signature 17 | - | - | - | - | SS | - | - | SS | - | - | 12.5% | Yes | Yes |
| Signature 18 | - | - | - | - | SS | - | - | SS | - | - | 12.5% | No | No |
| Signature 19 | - | - | - | - | - | - | - | - | SS | - | 12.5% | Yes | No |
| Signature 26 | - | - | - | - | SS | - | - | - | - | - | 12.5% | Yes | Yes |
| Signature 27 | - | - | - | - | SS | - | - | - | - | - | 12.5% | Yes | No |
| Signature 34 | - | - | - | - | - | - | - | - | - | SS | 12.5% | Yes | No |
| Signature 35 | - | - | - | - | - | - | SS | - | - | | 12.5% | Yes | No |
| Signature 36 | - | - | - | - | - | - | - | - | SS | - | 12.5% | No | No |
| Signature 44 | - | - | - | - | - | - | - | - | SS | - | 12.5% | Yes | No |

| Signature ID | 2003 | | 2004 | 2005 | 2006 (Dry) | 2008 | 2009 | 2010 | 2013 (Dry) | 2015 | 2017 | % Years Wetland Hydro Sig | Hydric Soil | NWI |
|-----------------|------|---|------|------|------------|------|------|------|------------|------|------|---------------------------------|----------------|-----|
| Signature 45 | - | - | | - | SS | - | - | - | SS | - | - | 0% | Yes | No |
| Signature 46 | - | - | | - | - | SS | - | - | - | - | - | 12.5% | Yes | No |
| Signature 47 | - | - | | - | - | - | SS | - | - | - | - | 12.5% | No | No |
| Signature | - | - | | - | - | _ | - | - | - | SS | SS | 25% | No | No |

WS = Wetland Signature, SS = Soil Wetness Signature

Areas of potential hydrology identified through historical aerial review were investigated in the field and the entire Project Area was reviewed for additional wetlands. 1 wetland area was delineated in the Project Area, Wetland 1. A total of 0.201 acres of wetland were field delineated in the Project Area. Table 4 summarizes wetland acreages and wetland types delineated in the Project Area. The delineated wetland boundaries are shown in Figure 3. USACE routine wetland data forms for the delineated wetlands are included as Appendix A. Ground level photography of the Project Area is included in Appendix B, with photo locations shown on Figure 3.

Wetland 1 consists of a palustrian emergent (PEM/Type 2) wetland. The boundary of Wetland 1 extends beyond the Project Area. The dominant vegetation of the PEM wetland is reed canary grass (*Phalaris arundinacea*). The adjacent upland vegetation is agricultural row crop. Wetland 1 includes the area identified as *Signature 10* from the offsite review. The boundary of the wetland area within agricultural row crop was identified by the extent of vegetation signature, topographic relief and the presence of hydric soil indicators.

Representative routine wetland delineation data forms were collected for wetland signatures identified during the offsite review. These data forms can be found in Appendix A.

Table 4. Delineated Wetlands

| Wetland ID | NWI Wetland Type | Eggers and Reed Vegetative Community | Circular 39 Wetland | Area (acres) |
|------------|---------------------|---|------------------------|--------------|
| | . , , , | | Type | |
| Wetland 1 | PEM | Fresh Wet Meadow | Type 2 Wet Meadow | 0.201 |
| | | | Total | 0.201 |

5.0 Conclusions

One wetland area was identified and delineated within the Project Area. The wetland boundaries were delineated in accordance with delineation methodologies as described in the July 2016 USACE and BWSR guidance and the 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2) (USACE 2010) and are subject to review and approval by the USACE and Rock County (Local Governmental Unit (LGU) responsible for implementing the Minnesota Wetland Conservation Act (WCA)).

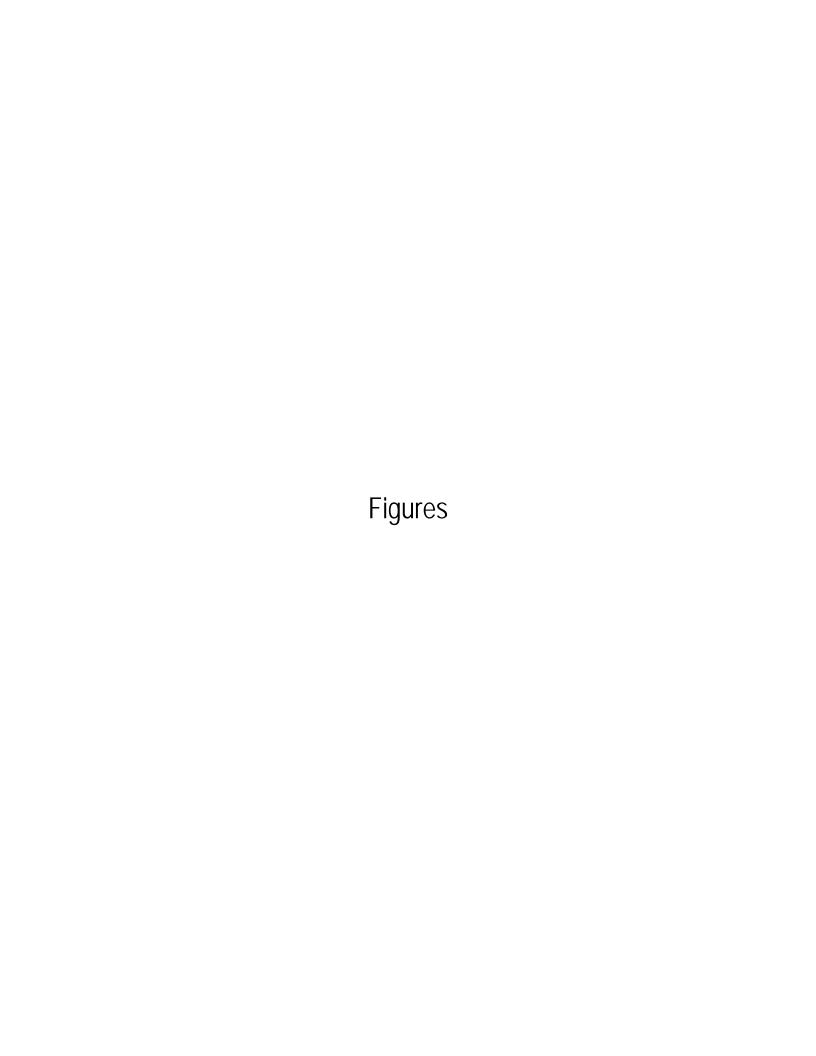
6.0 References

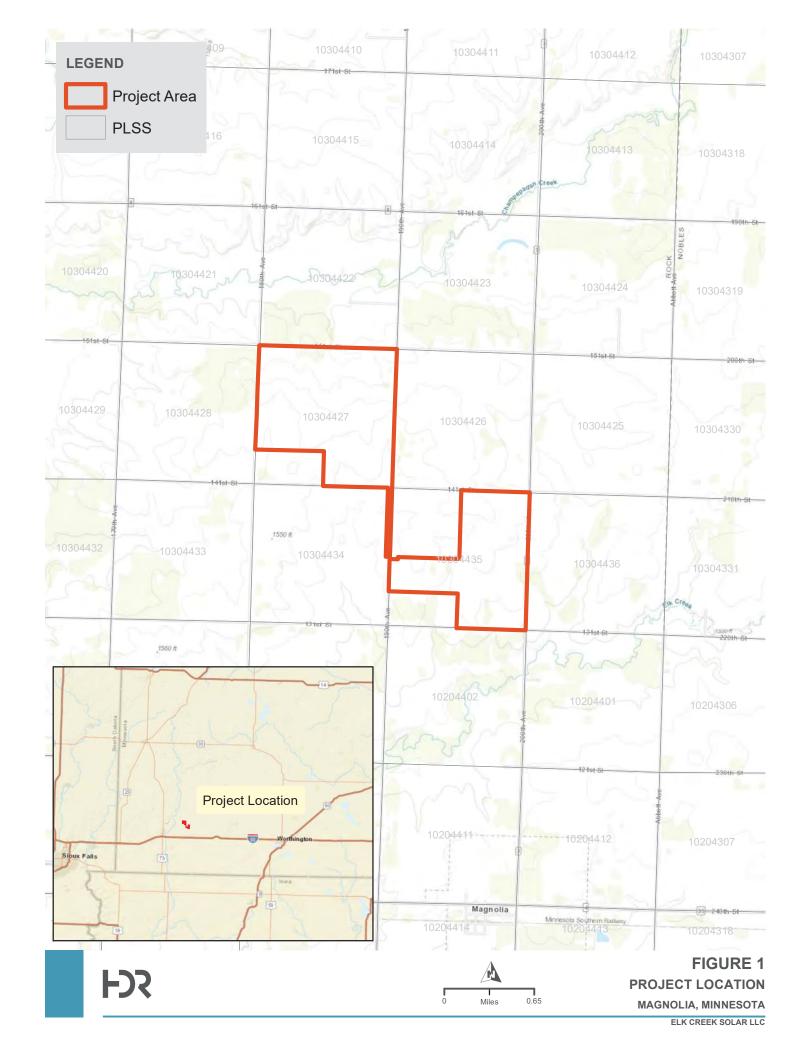
Minnesota Climatology Working Group. 2018. Wetland Delineation Precipitation Data Retrieval from a Gridded Database for Vienna Township, MN. http://climate.umn.edu/gridded_data/precip/wetland/wetland.asp.

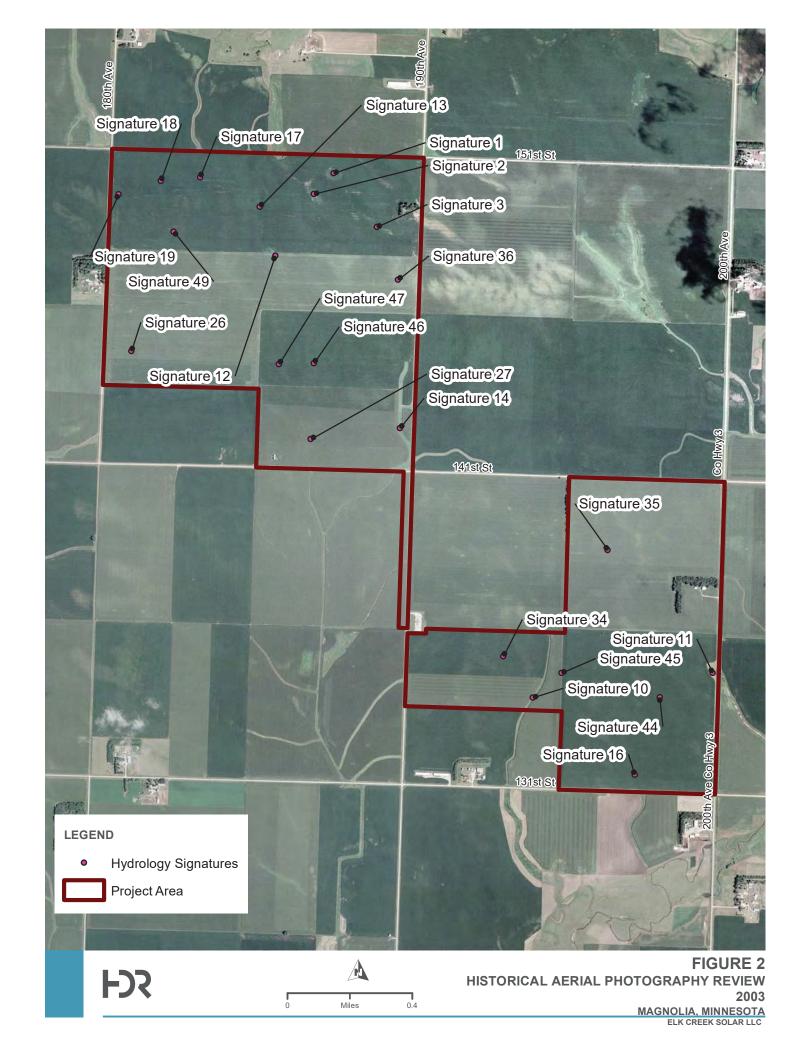
- Minnesota Department of Natural Resources. 2005. Field Guide to the Native Plant Communities of Minnesota: The Inner Coteau Subsection. Ecological land Classification Program, Minnesota County Biological Survey, and Natural Heritage and Nongame Research Program. MNDNR St. Paul, MN.
- U.S. Department of Agriculture, NRCS. 2018. Web Soil Survey for Rock County, Minnesota. http://websoilsurvey.nrcs.usda.gov/app/.
- U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual.*Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS, 100 pp. and appendices.
- U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0). ERDC/EL TR-10-16 Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Army Corps of Engineers and Minnesota Board of Water and Soil Resources. 2016.

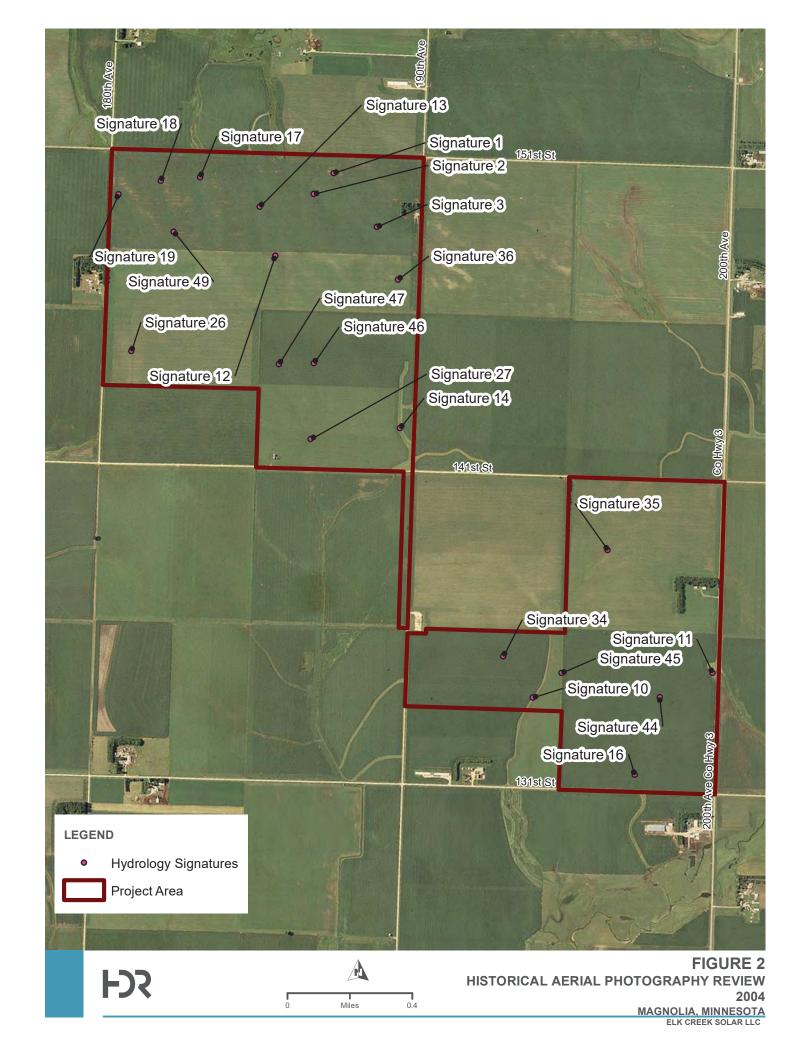
 Guidance for Offsite Hydrology/Wetland Determinations.

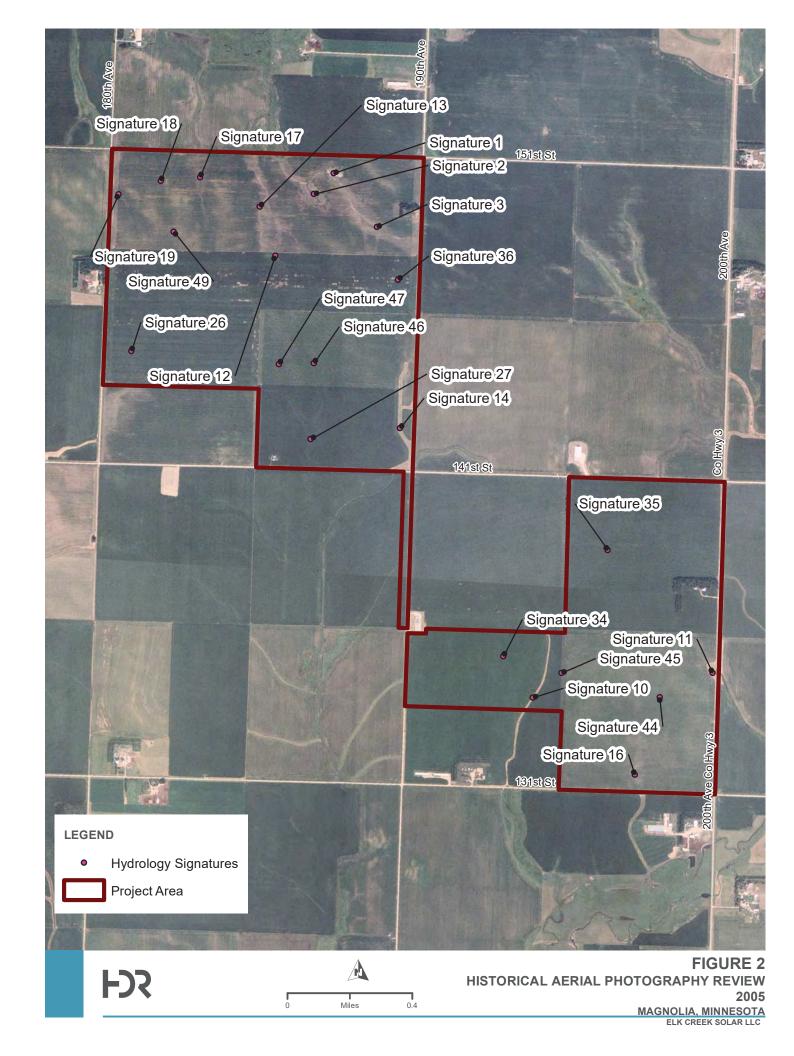
 http://www.bwsr.state.mn.us/wetlands/delineation/Guidance for Offsite Hydrology and Wetland Determinations.pdf

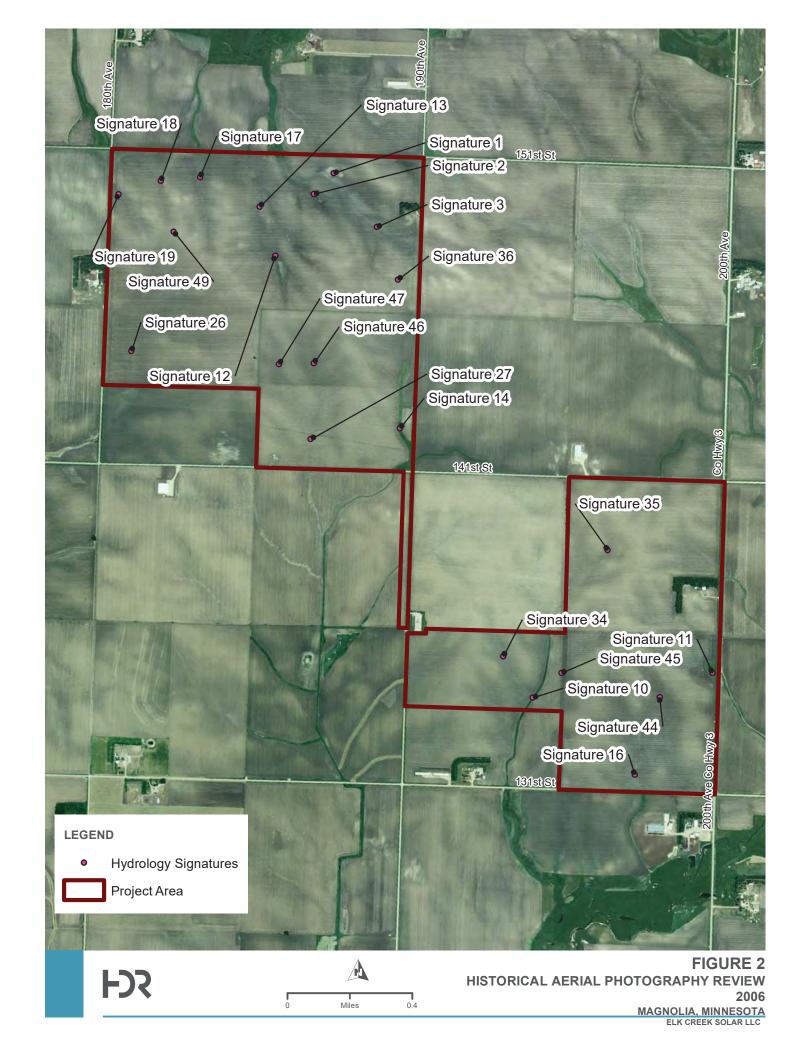


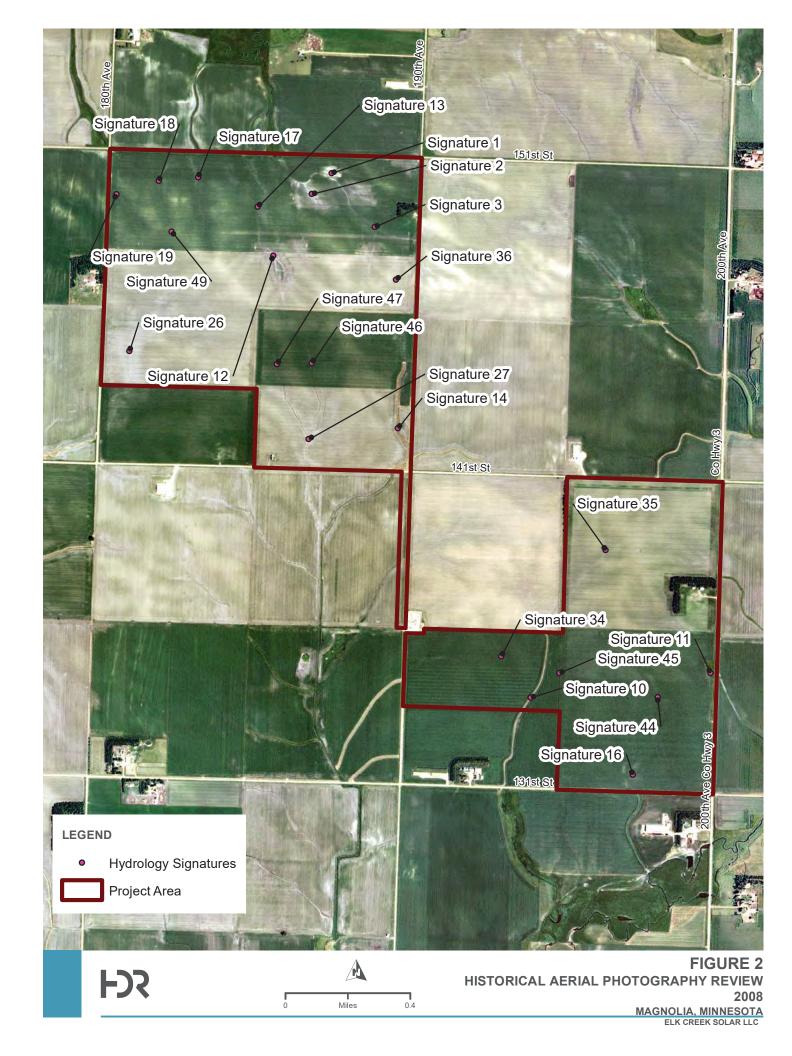


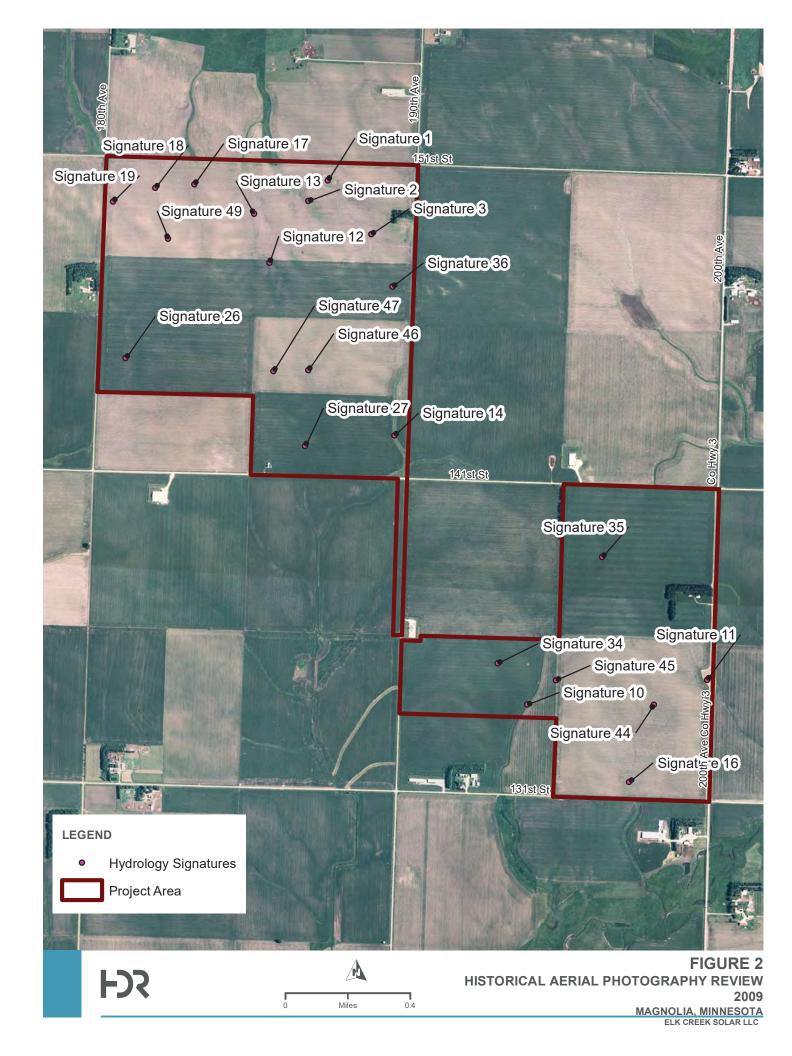


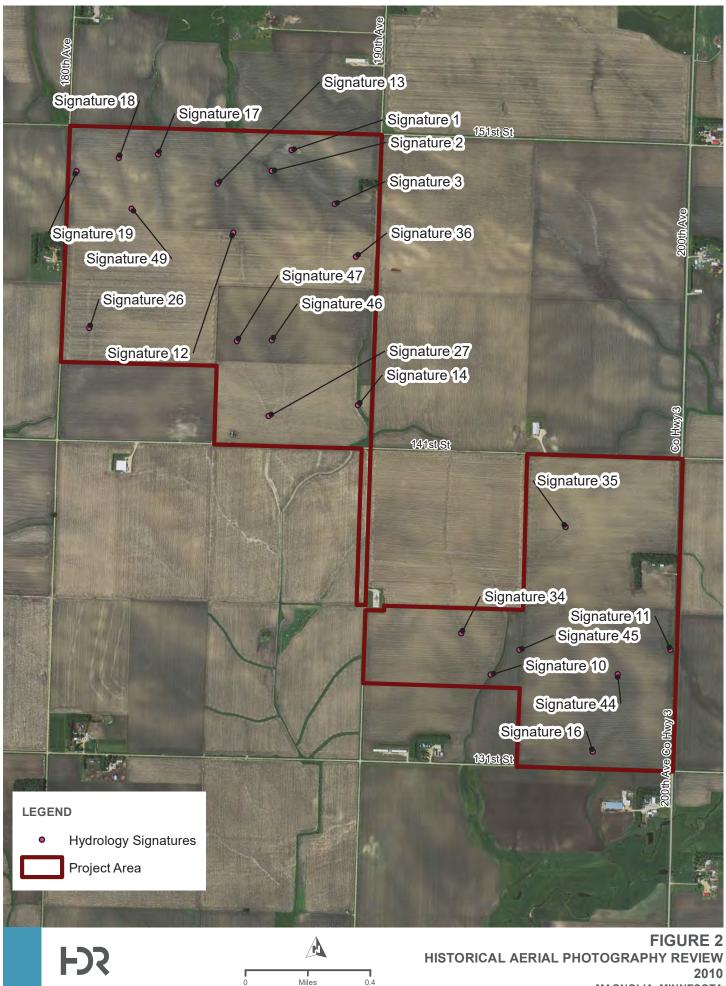




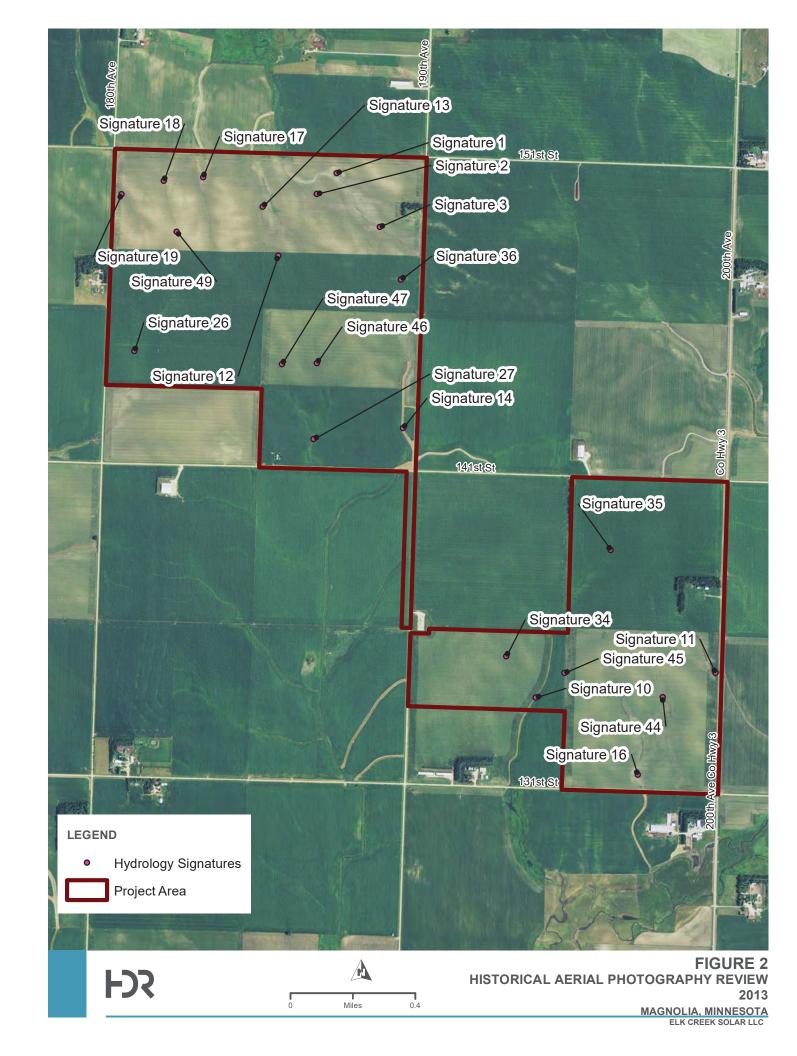


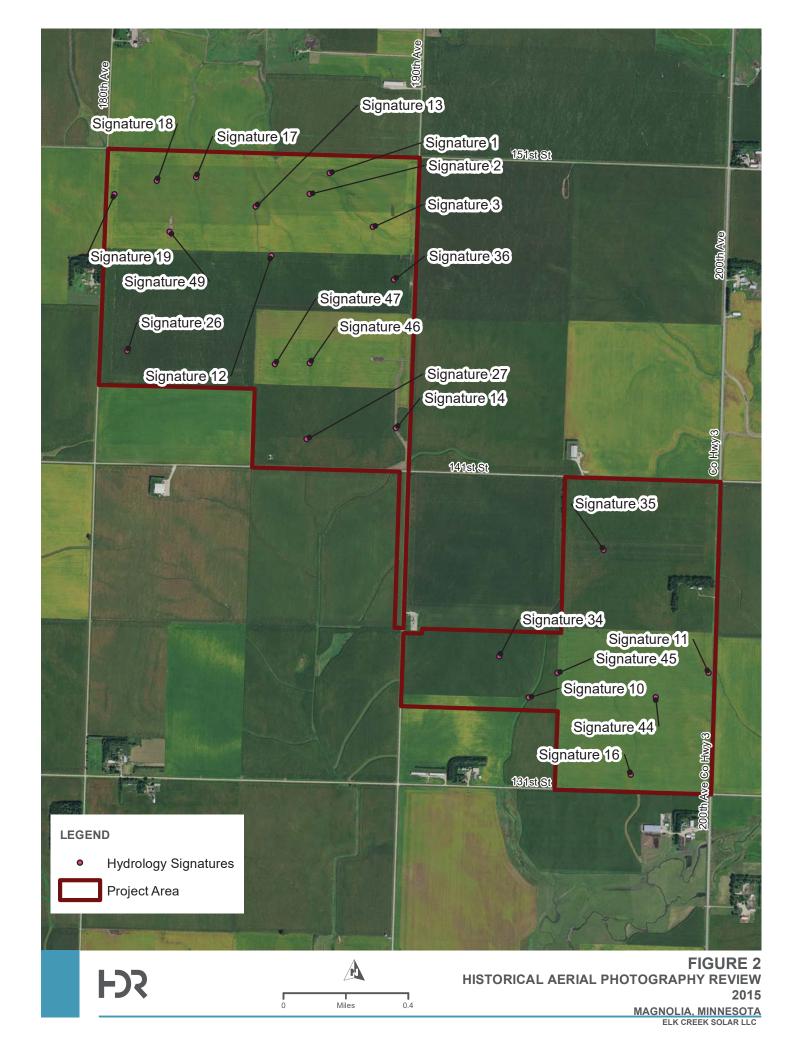


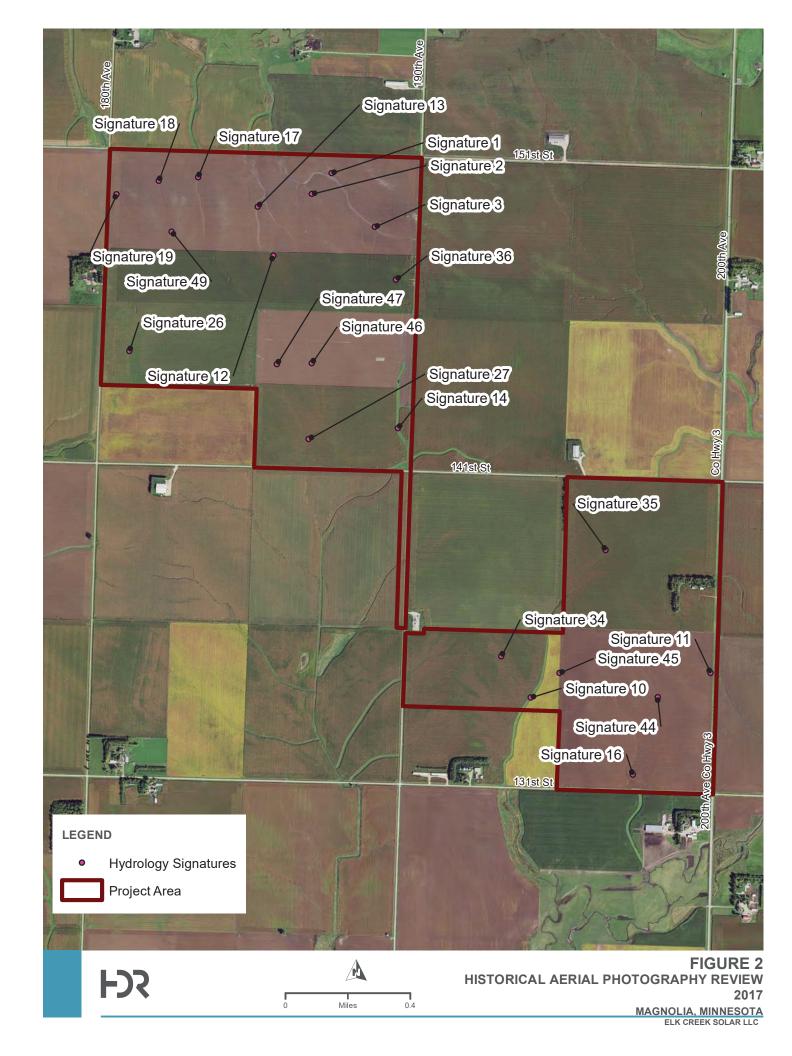


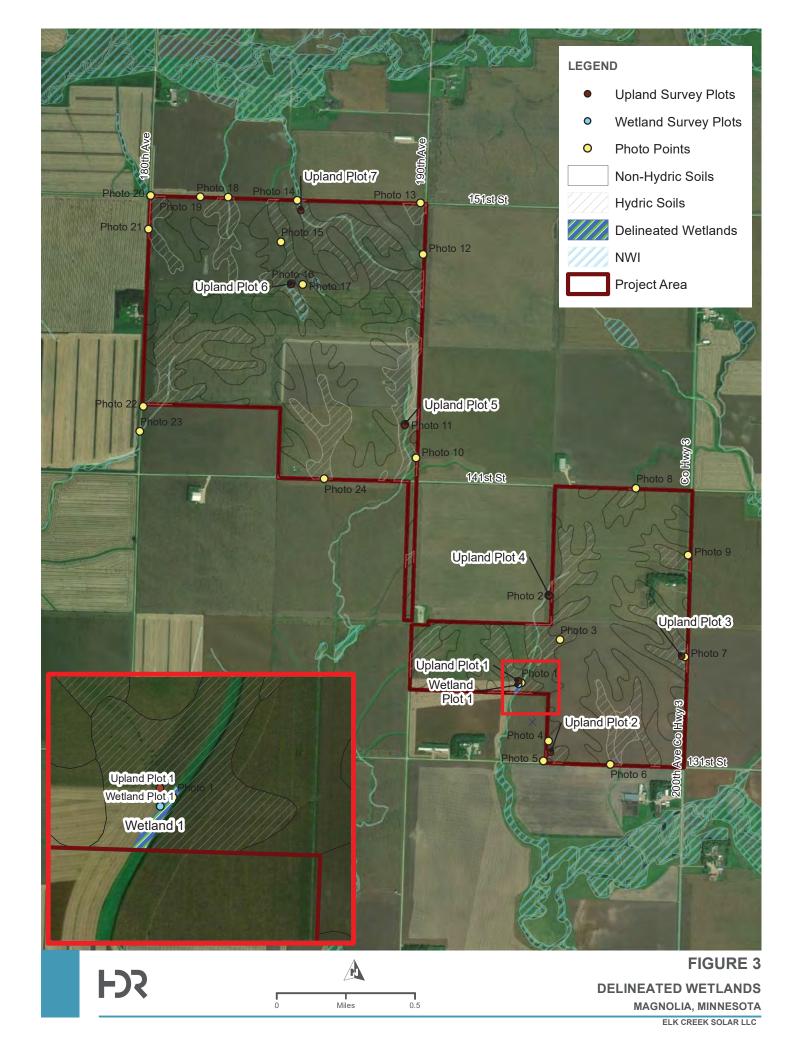


MAGNOLIA, MINNESOTA EELK CREEK SOLAR LLC









Appendix A

USACE Routine Wetland Delineation Data Forms

| Project/Site: Elk Creek | | City/County: | Rock | Sampling Da | te: 5/6/2019 | | |
|--|-----------------------|---------------------|--------------------------|-----------------------|------------------|---|------------------|
| Applicant/Owner: Geronimo | | _ | State: Minne | esota Sampling Poi | nt: Wetland Plo | ot 1 | |
| Investigators: Kendall Vandercamp | | | Section, Township, | Range: Section 35 To | ownship 103 Ra | inge 44 | |
| Landform (hillslope, terrace, etc.): Floodplain | | Local Reli | ef (concave, convex, | none): Concave | Slope | ∍(%): | 1 |
| Subregion (LRR): 103 - Cental lowa and | Lat: 43.6800 | 00 Long: | -96.080000 | Datum: | WGS84 | | |
| Soil Map Unit Name: Whitewood silty clay loam, 0 | to 2 percent slope | es | NWI Classific | cation: PEM | | | |
| Are climatic / hydrologic conditions on the site typic | al for this time of y | /ear? Yes | s <u>X</u> No | (If No, explain in Re | emarks) | | |
| Are Vegetation: Soil or Hydrology _ | significantly di | sturbed? | Are "Normal Circur | nstances" present? | Yes | X N | о |
| Are Vegetation: Soil or Hydrology _ | naturally probl | | | any answers in Rema | • | | |
| SUMMARY OF FINDINGS - Attach a sit | e map showi | ng sampling | point locations | , transects, imp | ortant featu | res, etc. | |
| Hydrophytic Vegetation Present? Yes _> | (No | | | | | | |
| Hydric Soil Present? Yes> | (No | Is the | Sampled Area | | | | |
| Wetland Hydrology Present? Yes> | (No | withi | n a Wetland? | Yes _ | X | No | |
| Remarks: | | | | | | | |
| Area is a hayed drainage/ floodplain area. This data | a form is represen | tative for field ve | erification of Signature | 2 10. | | | |
| VEGETATION – Use scientific names of | of plants. | | | | | | |
| | Absolute | Dominant | Indicator | Dominance Test V | Worksheet: | | |
| <u>Tree Statum</u> (Plot size:) | % Cover | Species? | Status | Number of Dominar | nt Species | | |
| 1 | | | _ | That Are OBL, FAC | W, or FAC: | 1 | _ (A) |
| 2. | | | | Total Number of Do | minant | | |
| 3. | | | | Species Across All | Strata: | 1 | _ (B) |
| 4. | | | _ | Percent of Dominar | | | |
| 5. | | | _ | That Are OBL, FAC | W, or FAC: | 100 | _ (A/B) |
| | | = Total Cover | | | | | |
| Sapling/Shrub Stratum (Plot size:) | | | | Prevalence Index | worksheet: | | |
| 1. | | | | Total % Cover of: | | ply by: | |
| 2. | | | | OBL species | x1= _ | | _ |
| 3 | | | | FACW species | 100 x2= | 200 | _ |
| 4. | | | | FAC species | x3= | 0 | _ |
| 5. | | | | FACU species | x4= _ | 0 | _ |
| | | = Total Cover | | UPL species | x5= _ | 0 | — (5) |
| Herb Stratum (Plot size:) | 100 | V | E A O\A/ | Column Totals: | 100 (A) | 200 | _ ^(B) |
| Phalaris arundinacea | 100 | Yes | FACW | | | | |
| 2. | | | | Prevalence Inde | D/A | 2.0 | 10 |
| 3. 4. | | | | Hydrophytic Vege | | | 0 |
| 5. | | | _ | X Dominance T | | 13. | |
| 6. | | | _ | X Prevalence Ir | | | |
| 7. | | | | | Adaptations1 | (Provide | |
| 8. | | | | | emarks or on a | | sheet) |
| | 100 | = Total Cover | _ | | Hydrophytic Veg | • | , |
| Woody Vine Stratum (Plot size:) | | . 514. 5515. | | | ., | , | |
| 1. | | | | Indicators of hydric | soil and wetland | d hvdroloa | V |
| 2. | | | _ | must be present, ur | | | - |
| | | = Total Cover | _ | Hydrophytic | | , | |
| % Bare Ground in Herb Stratum | | er of Biotic Crus | | Vegetation | Yes X | No | |
| | _ | | | Present? | | | _ |
| Remarks: | | | | 1 | | | |
| nomano. | | | | | | | |
| | | | | | | | |

| Profile Descrip | tion: (Describ | e to the dept | h neede | d to document the | indicator | or confirm | the abse | ence of indicators.) | |
|-----------------|-----------------|-----------------|----------|------------------------|---------------|---------------|------------|-----------------------|------------------------------|
| Depth _ | M | latrix | | Red | dox Feature | s | | | |
| (inches) | Color (mois | t) % | | Color (moist) | % | Type | Loc | Texture | Remarks |
| 0-24 | 10 YR 2/1 | 100 | | | | | | Silty Clay | |
| 24-36 | 10 YR 2/1 | 100 | | | | | | Silty Clay | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Type: C= Conc | entration, D= I | Depletion, RM: | Reduce | ed Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains. | Location | n: PL=Pore Lining, M=Matrix. |
| | | | | nless otherwise no | | | | Indicators for Proble | ematic Hydric Soils: |
| Histosol | | | | Sandy Gleyed M | | | | Coast Prairie F | • |
| | oipedon (A2) | | _ | Sandy Redox (S | | | | Dark Surface (| , |
| Black His | | | _ | Stripped Matrix (| * | | | | se Masses (F12) |
| | n Sulfide (A4) | | _ | Loamy Mucky M | | | | | Dark Surface (TF12) |
| | Layers (A5) | | | Loamy Gleyed N | | | | Other (Explain | |
| 2 cm Mu | ck (A10) | | _ | Depleted Matrix | (F3) | | | | |
| Depleted | Below Dark S | Surface (A11) | _ | Redox Dark Sur | face (F6) | | | | |
| X Thick Da | ark Surface (A | 12) | | — Depleted Dark S | Surface (F7) |) | | Indicators of hydrop | hytic vegetation and |
| Sandy M | lucky Mineral | (S1) | | Redox Depressi | on (F8) | | | wetland hydrology | must be present, |
| 5 cm Mu | cky Peat or Pe | eat (S3) | | | | | | unless disturbed of | or problematic. |
| Restrictive La | ayer (if prese | nt): | | | | | | | |
| Type: | | , | | | | | | | |
| Depth (ir | nches): | | | | | | | Hydric Soil Presen | t? Yes X No |
| Remarks: | | | | | | | | | |
| Likely depleted | helow dark su | rface | | | | | | | |
| Likely depicted | below dark su | nacc. | | | | | | | |
| | | | | | | | | | |
| HYDROLOG | Υ | | | | | | | | |
| Wetland Hyd | rology Indica | tors: | | | | | | | |
| Primary Indica | ators (minimun | n of one requir | ed; chec | k all that apply) | | | | Secondary Indicator | rs (2 or more required) |
| Surface ' | Water (A1) | | | Water Stained L | eaves (B9) | | | Surface Soil C | racks (B6) |
| High Wa | ter Tables (A2 | 2) | | Aquatic Inverteb | rates (B13) |) | | X Drainage Patte | erns (B10) |
| Saturation | on (A3) | | | True Aquatic Pla | ants (B14) | | | Dry-Season W | ater Table (C2) |
| Water M | arks (B1) | | | Hydrogen Sulfide | e Odor (C1 |) | | Crayfish Burro | ws (C8) |
| Sedimen | nt Deposits (B2 | 2) | | Oxidized Rhizos | pheres alor | ng Living Ro | oots (C | X Saturation Visi | ble on Aerial Imagery (C9) |
| Drift Dep | oosits (B3) | | | Presence of Rec | duced Iron (| (C4) | | Stunted or Stre | essed Plants (D1) |
| Algal Ma | t or Crust (B4) |) | _ | Recent Iron Red | luction in Ti | lled Soils (C | 26) | X Geomorphic P | osition (D2) |
| Iron Dep | osits (B5) | | _ | Thin Muck Surfa | ice (C7) | | | X FAC-Neutral T | est (D5) |
| Innundat | ion Visible on | Aerial Imagery | (B7) | Gauge or Well D | Data (D9) | | | | |
| Sparsely | Vegetated Co | ncave Surface | (B8) | Other (Explain in | n Remarks) | | | | |
| Field Observ | ations: | | | | | | | | |
| Surface Wate | r Present? | Yes N | o X | Depth (inches): | | | | | |
| Water Table F | Present? | Yes N | o X | Depth (inches): | | | | | |
| Saturation Pre | esent? | Yes N | o X | Depth (inches): | | | Wetland | d Hydrology Present | ? Yes X No |
| (includes capi | llary fringe) | | | | _ | | | | |
| Describe Record | ded Data (stre | am gauge, mo | nitoring | well, aerial photos, p | previous ins | spections), i | f availabl | e: | |
| | ` | | J | , , , | | | | | |
| Remarks: | | | | | | | | | |
| i veillains. | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

| Project/Site: El | k Creek | | | _ City/County: | Rock | Sampling Date | : 5/6/2019 | | |
|--|-------------------|---------------------|----------------------|-------------------|---------------------|--|----------------|-------------|--------------------|
| Applicant/Owner: | Geronimo | | | | State: Minn | esota Sampling Point | i: Upland Plo | ot 1 | |
| Investigators: Ke | endall Vandeca | imp | | | Section, Township, | Range: Section 35 Tow | vnship 103 R | ange 44 | |
| Landform (hillslope, | , terrace, etc.): | Hillslope | | Local Reli | ef (concave, convex | , none): Concave | Slop | oe(%): | 2 |
| Subregion (LRR): | 103 - Centra | al lowa and | Lat: 43.6800 | 00 Long: | -96.080000 | Datum: W | 'GS84 | | |
| Soil Map Unit Name | e: Whitewood | silty clay loam, | 0 to 2 percent slope | es | NWI Classifi | cation: NA | | | |
| Are climatic / hydrol | logic conditions | on the site typi | cal for this time of | year? Yes | s <u>X</u> No | (If No, explain in Rem | ıarks) | | |
| Are Vegetation: | Soil | or Hydrology | significantly di | sturbed? | Are "Normal Circur | mstances" present? | Yes | X 1 | No |
| Are Vegetation: | Soil | or Hydrology | naturally probl | ematic? | (If needed, explain | any answers in Remark | (s.) | | |
| SUMMARY OF | FINDINGS | - Attach a si | ite map showi | ng sampling | point locations | s, transects, impoi | tant featu | ıres, etc | |
| Hydrophytic Vegeta | tion Present? | Yes | X No | | | | | | |
| Hydric Soil Present | ? | Yes | No X | Is the | Sampled Area | | | | |
| Wetland Hydrology | Present? | Yes | No X | withi | n a Wetland? | Yes _ | | No | Χ |
| Remarks: | | | | | | | | | |
| This area consists of This data form is re | presentative for | r field verificatio | n of signatures 34 | and 35 | | | | | |
| VEGETATION - | - Use scien | unc names | | | 1 11 1 | In | | | |
| Total Obstanta (F | N. 4 - ! \ | | Absolute | Dominant | Indicator | Dominance Test We | | | |
| | Plot size:) | | % Cover | Species? | Status | Number of Dominant | | 4 | (4) |
| 1. | | | | | | That Are OBL, FACW | • | | (A) |
| 2. 3. | | | | | _ | Total Number of Dom | | 1 | (D) |
| 4. | | | | | | Species Across All St Percent of Dominant | | | (B) |
| 5 | | | | | | That Are OBL, FACW | • | 100 | (A/B) |
| J | | | | = Total Cover | _ | · That Are OBL, FACT | , OI FAC. | | — ^(A/B) |
| Sapling/Shrub Strat | tum (Plot s | size·) | | - Total Cover | | Prevalence Index we | | | |
| 1. | turri (1 lot 3 | 120.) | | | | Total % Cover of: | | tiply by: | |
| 2. | | | | | - | OBL species | x1= | | |
| 3. | | | | | | FACW species | 100 x2= | | _ |
| 4. | | | | | _ | FAC species | x3= | | _ |
| 5. | | | | | _ | FACU species | x4= | | _ |
| | | | | = Total Cover | _ | UPL species | x5= | 0 | _ |
| Herb Stratum (P | Plot size:) | | | | | Column Totals: | 100 (A) | 200 | — (B) |
| Phalaris arunce | dinacea | | 100 | Yes | FACW | _ | ` | | — ` ′ |
| 2. | | | | | _ | • | | | |
| 3. | | | | | | Prevalence Index | C = B/A = | 2. | .00 |
| 4. | | | | | | Hydrophytic Vegeta | tion Indicate | ors: | |
| 5. | | | | | | X Dominance Te | st is >50% | | |
| 6. | | | | | | X Prevalence Ind | ex is ≤3.01 | | |
| 7. | | | | | | Morphological . | Adaptations1 | (Provide | |
| 8. | | | | | | data in Rei | marks or on | a separate | sheet) |
| | | | 100 | = Total Cover | _ | Problematic Hy | ∕drophytic V∈ | getation1 | (Explain) |
| Woody Vine Stratur | m (Plot size:) | | | | | | | | |
| 1. | | | | | | Indicators of hydric so | oil and wetlar | าd hydroloo | ду |
| 2. | | | | | | must be present, unle | ss disturbed | or problen | natic. |
| | | | | = Total Cover | | Hydrophytic | | | |
| % Bare Ground in F | Herb Stratum | | % Cov | er of Biotic Crus | t | Vegetation Present? | Yes X | _No | _ |
| Remarks: | | | | | | _ | | | |
| | | | | | | | | | |

| Profile Descr | iption: (Descri | be to th | e depth ne | eded | to document the | indicator o | r confirm | the abse | ence of indicators.) | | | | | |
|----------------|-------------------|---------------|-------------|--------|-----------------------|----------------|--------------|-----------|---|-----------------|------------|-------------|----|--|
| Depth | N | Matrix | | | Red | dox Features | S | | | | | | | |
| (inches) | Color (mois | st) | % | | Color (moist) | % | Туре | Loc | - Texture | ı | Remarks | | | |
| 0-10 | 10 YR 3/1 | 1 - | 100 | | | | | | Silt | | | | | |
| 10-14 | 10 YR 3/2 | | 100 | | | | | | Silty Clay | | | | | |
| 14-18 | 10 YR 4/3 | - | 100 | | | | | | Silty Clay | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Type: C= Cor | ncentration, D= | Depletio | n, RM=Red | uced | Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains. | Location | n: PL=Pore L | ining, M=N | /latrix. | | |
| Hydric Soil Ir | ndicators: (Ap | plicable | to all LRR | s, unl | ess otherwise no | oted.) | | | Indicators for Proble | matic Hydri | c Soils: | | | |
| Histos | ol (A1) | | | | Sandy Gleyed M | latrix (S4) | | | Coast Prairie I | Redox (A16) | | | | |
| Histic | Epipedon (A2) | | | | _ Sandy Redox (S | 55) | | | Dark Surface | (S7) | | | | |
| Black | Histic (A3) | | | | Stripped Matrix (| (S6) | | | Iron-Mangane | se Masses (F | 12) | | | |
| | gen Sulfide (A4 |) | | | Loamy Mucky M | lineral (F1) | | | Very Shallow | Dark Surface | (TF12) | | | |
| Stratifi | ed Layers (A5) | | | | _ Loamy Gleyed N | /latrix (F2) | | | Other (Explain | in Remarks) | | | | |
| | /luck (A10) | | | | _ Depleted Matrix | ` ' | | | | | | | | |
| | ed Below Dark | | (A11) | | Redox Dark Sur | . , | | | | | | | | |
| | Dark Surface (A | | | | _ Depleted Dark S | | | | Indicators of hydrop | | | | | |
| | Mucky Mineral | | | | Redox Depressi | on (F8) | | | wetland hydrology must be present, unless disturbed or problematic. | | | | | |
| | Mucky Peat or F | | | | | | | | uniess disturbed (| or problemation | O | | | |
| | Layer (if prese | ent): | | | | | | | | | | | | |
| Type: | <i></i> | | | _ | | | | | | | | | ., | |
| Depth | (inches): | | | | | | | | Hydric Soil Preser | nt? Yes | | ۸o <u>-</u> | X | |
| Remarks: | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| HYDROLO | GY | | | | | | | | | | | | | |
| Wetland Hy | drology Indica | ators: | | | | | | | | | | | | |
| _ | icators (minimu | | required: c | heck | all that apply) | | | | Secondary Indicato | rs (2 or more | reauired) | | | |
| | e Water (A1) | | | | Water Stained L | eaves (B9) | | | Surface Soil C | , | , , | | | |
| High V | Vater Tables (A | 2) | | | – Aquatic Inverteb | | | | Drainage Patte | | | | | |
| | ition (A3) | | | | True Aquatic Pla | ants (B14) | | | Dry-Season W | /ater Table (C | 2) | | | |
| Water | Marks (B1) | | | | – Hydrogen Sulfide | e Odor (C1) | | | Crayfish Burro | ws (C8) | | | | |
| Sedim | ent Deposits (B | 2) | | | Oxidized Rhizos | pheres alon | g Living Ro | oots (C | X Saturation Vis | ible on Aerial | Imagery (0 | C9) | | |
| Drift D | eposits (B3) | | | | Presence of Red | duced Iron (| C4) | | Stunted or Str | essed Plants | (D1) | | | |
| Algal N | Mat or Crust (B4 | 4) | | | Recent Iron Red | luction in Til | led Soils (C | 26) | Geomorphic P | osition (D2) | | | | |
| Iron De | eposits (B5) | | | | Thin Muck Surfa | , , | | | FAC-Neutral T | est (D5) | | | | |
| Innund | lation Visible on | Aerial Ir | magery (B7) | | _ Gauge or Well D | oata (D9) | | | | | | | | |
| Sparse | ely Vegetated Co | oncave S | urface (B8) | | Other (Explain ir | n Remarks) | | | | | | | | |
| Field Obse | rvations: | | | | | | | | | | | | | |
| Surface Wa | ter Present? | Yes | No | Χ | Depth (inches): | | | | | | | | | |
| Water Table | e Present? | Yes | No | Χ | Depth (inches): | | | | | | | | | |
| Saturation F | Present? | Yes | No | Χ | Depth (inches): | | | Wetlan | d Hydrology Present | ? Yes | 1 | No _ | Х | |
| (includes ca | pillary fringe) | | | | | | | | | | | | | |
| Describe Rec | orded Data (stre | eam gau | ge, monitor | ing w | ell, aerial photos, p | orevious ins | pections), i | f availab | le: | | | | | |
| | | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Project/Site: Elk Creek | (| City/County: | Rock | Sampling Date: | 5/6/2019 | | |
|---|-----------------------------------|-------------------|-------------------------|----------------------------|-----------------------|---------------|------------|
| Applicant/Owner: Geronimo | | | State: Minne | esota Sampling Point | : Upland Plot 2 | > | |
| Investigators: Kendall Vandercamp | | | Section, Township, | Range: Section 35 Tow | /nship 103 Ran | ge 44 | |
| Landform (hillslope, terrace, etc.): Flat | | Local Reli | ef (concave, convex, | none): None | Slope(| (%): | 0 |
| Subregion (LRR): 103 - Central Iowa a | nd Lat: 43.670000 | Long: | -96.080000 | Datum: W | GS84 | | |
| Soil Map Unit Name: Marcus silty clay loa | m, 0 to 2 percent slopes | | NWI Classific | cation: NA | | | |
| Are climatic / hydrologic conditions on the s | site typical for this time of yea | ar? Yes | s X No | (If No, explain in Rem | arks) | | |
| Are Vegetation: X Soil or Hydr | ology significantly distu | urbed? | Are "Normal Circun | nstances" present? | Yes X | No_ | |
| Are Vegetation: Soil or Hydr | ology naturally problen | natic? | (If needed, explain | any answers in Remark | is.) | | |
| SUMMARY OF FINDINGS - Attac | th a site map showing | ı sampling | point locations | , transects, impor | tant feature | es, etc. | |
| Hydrophytic Vegetation Present? | Yes No X | | | | | | |
| Hydric Soil Present? | Yes No X | Is the | Sampled Area | | | | |
| Wetland Hydrology Present? | Yes No X | withir | n a Wetland? | Yes | | No X | |
| Remarks: | | | | | | | |
| This area consists of a tilled cultivated field | | ative of field ve | erification for Signatu | re 16 | | | |
| VEGETATION – Use scientific na | <u>_</u> | | | | | | |
| | Absolute | Dominant | Indicator | Dominance Test Wo | | | |
| <u>Tree Statum</u> (Plot size:) | % Cover | Species? | Status | Number of Dominant | • | | |
| 1. | | | | That Are OBL, FACW | _ | (/ | A) |
| 2. | | | | Total Number of Dom | | 41 | D . |
| 3. | | | | Species Across All St | _ | (I | B) |
| 4. | | | | Percent of Dominant | • | , | ۸ /D \ |
| 5. | | - Total Cavar | | That Are OBL, FACW | , or FAC: | (/ | A/B) |
| Conline/Chruth Ctratum (Diet size) | | = Total Cover | | Prevalence Index wo | | | |
| Sapling/Shrub Stratum (Plot size:) | | | | | | lu bu | |
| 1. 2. | | | | Total % Cover of: | <u>Multipl</u> x1= | <u>y by.</u> | |
| 3. | | | | OBL species — FACW species | x1= | 0 | |
| 4. | | | | FAC species | x3= | 0 | |
| 5. | | | - | FACU species | x4= | 0 | |
| · | | = Total Cover | | UPL species | x5= | 0 | |
| Herb Stratum (Plot size:) | | Total Gover | | Column Totals: | 0 (A) | | B) |
| 1. | | | | _ | | | -, |
| 2. | | | | | | | |
| 3. | | | | Prevalence Index | = B/A= | NaN | |
| 4. | | | | Hydrophytic Vegeta | tion Indicators | | |
| 5. | | | | Dominance Tes | st is >50% | | |
| 6. | | | | X Prevalence Ind | ex is ≤3.01 | | |
| 7. | | | | Morphological A | Adaptations1 (F | Provide | |
| 8. | | | | data in Rer | marks or on a s | eparate shee | et) |
| | | = Total Cover | | Problematic Hy | drophytic Vege | tation1 (Expl | ain) |
| Woody Vine Stratum (Plot size:) | | | | | | | |
| 1. | | | | Indicators of hydric so | il and wetland | hydrology | |
| 2. | | | | must be present, unle | ss disturbed or | problematic. | |
| | | = Total Cover | | Hydrophytic | | | |
| % Bare Ground in Herb Stratum | % Cover | of Biotic Crust | t | Vegetation Present? | YesN | lo X | |
| Remarks: | | | | | | | |
| This area consists of a tilled corn field and | there was no vegetation at th | ne time of the s | survey. | | | | |
| | | | | | | | |

| Profile Descr | iption: (Desci | ibe to th | e depth ne | eded | to document the | indicator o | r confirm | the abse | ence of indicators.) | | | | |
|----------------|------------------|-------------|--------------|--------|------------------------------------|-------------|--------------|------------|------------------------|-----------------|-----------|------------|---|
| Depth | | Matrix | | | Red | ox Feature: | s | | | | | | |
| (inches) | Color (mo | ist) | % | | Color (moist) | % | Туре | Loc | Texture | R | emarks | | |
| 0-24 | 10 YR 2/ | <u>'1</u> | 100 | | | | | | Silt | | | | |
| 24-36 | 10 YR 3/ | <u>'1</u> | 100 | | | | | | Silty Clay | | | | |
| 36-42 | 10 YR 4/ | 3 | 100 | | | | | | Silty Clay | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | · <u></u> | | | | |
| | | | | | | | | | · <u></u> | | | | |
| | | | | | | | | | · <u></u> | | | | |
| Type: C= Cor | ncentration, D | Depletic | n, RM=Red | uced | Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains. | Location: | PL=Pore Lir | ning, M=M | atrix. | |
| Hydric Soil Ir | ndicators: (A | plicable | to all LRRs | s, unl | ess otherwise no | ted.) | | | Indicators for Probler | natic Hydric | Soils: | | |
| Histose | ol (A1) | | | | _ Sandy Gleyed M | atrix (S4) | | | Coast Prairie R | edox (A16) | | | |
| Histic I | Epipedon (A2) | | | | Sandy Redox (S | 5) | | | Dark Surface (S | , 7) | | | |
| Black I | Histic (A3) | | | | _Stripped Matrix (| S6) | | | Iron-Manganese | Masses (F1 | 2) | | |
| <u> </u> | gen Sulfide (A | • | | | _ Loamy Mucky M | ineral (F1) | | | Very Shallow D | , | TF12) | | |
| Stratific | ed Layers (A5) |) | | | _ Loamy Gleyed M | latrix (F2) | | | Other (Explain i | n Remarks) | | | |
| | /luck (A10) | | | | Depleted Matrix | ` ' | | | | | | | |
| | ed Below Dark | | (A11) | | Redox Dark Surf | ` ' | | | | | | | |
| | Dark Surface (| | | | _ Depleted Dark S | | | | Indicators of hydroph | | | | |
| | Mucky Minera | | | | _Redox Depression | on (F8) | | | wetland hydrology | | | | |
| | lucky Peat or | | | | | | | | unless disturbed or | problematic. | | | |
| | Layer (if pres | ent): | | | | | | | | | | | |
| Type: | | | | _ | | | | | | | | | |
| Depth | (inches): | | | _ | | | | | Hydric Soil Present | ? Yes | N | ° <u> </u> | Х |
| | | | | | | | | | | | | | |
| HYDROLO | GY | | | | | | | | | | | | |
| Wetland Hy | drology Indic | ators: | | | | | | | | | | | |
| Primary Indi | cators (minimu | um of one | required; c | heck | all that apply) | | | | Secondary Indicators | ; (2 or more r | equired) | | |
| | e Water (A1) | | | | _ Water Stained Le | eaves (B9) | | | Surface Soil Cra | | | | |
| —— High W | Vater Tables (A | A2) | | | _ Aquatic Inverteb | ` ' | | | Drainage Patter | ns (B10) | | | |
| | tion (A3) | | | | _ True Aquatic Pla | , , | | | Dry-Season Wa | | 2) | | |
| | Marks (B1) | | | | _ Hydrogen Sulfide | ` ' | | | Crayfish Burrow | ` ' | | | |
| | ent Deposits (I | 32) | | | Oxidized Rhizos | | • | oots (C | X Saturation Visib | | • • • | 9) | |
| | eposits (B3) | 4) | | | Presence of Red | , | , | 20) | Stunted or Stres | | (1ט | | |
| | //at or Crust (B | 4) | | | Recent Iron Red | | led Soils (C | 26) | Geomorphic Po | | | | |
| | eposits (B5) | | (DZ) | _ | Thin Muck Surfa Gauge or Well D | , , | | | FAC-Neutral Te | St (D5) | | | |
| | ation Visible o | | 0 , , | | _ | | | | | | | | |
| | ly Vegetated C | oncave S | ипасе (вв) | | Other (Explain in — | Remarks) | | | | | | | |
| Field Obser | | | | | | | | | | | | | |
| | ter Present? | Yes _ | No _ | X | Depth (inches): | | | | | | | | |
| Water Table | | Yes - | No _ | X | Depth (inches): | | | l | 5 | | | | |
| Saturation F | | Yes _ | No _ | Х | Depth (inches): | | | vvetian | d Hydrology Present? | Yes . | N | ° – | X |
| | pillary fringe) | | | | | | | | | | | | |
| Describe Reco | orded Data (st | ream gau | ge, monitori | ng w | ell, aerial photos, p | revious ins | pections), i | f availabl | e: | | | | |
| | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Project/Site: E | lk Creek | | | City/County: | Rock | Sampling Date | : 5/6/2019 | | |
|----------------------|------------------------|----------------------|--------------------|---------------------|-----------------------|--|-------------------|-------------|------------------|
| Applicant/Owner: | Geronimo | | | | State: Minn | esota Sampling Poin | t: Upland Plot | 3 | |
| Investigators: K | endall Vandercam | пр | | | Section, Township, | Range: Section 35 Tov | vnship 103 Rar | ige 44 | |
| Landform (hillslope | e, terrace, etc.): F | lat | | Local Reli | ef (concave, convex | none): None | Slope | (%): | 0 |
| Subregion (LRR): | 103 - Central I | lowa and | Lat: 43.68000 | 0 Long: | -96.070000 | Datum: W | /GS84 | | |
| Soil Map Unit Nam | e: Whitewood sil | ty clay loam, 0 to | 2 percent slope | s | NWI Classifi | cation: NA | | | |
| Are climatic / hydro | ologic conditions o | n the site typical f | or this time of ye | ear? Yes | s <u>X</u> No | (If No, explain in Rem | narks) | | |
| Are Vegetation: | X Soilo | r Hydrology | significantly dis | turbed? | Are "Normal Circur | nstances" present? | Yes X | <u> </u> | No |
| Are Vegetation: _ | Soilo | r Hydrology | naturally proble | ematic? | (If needed, explain | any answers in Remarl | (s.) | | |
| SUMMARY OF | FINDINGS - A | Attach a site | map showin | g sampling | point locations | , transects, impo | rtant feature | es, etc | |
| Hydrophytic Vegeta | ation Present? | Yes | No X | | | | | | |
| Hydric Soil Present | t? | Yes | No X | Is the | Sampled Area | | | | |
| Wetland Hydrology | Present? | Yes | No X | withi | n a Wetland? | Yes _ | | No | Х |
| Remarks: | | | | | | | | | |
| | | | | f field verificatio | on for Signature 11 a | nd 44. | | | |
| VEGETATION | - Use scienti | nc names of | | | | T= . = | | | |
| T 01 1 | 3 | | Absolute | Dominant | Indicator | Dominance Test W | | | |
| | Plot size:) | | % Cover | Species? | Status Status | Number of Dominant | | | (4) |
| 1. | | | | | | That Are OBL, FACW | _ | | (A) |
| 2. 3. | | | | | _ | Total Number of Dom | | | (D) |
| 4. | | | | | _ | Species Across All Si Percent of Dominant | _ | | — ^(B) |
| 5 | | | | | _ | That Are OBL, FACW | | | (A/B) |
| J | | | | = Total Cover | _ | That Are Obl., I ACV | -, or i Ao | | (^(\) |
| Sapling/Shrub Stra | tum (Plot size | e.) | | - Total Gover | | Prevalence Index w | orksheet: | | |
| 1. | (1 101 012) | o. <i>)</i> | | | | Total % Cover of: | Multip | lv hv | |
| 2. | | | | | _ | OBL species | x1= | <u>.yy.</u> | |
| 3. | | | | | _ | FACW species | x ₂₌ _ | 0 | |
| 4. | | | | | _ | FAC species | x3= | 0 | |
| 5. | | | | | _ | FACU species | x4= | 0 | |
| | | | | = Total Cover | | UPL species | x5= | 0 | |
| Herb Stratum (F | Plot size:) | | | | | Column Totals: | 0 (A) | 0 | — (B) |
| 1. | | | | | | _ | | | |
| 2. | | | | | | | | | |
| 3. | | | | | | Prevalence Index | c = B/A = | Na | aN |
| 4. | | | | | | Hydrophytic Vegeta | tion Indicators | s: | |
| 5. | | | | | | Dominance Te | st is >50% | | |
| 6. | | | | | | X Prevalence Ind | ex is ≤3.01 | | |
| 7. | | | | | | Morphological | Adaptations1 (I | Provide | |
| 8. | | | | | | data in Re | marks or on a s | separate | sheet) |
| Woody Vine Stratu | m (Plot size:) | | | = Total Cover | | Problematic Hy | drophytic Vege | etation1 (| (Explain) |
| 1. | | | | | | Indicators of hydric so | oil and wetland | hydroloç | ЭУ |
| 2. | | | | | | must be present, unle | ess disturbed of | r problen | natic. |
| | | | | = Total Cover | | Hydrophytic | | | |
| % Bare Ground in | Herb Stratum _ | | % Cove | er of Biotic Crus | t | Vegetation Present? | YesN | No X | _ |
| Remarks: | | | | | | 1 | | | |
| This area consists | of a tilled corn field | d. No vegetation v | vas present at t | he time of the s | urvey. | | | | |
| | | | | | | | | | |

| Profile Descri | iption: (Desci | ribe to t | he depth nee | ded | to document the | indicator o | or confirm | the abse | ence of indicators.) | | | | |
|--|-----------------|-----------|----------------|-------|-----------------------|--------------|---------------|-----------|---|----------------|-------------|------|--|
| Depth Matrix | | | | Red | lox Feature | s | | | | | | | |
| (inches) | Color (mo | ist) | % | | Color (moist) | % | Туре | Loc | Texture | R | emarks | | |
| 0-24 | 10 YR 2/ | /1 | 100 | | | | | | Silt | | | | |
| 24-36 | 10 YR 3/ | /1 | 100 | | | | | | Silty Clay | | | | |
| 36-42 | 10 YR 4/ | /3 | 100 | | | | | | Silty Clay | | | | |
| | | | | | | | | | · | | | | |
| | | | | | | | | | · | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Type: C= Con | centration, D | = Deplet | ion, RM=Red | uced | Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains. | Location | : PL=Pore Lir | ning, M=Mat | rix. | |
| Hydric Soil In | dicators: (A | pplicabl | e to all LRRs | , unl | ess otherwise no | ted.) | | | Indicators for Proble | matic Hydric | Soils: | | |
| Histoso | ol (A1) | | | | Sandy Gleyed M | latrix (S4) | | | Coast Prairie Redox (A16) | | | | |
| Histic E | Epipedon (A2) | | | | Sandy Redox (S | 5) | | | Dark Surface (| S7) | | | |
| Black H | Histic (A3) | | | | Stripped Matrix (| (S6) | | | Iron-Manganes | e Masses (F1 | 2) | | |
| Hydrog | en Sulfide (A | 4) | | | _ Loamy Mucky M | ineral (F1) | | | Very Shallow Dark Surface (TF12) | | | | |
| Stratifie | ed Layers (A5) |) | | | Loamy Gleyed M | 1atrix (F2) | | | Other (Explain in Remarks) | | | | |
| 2 cm N | luck (A10) | | | | Depleted Matrix | (F3) | | | | | | | |
| Deplete | ed Below Dark | k Surface | e (A11) | | _Redox Dark Surf | ` , | | | | | | | |
| | Oark Surface (| | | | _ Depleted Dark S | urface (F7) | | | Indicators of hydrophytic vegetation and | | | | |
| | Mucky Minera | . , | | | _Redox Depression | on (F8) | | | wetland hydrology must be present, | | | | |
| 5 cm M | lucky Peat or | Peat (S3 | 3) | | | | | | unless disturbed o | r problematic. | | | |
| Restrictive | Layer (if pres | sent): | | | | | | | | | | | |
| Type: | | | | _ | | | | | | | | | |
| Depth | (inches): | | | _ | | | | | Hydric Soil Present | ? Yes | No | X | |
| | | | | | | | | | | | | | |
| HYDROLO | GY | | | | | | | | | | | | |
| Wetland Hy | drology Indic | ators: | | | | | | | | | | | |
| 1 | cators (minim | | e required; cl | neck | all that apply) | | | | Secondary Indicator | s (2 or more r | equired) | | |
| Surface | e Water (A1) | | | | Water Stained Lo | eaves (B9) | | | Surface Soil Cracks (B6) | | | | |
| High W | ater Tables (A | A2) | | | Aquatic Inverteb | rates (B13) | | | Drainage Patterns (B10) | | | | |
| Saturat | tion (A3) | | | | True Aquatic Pla | ints (B14) | | | Dry-Season Water Table (C2) | | | | |
| Water | Marks (B1) | | | | Hydrogen Sulfide | e Odor (C1 |) | | Crayfish Burrows (C8) | | | | |
| Sedime | ent Deposits (I | B2) | | | Oxidized Rhizos | pheres alor | ng Living Ro | oots (C | X Saturation Visible on Aerial Imagery (C9) | | | | |
| Drift De | eposits (B3) | | | | Presence of Red | luced Iron (| C4) | | Stunted or Stressed Plants (D1) | | | | |
| Algal M | lat or Crust (B | 34) | | | _Recent Iron Red | uction in Ti | lled Soils (C | 26) | Geomorphic Position (D2) | | | | |
| Iron De | posits (B5) | | | | Thin Muck Surfa | ` ' | | | FAC-Neutral Te | est (D5) | | | |
| Innundation Visible on Aerial Imagery (B7) | | | | | Gauge or Well D | ata (D9) | | | | | | | |
| Sparse | y Vegetated C | Concave | Surface (B8) | | Other (Explain in | Remarks) | | | | | | | |
| Field Obser | vations: | | | | | | | | | | | | |
| Surface Wat | er Present? | Yes | No | Χ | Depth (inches): | | | | | | | | |
| Water Table | | | | | | | | | | | | | |
| | | | | Χ | Depth (inches): | | | Wetlan | tland Hydrology Present? YesNoX | | | | |
| (includes ca | pillary fringe) | | | | | | | | | | | | |
| Describe Reco | orded Data (st | ream ga | uge, monitori | ng w | ell, aerial photos, p | revious ins | pections), i | f availab | le: | | | | |
| | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Salety Minimensional Salety Sal | Project/Site: | Elk Creek | | | City/County: | Rock | Sampling Date | e: 5/6/2019 | | |
|--|--------------------|-----------------------|--|--------------------|---------------------|------------------------|--------------------------|-----------------|----------------|------------------|
| Landfarm (Illisopp, crarace, etc.) Shoulder Local Rotel (concave, convex, none); Concave Stope(16); Storegin (LRR); 103 - Central lows and Lat: 43.680000 Long: 96.080000 Datum; WGS84 Value WGS84 | Applicant/Owner | Geronimo | | | | State: Minn | esota Sampling Poin | it: Upland Plot | 4 | |
| Subsequence Large | Investigators: | Kendall Vanderca | amp | | | Section, Township, | Range: Section 35 To | wnship 103 Rar | nge 44 | |
| Note Marcus silly clay Joannes 1 | Landform (hillslo | pe, terrace, etc.): | Shoulder | | Local Reli | ief (concave, convex | , none): Concave | Slope | (%): | 1 |
| Are climatic / hydrologic conditions on the site hydrology significantly disturbed? | Subregion (LRR) | : 103 - Centra | al lowa and | Lat: 43.68000 | DO Long: | -96.080000 | Datum: V | VGS84 | | |
| Are Vegetation: X Soil or Hydrology analysing disturbed? Are Normal Circumstances' present? Yes X No Are Vegetation: Soil or Hydrology analysing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No X Is the Sampled Area within a Wetland? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Is the Sampled Area within a Wetland? Yes No X Wetland Hydrology Present? Yes No X Is the Sampled Area within a Wetland? Yes No X Wetland Hydrology Present? Yes No X Wetland Hydrology Present? Yes No X Is the Sampled Area within a Wetland? Yes No X Wetland Hydrology Present? Yes No X No X Prevalence Index North Hydrology Present? Yes No X Present Hydrological Adaptation (Plot size: Yes No X Prevalence Index North Hydrological Adaptation (Plot size: Yes No X Prevalence Index North Hydrological Adaptation (Plot size: Yes No X Prevalence Index North Hydrological Adaptation (Plot size: Yes No X Prevalence Index North Hydrological Adaptation (Plot size: Yes No X Prevalence Index North Hydrological Adaptation (Plot yide data in Remarks or on a separate sheet) Problematic Hydrology Present Present? Yes No X Present? Yes No X Present? | Soil Map Unit Na | me: Marcus silty | clay loams, 0 to 2 | percent slopes | | NWI Classifi | cation: NA | | | |
| Are Veperlation: Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS - Attach a site map howing sampling point locations, transects, important features, etc. Hydrochytic Vegitation Present? Yes No X Is the Sampled Area Wottand Hydrology Present? Yes No X within a Wetland? Yes No X Wottand Hydrology Present? Yes No X within a Wetland? Yes No X VEGETATION — Use scientific names of plants. This area is within a cultivated corn field. This data form is representative of field verification for Signature 35. VEGETATION — Use scientific names of plants. Absolute Dominant Indicator Status Number of Dominant Species 1. | Are climatic / hyd | Irologic conditions | on the site typical | for this time of y | ear? Yes | s X No | (If No, explain in Ren | narks) | | |
| SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegelation Present? Yes No X Wetland Hydrology Present? Yes No X within a Wetland? Yes No X Wetland Hydrology Present? Yes No X Within a Wetland? Yes No X Within a Wetland? Yes No X Yes No X X Within a Wetland? Yes No X Yes No X Yes No X Yes No X Yes No X Yes No X X Yes No X Yes | Are Vegetation: | X Soil | or Hydrology | significantly dis | sturbed? | Are "Normal Circur | nstances" present? | YesX | (| No |
| Hydric Sol Present? Yes No X within a Wetland? Yes No X within a Wetland? Yes No X Wetland Hydrology Present? Yes No X within a Wetland? Yes No X Remarks: This area is within a cultivated corn field. This data form is representative of field verification for Signature 35. VEGETATION – Use scientific names of plants. Absolute Dominant Indicator Status Present? Status Present? Status Sta | Are Vegetation: | Soil | or Hydrology | naturally proble | ematic? | (If needed, explain | any answers in Remar | ks.) | | |
| Hydric Soil Present? Yes | SUMMARY C | F FINDINGS | - Attach a site | map showir | ng sampling | point locations | s, transects, impo | rtant featur | es, etc | |
| VEGETATION - Use scientific names of plants. | Hydrophytic Veg | etation Present? | Yes | No X | | | | | | |
| Remarks: This area is within a cultivated corn field. This data form is representative of field verification for Signature 35. | Hydric Soil Prese | ent? | Yes | No X | Is the | Sampled Area | | | | |
| VEGETATION – Use scientific names of plants. Absolute | Wetland Hydrolo | gy Present? | Yes | No X | withi | n a Wetland? | Yes _ | | No | Х |
| VEGETATION – Use scientific names of plants. Absolute | Remarks: | | | | 1 | | | | | |
| Absolute | | | | | tive of field verif | fication for Signature | 35. | | | |
| Tree Statum (Plot size:) | VEGETATIO | N - Use scien | tific names of | · | | | T= | | | |
| 1. | T 01.1 | (D) () | | | | | | | | |
| 2. | | (Plot size:) | | % Cover | Species? | _ Status | · | | | (4) |
| Species Across All Strata: | | | | | | | · | _ | | — ^(A) |
| 4. | | | | | | _ | · | | | (D) |
| That Are OBL, FACW, or FAC: (A/B) Sapling/Shrub Stratum (Plot size:) Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x1 = Sapling/Shrub Stratum (Plot size:) OBL species x2 = OBL species x3 = OBL species x3 = OBL species x3 = OBL species x3 = OBL species x4 = OBL specie | | | | | | _ | · ` | _ | | — ^(b) |
| Sapling/Shrub Stratum (Plot size:) | | | | | | _ | · | | | (A/R) |
| Prevalence Index worksheet: | J | | | | = Total Cover | | · Illat Ale OBL, I AOV | v, or r Ac | | <u> </u> |
| 1. | Sanling/Shrub St | ratum (Plotis | size.) | | - Total Gover | | Prevalence Index w | orksheet: | | |
| 2. | | <u>adam</u> (Flot c | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | | | alv bv | |
| 3. | | | | | | _ | · | | <u>., ., .</u> | |
| ### Stratum (Plot size:) ### Stratum (Plot siz | | | | | | _ | · | | | _ |
| FACU species | | | | | | _ | . 1 | | | _ |
| Herb Stratum (Plot size:) | | | | | | _ | · | | | _ |
| Column Totals: | | | | | = Total Cover | | · I — | x5= | 0 | _ |
| 1. 2. 3. Prevalence Index = B/A= NaN 4. Hydrophytic Vegetation Indicators: | Herb Stratum | (Plot size:) | | | | | _ | 0 (A) | 0 | — _(B) |
| 3. Prevalence Index = B/A= NaN 4. Hydrophytic Vegetation Indicators: 5. Dominance Test is >50% 6. X Prevalence Index is ≤3.01 7. Morphological Adaptations1 (Provide 8. data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation1 (Explain) Woody Vine Stratum (Plot size:) 1. Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Present? Remarks: | 1. | | | | | | _ | | | |
| Hydrophytic Vegetation Indicators: Dominance Test is >50% X Prevalence Index is ≤3.01 Morphological Adaptations1 (Provide ata in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation1 (Explain) Woody Vine Stratum (Plot size:) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic | 2. | | | | | | | | | |
| Dominance Test is >50% X Prevalence Index is ≤3.01 X Prevalence Index is ≤3.01 Morphological Adaptations1 (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation1 (Explain) Woody Vine Stratum (Plot size:) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. = Total Cover Bare Ground in Herb Stratum Cover of Biotic Crust Wegetation Yes No X Present? | 3. | | | | | | Prevalence Index | x = B/A = | N | aN |
| X Prevalence Index is ≤3.01 7. | 4. | | | | | _ | Hydrophytic Vegeta | ation Indicator | s: | |
| 7. Morphological Adaptations1 (Provide 8. data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation1 (Explain) Woody Vine Stratum (Plot size:) 1. Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. = Total Cover % Bare Ground in Herb Stratum % Cover of Biotic Crust Remarks: | 5. | | | | | | Dominance Te | est is >50% | | |
| 8. | 6. | | | | | _ | X Prevalence Inc | dex is ≤3.01 | | |
| ## Total Cover Problematic Hydrophytic Vegetation1 (Explain) ## Double Stratum (Plot size:) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Total Cover | 7. | | | | | | Morphological | Adaptations1 (| Provide | |
| Woody Vine Stratum (Plot size:) 1. Indicators of hydric soil and wetland hydrology 2. Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Yes No X Present? Remarks: | 8. | | | | | | data in Re | marks or on a | separate | sheet) |
| 2 must be present, unless disturbed or problematic. = Total Cover Hydrophytic Vegetation Yes No X Present? Remarks: | Woody Vine Stra | tum (Plot size:) | | | = Total Cover | | Problematic H | ydrophytic Veg | etation1 | (Explain) |
| ## Total Cover Space Ground in Herb Stratum ## Cover of Biotic Crust ## Vegetation Yes No X Present? Remarks: | 1. | | | | | | Indicators of hydric s | oil and wetland | hydrolog | ду |
| % Bare Ground in Herb Stratum % Cover of Biotic Crust Present? No X Present? | 2. | | | | | | must be present, unl | ess disturbed o | r problen | natic. |
| Remarks: | | | | | = Total Cover | | Hydrophytic | | | |
| | % Bare Ground i | n Herb Stratum | | % Cov | er of Biotic Crus | .t | · - | Yes | No X | |
| | Remarks: | | | | | | 1 | | | |
| | This area is withi | n a tilled corn field | d. No vegetation wa | as present at the | time of the surv | vey. | | | | |

| Profile Descr | iption: (Describe to | the depth need | ded to document the | indicator o | r confirm | the abse | ence of indicators. | | | | | |
|----------------|------------------------|------------------|--------------------------|---------------|--------------|------------|---|-----------------|-----------------|-----|--|--|
| Depth Matrix | | | Red | ox Feature: | S | | | | | | | |
| (inches) | Color (moist) | % | Color (moist) | % | Туре | Loc | Texture | | Remarks | | | |
| 0-18 | 10 YR 2/1 | 50 | 10 YR 3/1 | 50 | | | Silty Clay | Two matrix o | olors, no redox | | | |
| 18-24 | 10 YR 4/3 | 100 | | | | | Clay | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Type: C= Cor | ncentration, D= Deple | etion, RM=Redu | ced Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains. | Locat | ion: PL=Pore | Lining, M=Mati | ix. | | |
| Hydric Soil Ir | idicators: (Applica | ble to all LRRs, | unless otherwise no | ted.) | | | Indicators for Pro | blematic Hyd | ric Soils: | | | |
| Histos | ol (A1) | | Sandy Gleyed M | atrix (S4) | | | Coast Prairie Redox (A16) | | | | | |
| Histic I | Epipedon (A2) | - | Sandy Redox (S | 5) | | | Dark Surfac | e (S7) | | | | |
| Black I | Histic (A3) | - | Stripped Matrix (| S6) | | | Iron-Manga | nese Masses | F12) | | | |
| —— Hydrog | gen Sulfide (A4) | - | Loamy Mucky Mi | ineral (F1) | | | Very Shallo | w Dark Surfac | e (TF12) | | | |
| Stratifi | ed Layers (A5) | - | Loamy Gleyed M | latrix (F2) | | | Other (Expl | ain in Remarks | s) | | | |
| 2 cm N | luck (A10) | • | Depleted Matrix | (F3) | | | | | | | | |
| Deplet | ed Below Dark Surfa | ce (A11) | Redox Dark Surf | ace (F6) | | | | | | | | |
| Thick I | Dark Surface (A12) | _ | Depleted Dark S | urface (F7) | | | Indicators of hydrophytic vegetation and | | | | | |
| Sandy | Mucky Mineral (S1) | _ | Redox Depression | on (F8) | | | wetland hydrology must be present, | | | | | |
| 5 cm N | lucky Peat or Peat (| S3) | | | | | unless disturbed or problematic. | | | | | |
| Restrictive | Layer (if present): | | | | | | | | | | | |
| Type: | | | | | | | | | | | | |
| Depth | (inches): | | | | | | Hydric Soil Pres | ent? Yes | No | X | | |
| HYDROLO | GY | | | | | | | | | | | |
| | drology Indicators: | | | | | | | | | | | |
| 1 | cators (minimum of | | eck all that apply) | | | | Secondary Indica | ators (2 or mor | e required) | | | |
| | e Water (A1) | | Water Stained Le | eaves (B9) | | | Surface Soil Cracks (B6) | | | | | |
| | /ater Tables (A2) | - | Aquatic Inverteb | , , | | | Drainage Patterns (B10) | | | | | |
| Satura | tion (A3) | - | True Aquatic Pla | nts (B14) | | | Dry-Season Water Table (C2) | | | | | |
| Water | Marks (B1) | - | Hydrogen Sulfide | e Odor (C1) |) | | Crayfish Burrows (C8) | | | | | |
| Sedim | ent Deposits (B2) | _ | Oxidized Rhizos | pheres alor | ng Living Ro | oots (C | C X Saturation Visible on Aerial Imagery (C9) | | | | | |
| Drift D | eposits (B3) | | Presence of Red | luced Iron (| C4) | | Stunted or Stressed Plants (D1) | | | | | |
| Algal N | Mat or Crust (B4) | | Recent Iron Red | uction in Til | led Soils (C | 26) | Geomorphic Position (D2) | | | | | |
| Iron De | eposits (B5) | - | Thin Muck Surface | ` ' | | | FAC-Neutra | I Test (D5) | | | | |
| Innund | ation Visible on Aeria | al Imagery (B7) | Gauge or Well D | ata (D9) | | | | | | | | |
| Sparse | ly Vegetated Concav | e Surface (B8) | Other (Explain in | Remarks) | | | | | | | | |
| Field Obse | rvations: | | | | | | | | | | | |
| Surface Wa | ter Present? Yes | No | X Depth (inches): | | | | | | | | | |
| Water Table | Present? Yes | No | X Depth (inches): | | | | | | | | | |
| Saturation F | Present? Yes | No | X Depth (inches): | | | Wetlan | etland Hydrology Present? Yes No X | | | | | |
| (includes ca | pillary fringe) | | | | | | | | | | | |
| Describe Rec | orded Data (stream ç | gauge, monitorin | g well, aerial photos, p | revious ins | pections), i | f availabl | le: | | | | | |
| Remarks: | | | | | | | | | | | | |

WETLAND DETERMINATION DATA FORM - Midwest Region

| Project/Site: | Elk Creek | | | City/County: | Rock | Sampling Date | : 5/6/2019 | | |
|---------------------|-----------------------|-----------------------|--|-----------------------|-----------------------|--|-------------------|--------------|------------------|
| Applicant/Owner: | Geronimo | | | | State: Minne | esota Sampling Poin | t: Upland Plot 6 | 3 | |
| Investigators: | Kendall Vanderca | ımp | | | Section, Township, | Range: Section 27 You | vnship 103 Rar | ige 44 | |
| Landform (hillslop | oe, terrace, etc.): | Hillslope | | Local Reli | ef (concave, convex, | none): Concave | Slope(| (%): | 2 |
| Subregion (LRR) | : 103 - Centra | l lowa and | Lat: 43.70000 | 00 Long: | -96.100000 | Datum: W | /GS84 | | |
| Soil Map Unit Na | me: Whitewood s | silty clay loam, 0 to | 2 percent slope | s | NWI Classific | cation: NA | | | |
| Are climatic / hyd | rologic conditions | on the site typical | for this time of y | ear? Yes | s <u>X</u> No | (If No, explain in Ren | narks) | | |
| Are Vegetation: | X Soil | or Hydrology | significantly dis | turbed? | Are "Normal Circun | nstances" present? | Yes | 1 | No X |
| Are Vegetation: | Soil | or Hydrology | naturally proble | ematic? | (If needed, explain | any answers in Remarl | ks.) | | |
| SUMMARY O | F FINDINGS - | Attach a site | map showin | ig sampling | point locations | , transects, impo | rtant feature | s, etc. | • |
| Hydrophytic Vege | etation Present? | Yes | No X | | | | | | |
| Hydric Soil Prese | nt? | Yes | No X | Is the | Sampled Area | | | | |
| Wetland Hydrolog | gy Present? | Yes | No X | withi | n a Wetland? | Yes _ | | No | Х |
| Remarks: | | | | 1 | | | | | |
| | | | | of field verification | on for Signatures 12, | 13, 17, 18, 19, 36, and | 49. | | |
| VEGETATION | v – Use scient | tific names of | <u>. </u> | | | T= . = | | | |
| T 01.1 | (DI 1 :) | | Absolute | Dominant | Indicator | Dominance Test W | | | |
| | (Plot size:) | | % Cover | Species? | Status Status | Number of Dominant | | | (4) |
| 1 | | - | | | | That Are OBL, FACW | _ | | (A) |
| 2. 3. | | | | | | Total Number of Dom | | | (P) |
| 4. | | | | | | Species Across All Since Percent of Dominant | _ | | — ^(B) |
| 5 | | | | | | That Are OBL, FACW | | | (A/B) |
| J | | | | = Total Cover | | That Are OBL, I ACV | -, or i Ac | | _ (٨/۵) |
| Sapling/Shrub St | ratum (Plot si | ize.) | | - Total Gover | | Prevalence Index w | orksheet: | | |
| 1. | ratam (1 lot of | 20.) | | | | Total % Cover of: | Multip | lv hv | |
| 2. | | - | | | | OBL species | x1= | , | |
| 3. | | - | | | | FACW species | x ₂₌ _ | 0 | _ |
| 4. | | | | | | FAC species | x3= | 0 | _ |
| 5. | | | | | | FACU species | x4= | 0 | _ |
| | | | | = Total Cover | | UPL species | x5= | 0 | _ |
| Herb Stratum | (Plot size:) | | | | | Column Totals: | 0 (A) | 0 | — (B) |
| 1. | | | | | | _ | | | _ ` ` |
| 2. | | | | | | | | | |
| 3. | | | | | | Prevalence Index | c = B/A = | Na | aN |
| 4. | | - | | | | Hydrophytic Vegeta | tion Indicators | ;: | |
| 5. | | | | | | Dominance Te | st is >50% | | |
| 6. | | - | | | | X Prevalence Inc | lex is ≤3.01 | | |
| 7. | | | | | | Morphological | Adaptations1 (F | rovide | |
| 8. | | | | | | data in Re | marks or on a s | eparate | sheet) |
| Woody Vine Stra | tum (Plot size:) | | | = Total Cover | | Problematic Hy | ydrophytic Vege | tation1 (| Explain) |
| 1. | | | | | | Indicators of hydric se | oil and wetland | hydrolog | ј у |
| 2. | | | | | | must be present, unle | ess disturbed or | problem | natic. |
| | | | | = Total Cover | | Hydrophytic | | | |
| % Bare Ground in | n Herb Stratum | | % Cove | er of Biotic Crus | t | Vegetation Present? | YesN | lo <u>X</u> | _ |
| Remarks: | | | | | | 1 | | | |
| This area is within | n a tilled corn field | . No vegetation wa | s present at the | time of the surv | /ey. | | | | |

SOIL Sampling Point: Upland Plot 6

| Profile Description: (Describe to the depth | needed to document the | indicator of | or confirm | the abse | ence of indicators.) | | | | |
|--|-------------------------------|--|---------------|----------------|-----------------------------|-----------------------|---------|---|--|
| Depth Matrix | Re | dox Feature | es . | | | | | | |
| (inches) Color (moist) % | Color (moist) | % | Туре | Loc | Texture | Remarks | 3 | | |
| 0-18 10 YR 2/1 100 | | | | | Silty Clay | | | | |
| 18-20 10 YR 4/3 100 | | | | | Silty Clay | | | | |
| | <u> </u> | | | | · | | | | |
| | | | | | | | | | |
| | _ | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Type: C= Concentration, D= Depletion, RM= | Reduced Matrix CS=Cove | red or Coate | ed Sand Gr | | Location: | PL=Pore Lining, M | =Matriy | | |
| Hydric Soil Indicators: (Applicable to all L | | | ou ound on | uii io. | Indicators for Probler | | Watix. | | |
| Histosol (A1) | Sandy Gleyed N | | | | Coast Prairie R | • | | | |
| Histic Epipedon (A2) | | | | | | , , | | | |
| Black Histic (A3) | | Redox (S5) Dark Surface (S7) ed Matrix (S6) Mucky Mineral (F1) Dark Surface (TF12) Very Shallow Dark Surface (TF12) | | | | | | | |
| Hydrogen Sulfide (A4) | | | | | | | | | |
| Stratified Layers (A5) | | Other (Explain i | , | | | | | | |
| 2 cm Muck (A10) | Loamy Gleyed Depleted Matrix | | | | | | | | |
| Depleted Below Dark Surface (A11) | Redox Dark Su | () | | | | | | | |
| Thick Dark Surface (A12) | Depleted Dark | . , |) | | Indicators of hydroph | vtic vegetation and | | | |
| Sandy Mucky Mineral (S1) | Redox Depress | | • | | wetland hydrology | | | | |
| 5 cm Mucky Peat or Peat (S3) | | , , | | | unless disturbed or | | | | |
| Restrictive Layer (if present): | | | | | | - | | | |
| Type: | | | | | | | | | |
| Depth (inches): | | | | | Hydric Soil Present | ? Yes | No 2 | Х | |
| Remarks: | | | | | , | | | _ | |
| Tremains. | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| HYDROLOGY | | | | | | | | | |
| Wetland Hydrology Indicators: | | | | | | | | | |
| Primary Indicators (minimum of one require | ed; check all that apply) | | | | Secondary Indicators | s (2 or more required | d) | | |
| Surface Water (A1) | Water Stained I | eaves (B9) | | | Surface Soil Cra | acks (B6) | | | |
| High Water Tables (A2) | Aquatic Invertel | orates (B13) |) | | Drainage Patter | ns (B10) | | | |
| Saturation (A3) | True Aquatic PI | ants (B14) | | | Dry-Season Water Table (C2) | | | | |
| Water Marks (B1) | Hydrogen Sulfic | de Odor (C1 |) | | Crayfish Burrow | /s (C8) | | | |
| Sediment Deposits (B2) | Oxidized Rhizos | spheres alor | ng Living Ro | oots (C | X Saturation Visib | le on Aerial Imagery | / (C9) | | |
| Drift Deposits (B3) | Presence of Re | duced Iron (| (C4) | | Stunted or Stres | ssed Plants (D1) | | | |
| Algal Mat or Crust (B4) | Recent Iron Rec | duction in Ti | lled Soils (C | 26) | Geomorphic Po | sition (D2) | | | |
| Iron Deposits (B5) | Thin Muck Surfa | , , | | | FAC-Neutral Te | est (D5) | | | |
| Innundation Visible on Aerial Imagery | (B7) Gauge or Well I | Data (D9) | | | | | | | |
| Sparsely Vegetated Concave Surface (| B8) Other (Explain i | n Remarks) | | | | | | | |
| Field Observations: | | | | | | | | | |
| Surface Water Present? Yes No | X Depth (inches): | | | | | | | | |
| Water Table Present? Yes No | X Depth (inches): | | | | | | | | |
| Saturation Present? Yes No | X Depth (inches): | | | Wetlan | d Hydrology Present? | Yes | No 2 | X | |
| (includes capillary fringe) | | | | | | | | | |
| Describe Recorded Data (stream gauge, mor | nitoring well, aerial photos, | previous ins | spections), i | r f availab | le: | | | | |
| (3 3 7 | | | , ,, | | | | | | |
| Domestic | | | | | | | | | |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |

WETLAND DETERMINATION DATA FORM - Midwest Region

| Project/Site: Elk Creek | | City/County: | Rock | Sampling Date: | 5/6/2019 | |
|--|------------------------------------|----------------------|------------------------|--------------------------|------------------|--------------------|
| Applicant/Owner: Geronimo | | | State: Minne | esota Sampling Point | : Upland Plot 7 | 7 |
| Investigators: Kendall Vandercamp | | | Section, Township, | Range: Section 27 Tow | nship 103 Ran | ige 44 |
| Landform (hillslope, terrace, etc.): Hills | slope | Local Reli | ef (concave, convex, | none): Concave | Slope(| (%): 2 |
| Subregion (LRR): 103 - Central low | va and Lat: 43.70000 | 00 Long: | -96.100000 | Datum: W | GS84 | |
| Soil Map Unit Name: Rushmore silty c | lay loam, 0 to 2 percent slopes | 3 | NWI Classific | cation: NA | | |
| Are climatic / hydrologic conditions on the | he site typical for this time of y | ear? Yes | . No X | (If No, explain in Rem | arks) | |
| Are Vegetation: X Soil or F | Hydrology significantly dis | sturbed? | Are "Normal Circum | nstances" present? | Yes X | . No |
| Are Vegetation: Soil or F | Hydrology naturally proble | ematic? | (If needed, explain | any answers in Remark | (s.) | |
| SUMMARY OF FINDINGS - At | tach a site map showir | ng sampling | point locations | , transects, impor | tant feature | es, etc. |
| Hydrophytic Vegetation Present? | Yes No X | | | | | |
| Hydric Soil Present? | Yes No X | Is the | Sampled Area | | | |
| Wetland Hydrology Present? | Yes No X | withir | n a Wetland? | Yes | | No X |
| Remarks: | | | | | | |
| This area is within a tilled corn field. Thi | s data form is representative o | of field verificatio | on for Signature 1, 2, | and 3. | | |
| VEGETATION – Use scientific | names of plants. | | | | | |
| | Absolute | Dominant | Indicator | Dominance Test Wo | | |
| <u>Tree Statum</u> (Plot size:) | % Cover | Species? | Status | Number of Dominant | | |
| 1. | | | | That Are OBL, FACW | _ | (A) |
| 2. | | | | Total Number of Dom | | |
| 3. | | | | Species Across All St | _ | (B) |
| 4. | | | | Percent of Dominant | | |
| 5. | | | | That Are OBL, FACW | , or FAC: | (A/B) |
| | | = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size:) |) | | | Prevalence Index wo | | |
| 1. | | | | Total % Cover of: | <u>Multipl</u> | <u>ly by:</u> |
| 2. | | | | OBL species | x1= _ | |
| 3. | | | | FACW species | x2= | 0 |
| 4. | | | | FAC species | x3= | 0 |
| 5. | | = Total Cover | | FACU species UPL species | x4= | 0 |
| Herb Stratum (Plot size:) | | - Total Cover | | Column Totals: | 0 (A) | 0 (B) |
| 1. | | | | | | (B) |
| 2. | | | | | | |
| 3. | | | | Prevalence Index | = B/A= | NaN |
| 4. | | | | Hydrophytic Vegeta | | |
| 5. | | | | Dominance Tes | | |
| 6. | | | | X Prevalence Ind | ex is ≤3.01 | |
| 7. | | | | Morphological A | Adaptations1 (F | Provide |
| 8. | | | | <u> </u> | | separate sheet) |
| | | = Total Cover | | | | etation1 (Explain) |
| Woody Vine Stratum (Plot size:) | | | | | | |
| 1. | | | | Indicators of hydric so | oil and wetland | hydrology |
| 2. | | | | must be present, unle | ess disturbed or | r problematic. |
| | | = Total Cover | | Hydrophytic | | |
| % Bare Ground in Herb Stratum | % Cove | er of Biotic Crust | t | Vegetation Present? | YesN | No X |
| Remarks: | | | | • | | |
| This area is within a tilled corn field. No | vegetation was present at the | time of the surv | rey. | | | |
| | | | | | | |

SOIL Sampling Point: Upland Plot 7

| Profile Descr | iption: (Descri | be to the | e depth ne | eded | to document the | indicator o | r confirm | the abse | ence of indicators.) | | | | |
|--|---------------------|------------|-------------|-------|------------------------|--------------|---------------|-----------|------------------------------------|-----------------|-------------|------------|--|
| Depth | N | /latrix | | | Red | lox Features | S | | | | | | |
| (inches) | Color (mois | st) | % | | Color (moist) | % | Туре | Loc | Texture | ĺ | Remarks | | |
| 0-8 | 10 YR 2/1 | | 100 | | | | | | Silt | | | | |
| 8-18 | 10 YR 3/1 | | 100 | | | | | | Silty Clay | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | - | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | · | | | | |
| | | | | | | | | | | | | | |
| Type: C= Cor | ncentration. D= | Depletio | n. RM=Rec | luced | Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains. | Locatio | n: PL=Pore L | ining. M=Ma | atrix. | |
| | | | | | ess otherwise no | | | | Indicators for Probl | | | | |
| Histos | | | | , | Sandy Gleyed M | | | | Coast Prairie | • | | | |
| | Epipedon (A2) | | | | Sandy Redox (S | | | | Dark Surface | , , | | | |
| | Histic (A3) | | | | Stripped Matrix (| | | | Iron-Mangane | ` ' | :12) | | |
| | |) | | | _ | | | | Very Shallow | | | | |
| Hydrogen Sulfide (A4) Stratified Layers (A5) Loamy Mucky Mineral (F1) Loamy Gleyed Matrix (F2) | | | | | | | | | Other (Explain | n in Remarks) | | | |
| 2 cm N | /luck (A10) | | | | Depleted Matrix | (F3) | | | | | | | |
| Deplet | ed Below Dark | Surface | (A11) | | Redox Dark Surf | face (F6) | | | | | | | |
| Thick I | Dark Surface (A | .12) | | | Depleted Dark S | urface (F7) | | | Indicators of hydro | phytic vegetat | ion and | | |
| Sandy | Mucky Mineral | (S1) | | | Redox Depression | on (F8) | | | wetland hydrology must be present, | | | | |
| 5 cm N | /lucky Peat or P | eat (S3) | | | _ | | | | unless disturbed | or problemation | ٥. | | |
| Restrictive | Layer (if prese | ent): | | | | | | | | | | | |
| Type: | | | | | | | | | | | | | |
| Depth | (inches): | | | _ | | | | | Hydric Soil Prese | nt? Yes | No | о Х | |
| Remarks: | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| HYDROLO | | | | | | | | | | | | | |
| Wetland Hy | drology Indica | itors: | | | | | | | | | | | |
| Primary Indi | icators (minimu | m of one | required; c | heck | all that apply) | | | | Secondary Indicate | ors (2 or more | required) | | |
| | e Water (A1) | | | | _ Water Stained Lo | eaves (B9) | | | Surface Soil (| | | | |
| | Vater Tables (A | 2) | | | _ Aquatic Inverteb | , , | | | Drainage Pat | | | | |
| | tion (A3) | | | | _ True Aquatic Pla | ` ' | | | Dry-Season V | | ;2) | | |
| | Marks (B1) | | | | _ Hydrogen Sulfide | ` ' | | | Crayfish Burr | ` , | | | |
| | ent Deposits (B | 2) | | | Oxidized Rhizos | | | oots (C | X Saturation Vis | | • • • | 9) | |
| | eposits (B3) | | | | Presence of Red | , | , | | Stunted or St | | (D1) | | |
| | Mat or Crust (B4 | !) | | | Recent Iron Red | | lled Soils (C | 26) | Geomorphic I | | | | |
| | eposits (B5) | | | | Thin Muck Surfa | , , | | | FAC-Neutral | Γest (D5) | | | |
| Innund | ation Visible on | Aerial In | nagery (B7 |) | Gauge or Well D | ata (D9) | | | | | | | |
| Sparse | ly Vegetated Co | oncave S | urface (B8) | | Other (Explain in - | n Remarks) | | | | | | | |
| Field Obse | rvations: | | | | | | | | | | | | |
| Surface Wa | ter Present? | Yes _ | No | Χ | Depth (inches): | | | | | | | | |
| Water Table | Present? | Yes _ | No | Х | Depth (inches): | | | | | | | | |
| Saturation F | Present? | Yes _ | No | Х | Depth (inches): | | | Wetlan | d Hydrology Presen | t? Yes | No | o <u>X</u> | |
| (includes ca | pillary fringe) | | | | | | | | | | | | |
| Describe Rec | orded Data (stre | eam gau | ge, monitor | ing w | ell, aerial photos, p | revious ins | pections), i | f availab | le: | | | | |
| | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

WETLAND DETERMINATION DATA FORM - Midwest Region

| Project/Site: Elk Creek | | City/County: | Rock | Sampling Date | te: 5/6/2019 | | |
|---|------------------------|---------------------|-----------------------|------------------------|--------------------|------------------|-----------|
| Applicant/Owner: Geronimo | | _ | State: Minn | esota Sampling Poi | int: Upland Plot | 5 | |
| Investigators: Kendall Vandercamp | | | Section, Township, | Range: Section 27 To | ownship 103 Ra | nge 44 | |
| Landform (hillslope, terrace, etc.): Hillslope | | Local Reli | ief (concave, convex | , none): Concave | Slope | (%): | 2 |
| Subregion (LRR): 103 - Central Iowa and | Lat: 43.6900 | 00 Long: | -96.090000 | Datum: | WGS84 | | |
| Soil Map Unit Name: Whitewood silty clay loam, | , 0 to 2 percent | | NWI Classifi | cation: NA | | | |
| Are climatic / hydrologic conditions on the site type | oical for this time of | /ear? Yes | s <u>X</u> No | (If No, explain in Re | marks) | | |
| Are Vegetation: Soil or Hydrology | | sturbed? | Are "Normal Circur | nstances" present? | Yes> | × 1 | No |
| Are Vegetation: Soil or Hydrology | | | • | any answers in Rema | • | | |
| SUMMARY OF FINDINGS - Attach a s | site map showi | ng sampling | point locations | , transects, impo | ortant featur | es, etc. | |
| Hydrophytic Vegetation Present? Yes _ | No X | | | | | | |
| Hydric Soil Present? Yes _ | No X | Is the | e Sampled Area | | | | |
| Wetland Hydrology Present? Yes _ | No X | withi | n a Wetland? | Yes | | No | X |
| Remarks: | | | | | | | |
| This plot is within a grassy drainage. This data fo | | of field verificati | ion for Signatures 14 | , 26, 27, 46, and 47. | | | |
| VEGETATION – Use scientific names | | | | T | | | |
| | Absolute | Dominant | Indicator | Dominance Test V | | | |
| <u>Tree Statum</u> (Plot size:) | % Cover | Species? | Status | Number of Dominar | • | | |
| 1. | | | _ | That Are OBL, FAC | _ | 0 | (A) |
| 2. | | | _ | Total Number of Do | | | (5) |
| 3. | | | | Species Across All | - | 1 | (B) |
| 4 | | | | Percent of Dominar | • | 0 | (A /D) |
| 5. | | - Total Cover | | That Are OBL, FAC | vv, or FAC: | 0 | (A/B) |
| Sapling/Shrub Stratum (Plot size:) | | = Total Cover | | Prevalence Index | workshoot: | | |
| 1. | | | | Total % Cover of: | | oly by: | |
| 2. | | | _ | OBL species | <u>Mulu</u> x1= | лу ру. | |
| 3. | | | _ | FACW species | x1=_ | 0 | _ |
| 4. | - | | | FAC species | x3= | 0 | _ |
| 5. | | | | FACU species | 100 x4= | 400 | _ |
| | | = Total Cover | _ | UPL species | x ₅₌ - | 0 | _ |
| Herb Stratum (Plot size:) | | . 514. 5575. | | Column Totals: | 100 (A) | 400 | — (B) |
| 1. Bromus inermis | 100 | Yes | FACU | - | | | _` ′ |
| 2. | | | | • | | | |
| 3. | | | | Prevalence Inde | 9x = B/A = | 4.0 | 00 |
| 4. | | | | Hydrophytic Veget | tation Indicator | 's: | |
| 5. | | | | Dominance T | est is >50% | | |
| 6. | | | | Prevalence Ir | ndex is ≤3.01 | | |
| 7. | | | | Morphologica | al Adaptations1 (| Provide | |
| 8. | | | _ | data in R | temarks or on a | separate | sheet) |
| | 100 | = Total Cover | | Problematic I | Hydrophytic Veg | etation1 (| (Explain) |
| Woody Vine Stratum (Plot size:) | | | | | | | |
| 1 | | | _ | Indicators of hydric | soil and wetland | l hydrolog | ĵУ |
| 2. | | | | must be present, ur | ıless disturbed o | r problem | natic. |
| | | = Total Cover | | Hydrophytic | | | |
| % Bare Ground in Herb Stratum | % Cov | er of Biotic Crus | .t | Vegetation Present? | Yes | No X | _ |
| Remarks: | | | | | | | |
| | | | | | | | |

SOIL Sampling Point: Upland Plot 5

| Profile Descr | ription: (Descri | be to the | depth ne | eded | to document the | indicator o | r confirm | the abse | ence of indicators.) | | | | |
|---------------|-------------------|-----------|-------------|---------------|----------------------------|---------------|--------------|--------------|------------------------------------|--------------|-------------|---------|---|
| Depth | 1 | Иatrix | | | Red | lox Features | S | | | | | | |
| (inches) | Color (mois | st) | % | | Color (moist) | % | Туре | Loc | Texture | | Remark | 3 | |
| 0-18 | 10 YR 2/ | | 100 | | | | | - | Silt | | | | |
| 18-36 | 10 YR 3/ | | 100 | | | | | | Silt | | | | |
| 36-42 | 10 YR 4/2 | | 96 | | 10 YR 4/4 | 4 | | M | Clay | | | | |
| | | | | | | | | - | | | | | |
| | | | | | | | | - | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Type: C= Co | ncentration D= | Depletion | RM=Rec | luced | Matrix, CS=Cover | ed or Coate | ed Sand Gr | ains | L ocatio | n: PL=Por | e Linina M | =Matrix | , |
| | | | | | ess otherwise no | | | | Indicators for Probl | | | | |
| Histos | | p | | -, u | Sandy Gleyed M | | | | Coast Prairie | - | | | |
| | Epipedon (A2) | | | | Sandy Redox (S | | | | Dark Surface | , | - / | | |
| | Histic (A3) | | | | Stripped Matrix (| * | | | Iron-Mangane | , , | (F12) | | |
| | gen Sulfide (A4 | | | Loamy Mucky M | | | | Very Shallow | | | | | |
| | ed Layers (A5) | , | | | Loamy Gleyed M | | | | Other (Explai | | , , | | |
| | Muck (A10) | | | | Depleted Matrix | | | | | | , | | |
| | ed Below Dark | Surface (| A11) | | - ' Redox Dark Surf | ` ' | | | | | | | |
| | Dark Surface (A | , | , | | - Depleted Dark S | | | | Indicators of hydro | phytic vege | tation and | | |
| | Mucky Mineral | | | | - Redox Depression | | | | wetland hydrology must be present, | | | | |
| 5 cm N | Mucky Peat or F | eat (S3) | | - | - | | | | unless disturbed | or problem | atic. | | |
| Restrictive | Layer (if prese | ent): | | | | | | | | | | | |
| Type: | , , , | , | | | | | | | | | | | |
| | (inches): | | | _ | | | | | Hydric Soil Prese | nt? Ye | S | No | Χ |
| Remarks: | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| HYDROLO | GY | | | | | | | | | | | | |
| Wetland Hy | drology Indica | ators: | | | | | | | | | | | |
| Primary Ind | icators (minimu | m of one | required; c | heck | all that apply) | | | | Secondary Indicate | ors (2 or mo | ore require | 1) | |
| Surfac | e Water (A1) | | | | Water Stained Le | eaves (B9) | | | Surface Soil (| Cracks (B6) | | | |
| High V | Vater Tables (A | 2) | | | Aquatic Inverteb | rates (B13) | | | Drainage Patterns (B10) | | | | |
| Satura | ition (A3) | | | | True Aquatic Pla | nts (B14) | | | Dry-Season \ | Vater Table | (C2) | | |
| Water | Marks (B1) | | | | _ Hydrogen Sulfide | e Odor (C1) |) | | Crayfish Burr | ows (C8) | | | |
| Sedim | ent Deposits (B | 2) | | | Oxidized Rhizos | pheres alon | ng Living R | oots (C | X Saturation Vis | sible on Aer | ial Imager | / (C9) | |
| Drift D | eposits (B3) | | | | Presence of Red | luced Iron (| C4) | | Stunted or St | ressed Plar | nts (D1) | | |
| Algal I | Mat or Crust (B | 1) | | | Recent Iron Red | uction in Til | led Soils (0 | 26) | Geomorphic | , | 2) | | |
| | eposits (B5) | | | | Thin Muck Surfa | , , | | | FAC-Neutral | Test (D5) | | | |
| Innund | lation Visible or | Aerial Im | nagery (B7 | | Gauge or Well D | ata (D9) | | | | | | | |
| Sparse | ely Vegetated Co | oncave Su | urface (B8) | | Other (Explain in | Remarks) | | | | | | | |
| Field Obse | rvations: | | | | | | | | | | | | |
| Surface Wa | ter Present? | Yes | No | Χ | Depth (inches): | | | | | | | | |
| Water Table | e Present? | Yes | No | Х | Depth (inches): | | | | | | | | |
| Saturation F | Present? | Yes | No | Χ | Depth (inches): | | | Wetlan | d Hydrology Presen | t? Ye | s | No | Х |
| (includes ca | pillary fringe) | | | | | | | | | | | | |
| Describe Rec | orded Data (str | eam gaug | je, monitor | ing we | ell, aerial photos, p | revious ins | pections), i | f availabl | e: | | | | |
| | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | |
| . Comand. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Appendix B

Ground Level Photography









Photo 3. Facing South





Photo 5. Facing West Photo 6. Facing North





Photo 8. Facing South





Photo 9. Facing West





Photo 11. Facing East Photo 12. Facing West





Photo 13. Facing South Photo 14. Facing South





Photo 15. Facing South Photo 16. Facing South





Photo 17. Facing East Photo 18. Facing South





Photo 19. Facing South Photo 20. Facing South









Appendix C

Minnesota Climatology Working Group Antecedent Precipitation Data

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Friday, August 15, 2003

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: July 2003 | second prior month: June 2003 | third prior month: May 2003 | |
|--|------------------------------------|-------------------------------------|-----------------------------------|--|
| estimated precipitation total for this location: | 2.41 | 4.98 | 3.28 | |
| there is a 30% chance this location will have less than: | 2.22 | 3.42 | 1.92 | |
| there is a 30% chance this location will have more than: | 3.96 | 5.60 | 4.11 | |
| type of month: dry normal wet | normal | normal | normal | |
| monthly score | 3 * 2 = 6 | 2 * 2 = 4 | 1 * 2 = 2 | |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | 12 (Normal) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Monday, August 9, 2004

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: July 2004 | second prior month: June 2004 | third prior month: May 2004 | |
|--|------------------------------------|-------------------------------------|-----------------------------------|--|
| estimated precipitation total for this location: | 5.47 | 2.24 | 7.03 | |
| there is a 30% chance this location will have less than: | 2.22 | 3.42 | 1.92 | |
| there is a 30% chance this location will have more than: | 3.96 | 5.60 | 4.11 | |
| type of month: dry normal wet | wet | dry | wet | |
| monthly score | 3 * 3 = 9 | 2*1=2 | 1 * 3 = 3 | |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | 14 (Normal) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N range number: 44W township name: Vienna nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Monday, September 12, 2005

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: August 2005 | second prior month: July 2005 | third prior month: June 2005 |
|--|--------------------------------|-------------------------------------|------------------------------------|
| estimated precipitation total for this location: | 2.47 | 3.60 | 5.82 |
| there is a 30% chance this location will have less than: | 2.55 | 2.22 | 3.42 |
| there is a 30% chance this location will have more than: | 4.19 | 3.96 | 5.60 |
| type of month: dry normal wet | dry | normal | wet |
| monthly score | 3 * 1 = 3 | 2*2=4 | 1 * 3 = 3 |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | 10 (Normal) | 1 |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us 1



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Friday, August 11, 2006

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: July 2006 | second prior month: June 2006 | third prior month: May 2006 | |
|--|------------------------------------|-------------------------------------|-----------------------------------|--|
| estimated precipitation total for this location: | 0.10 | 4.00 | 1.18 | |
| there is a 30% chance this location will have less than: | 2.22 | 3.42 | 1.92 | |
| there is a 30% chance this location will have more than: | 3.96 | 5.60 | 4.11 | |
| type of month: dry normal wet | dry | normal | dry | |
| monthly score | 3*1=3 | 2 * 2 = 4 | 1*1=1 | |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | 8 (Dry) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Friday, July 4, 2008

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: June 2008 | second prior month: May 2008 | third prior month: April 2008 | |
|--|------------------------------------|------------------------------------|-------------------------------------|--|
| estimated precipitation total for this location: | 5.29 | 4.98 | 2.33 | |
| there is a 30% chance this location will have less than: | 3.42 | 1.92 | 2.21 | |
| there is a 30% chance this location will have more than: | 5.60 | 4.11 | 3.49 | |
| type of month: dry normal wet | normal | wet | normal | |
| monthly score | 3 * 2 = 6 | 2 * 3 = 6 | 1*2=2 | |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | 14 (Normal) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date: Thursday, September 17, 2009

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: August 2009 | second prior month: July 2009 | third prior month: June 2009 | |
|--|--------------------------------|-------------------------------------|------------------------------------|--|
| estimated precipitation total for this location: | 2.69 | 3.27 | 4.66 | |
| there is a 30% chance this location will have less than: | 2.55 | 2.22 | 3.42 | |
| there is a 30% chance this location will have more than: | 4.19 | 3.96 | 5.60 | |
| type of month: dry normal wet | normal | normal | normal | |
| monthly score | 3*2=6 | 2*2=4 | 1*2=2 | |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | 12 (Normal) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Thursday, June 24, 2010

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: May 2010 | second prior month: April 2010 | third prior month: March 2010 |
|--|-----------------------------------|--------------------------------|--|
| estimated precipitation total for this location: | 2.32 | 2.51 | 0.89 |
| there is a 30% chance this location will have less than: | 1.92 | 2.21 | 1.00 |
| there is a 30% chance this location will have more than: | 4.11 normal | 3.49 normal | al dry |
| type of month: dry normal wet | | | |
| monthly score | 3 * 2 = 6 | 2*2=4 | |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | 11 (Normal) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date: Wednesday, September 25, 2013

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: August 2013 | second prior month: July 2013 | third prior month: June 2013 |
|--|--------------------------------|-------------------------------------|------------------------------------|
| estimated precipitation total for this location: | 1.76 | 0.35 | 5.91 |
| there is a 30% chance this location will have less than: | 2.55 | 2.22 | 3.42 |
| there is a 30% chance this location will have more than: | 4.19 | 3,96 | 5.60 |
| type of month: dry normal wet | dry | dry | wet |
| monthly score | 3*1=3 | 2*1=2 | 1*3=3 |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | 8 (Dry) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources

home | current conditions | journal | past data | summaries | agriculture | other sites | about us K



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Wednesday, July 15, 2015

Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: June 2015 | second prior month: May 2015 | third prior month: April 2015 |
|--|------------------------------------|------------------------------------|-------------------------------------|
| estimated precipitation total for this location: | 3.48 | 4.83 | 1.17 |
| there is a 30% chance this location will have less than: | 3.42 | 1.92 | 2.21 |
| there is a 30% chance this location will have more than: | 5.60 | 4.11 | 3.49 |
| type of month: dry normal wet | normal | wet | dry |
| monthly score | 3 * 2 = 6 | 2 * 3 = 6 | 1*1=1 |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

home | current conditions | journal | past data | summaries | agriculture | other sites | about us |



Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: Rock township number: 103N township name: Vienna range number: 44W nearest community: Magnolia section number: 27

Aerial photograph or site visit date:

Friday, September 1, 2017

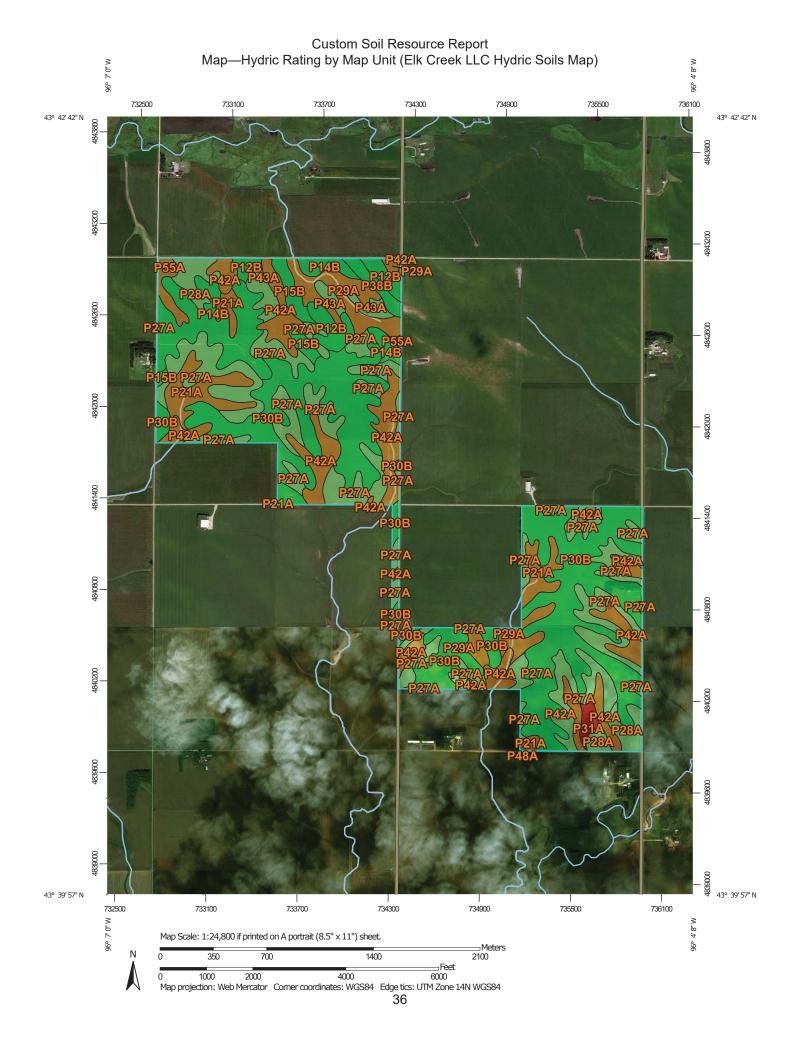
Score using 1981-2010 normal period

| values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates. | first prior month: August 2017 | second prior month: July 2017 | third prior month: June 2017 |
|--|--------------------------------|-------------------------------------|------------------------------------|
| estimated precipitation total for this location: | 5.29 | 0.99 | 3.99 |
| there is a 30% chance this location will have less than: | 2.55 | 2.22 | 3.42 |
| there is a 30% chance this location will have more than: | 4.19 | 3.96 | 5.60 |
| type of month: dry normal wet | wet | dry | normal |
| monthly score | 3 * 3 = 9 | 2*1=2 | 1*2=2 |
| multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | 13 (Normal) | | |

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

Appendix D

USDA Web Soil Survey Hydric Rating by Map Unit



MAP LEGEND MAP INFORMATION The soil surveys that comprise your AOI were mapped at Area of Interest (AOI) Transportation 1:12.000. Area of Interest (AOI) Rails Soils Interstate Highways Please rely on the bar scale on each map sheet for map Soil Rating Polygons measurements. **US Routes** Hydric (100%) Major Roads Source of Map: Natural Resources Conservation Service Hydric (66 to 99%) Web Soil Survey URL: Local Roads \sim Hydric (33 to 65%) Coordinate System: Web Mercator (EPSG:3857) Background Hydric (1 to 32%) Aerial Photography Maps from the Web Soil Survey are based on the Web Mercator Not Hydric (0%) projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Not rated or not available Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required. Soil Rating Lines Hydric (100%) This product is generated from the USDA-NRCS certified data as Hydric (66 to 99%) of the version date(s) listed below. Hydric (33 to 65%) Soil Survey Area: Rock County, Minnesota Hydric (1 to 32%) Survey Area Data: Version 16, Oct 9, 2018 Not Hydric (0%) Soil map units are labeled (as space allows) for map scales Not rated or not available 1:50,000 or larger. **Soil Rating Points** Date(s) aerial images were photographed: Sep 27, 2012—Mar Hydric (100%) 5, 2017 Hydric (66 to 99%) Hydric (33 to 65%) The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background Hydric (1 to 32%) imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. Not Hydric (0%) Not rated or not available **Water Features** Streams and Canals

Table—Hydric Rating by Map Unit (Elk Creek LLC Hydric Soils Map)

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|--------------------------|---|--------|--------------|----------------|
| P12B | Everly silty clay loam, 2 to 6 percent slopes | 0 | 26.3 | 2.7% |
| P14B | Flandreau silt loam, 2 to 6 percent slopes | 0 | 77.9 | 8.0% |
| P15B | Galva silty clay loam, 2 to 5 percent slopes | 0 | 17.2 | 1.8% |
| P21A | Marcus silty clay loam, 0 to 2 percent slopes | 95 | 49.2 | 5.1% |
| P27A | Primghar silty clay loam, 1 to 3 percent slopes | 8 | 220.0 | 22.7% |
| P28A | Ransom silty clay loam, 1 to 3 percent slopes | 8 | 29.9 | 3.1% |
| P29A | Rushmore silty clay loam, 0 to 2 percent slopes | 90 | 54.7 | 5.6% |
| P30B | Sac silty clay loam, loam substratum, 2 to 5 percent slopes | 0 | 330.2 | 34.0% |
| P31A | Spicer silty clay loam, 0 to 2 percent slopes | 100 | 6.0 | 0.6% |
| P38B | Thurman sandy loam, 2 to 6 percent slopes | 0 | 9.2 | 1.0% |
| P42A | Whitewood silty clay loam, 0 to 2 percent slopes | 80 | 119.7 | 12.3% |
| P43A | Wilmonton silty clay loam, 1 to 3 percent slopes | 5 | 20.3 | 2.1% |
| P48A | Allendorf silty clay loam, 0 to 2 percent slopes | 0 | 0.2 | 0.0% |
| P55A | Kato silty clay loam, 0 to 2 percent slopes | 90 | 9.6 | 1.0% |
| Totals for Area of Inter | est | 1 | 970.3 | 100.0% |

Rating Options—Hydric Rating by Map Unit (Elk Creek LLC Hydric Soils Map)

Aggregation Method: Percent Present

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute

Custom Soil Resource Report

value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Percent Present" returns the cumulative percent composition of all components of a map unit for which a certain condition is true. For example, attribute "Hydric Rating by Map Unit" returns the cumulative percent composition of all components of a map unit where the corresponding hydric rating is "Yes". Conditions may be simple or complex. At runtime, the user may be able to specify all, some or none of the conditions in question.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Hydric Rating by Map Unit (Elk Creek LLC Hydric Soils Map)

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Custom Soil Resource Report

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.