Revised Wetland Delineation and Functional Assessment Report: Keetac Exterior Tailings Basin and 2023 Additional Areas

Prepared for
U. S. Steel - Keetac

September 2023

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3128 14th Avenue East
Hibbing, MN 55746
Phone: 218.262.8600
Fax: 218.262.3460

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1.0 Introduction

This report describes wetland resources delineated at the United States Steel - Keetac (Keetac) facility located near the City of Keewatin, in Itasca County, Minnesota (Figure 1). This facility mines and processes iron ore for the production of taconite pellets.

During tailings basin planning efforts, Keetac identified the need to update the outer perimeter of their tailings basin (Figure 1). The study area for this project originally included a 550-foot buffer from the outer toe of the tailings basin around approximately the southern half of the tailings basin. Barr Engineering Company (Barr) identified, delineated, and mapped wetlands in that study area on August 2-4 and 12, 2021. An amendment to a wetland boundary was made on September 29, 2022. Planning efforts in the summer of 2023 identified additional areas outside of the original 550-foot buffer and a linear route for a water make-up line following one of the tailings basin roads (Figure 1). Barr evaluated and documented wetlands in these areas on August 14-17, and August 24 -25, 2023. Several wetland delineation and permitting projects have been previously completed for Keetac; this work supplements the facility's existing wetland inventory in preparation for additional permitting efforts. Section 3.4.1 of this document describes the additional wetlands delineated in 2023.

This report provides the results of the wetland delineation and functional assessment, and includes general environmental information (Section 2.0), descriptions of the delineation methods and observations (Section 3.0), and a discussion of regulations and the administering authorities (Section 4.0). Wetland determination forms are included in Appendix A and photographs are included as Appendix B. A description of the functional assessment method is included as Appendix C. Historical aerial imagery is included in Appendix D. The Minnesota Joint Application for requesting wetland type confirmation, a delineation concurrence, and an approved jurisdiction determination is included as Appendix E.

2.0 General Environmental Setting

2.1 Site Description

The study area consists of a mix of land disturbed by mining and undeveloped forests and wetlands. Some portions of the undeveloped forests have been logged, historically and more recently. Portions of the study area have been disturbed by the construction of the adjacent tailings basin, including construction of roads, construction of the tailings basin outer berm, grading near the perimeter berm, and excavation of borrow material used to build the outer berm. The original study area consists of a 550-foot buffer from the toe of the tailings basin perimeter berm, encompassing approximately 498 acres (Figure 1). The water make-up line study area added in 2023 encompasses approximately 90 acres while the additional study areas located outside of the perimeter tailings basin added in 2023 encompass about 139 acres.

2.2 Topography and Geology

The study area is located south of the Laurentian Divide within the Nashwauk Uplands Ecological Subsection (212Lc) of the Laurentian Mixed Forest Province (MDNR, 2015). This subsection is characterized by glacial drift (of varying thickness) atop Precambrian bedrock that includes gneiss, granite, and metamorphosed volcanic and sedimentary rocks. Till plains, moraines, and outwash plains are common landforms in the vicinity. Soils were formed from glacial till and outwash sand and typically have a loamy cap with dense till at a depth of 20 to 40 inches. Native soil textures range from sandy loam to clay loam along with organic soils.

Ground elevations in the study area range from 1412 to 1514 feet above mean sea level (AMSL) for the study area (Figures 5-1 to 5-6).

2.3 Hydrology

The study area is located within the Mississippi River – Grand Rapids Watershed (major watershed #9) in Wetland Bank Service Area 5 and the St. Louis River Watershed (major watershed #3) in Wetland Bank Service Area 1 (Figure 1). Average annual precipitation at the closest weather station (Hibbing Airport) is 28.6 inches, based on the 1981-2010 WETS records from the Minnesota State Climatology Office website.

The MDNR Public Water Inventory (PWI) identifies three public watercourses. Hay Creek crosses through the south-central part of the study area and Welcome Creek entering the Study Area in the northwestern reaches, West Swan River running southerly east of the study area, and three unnamed public water basins (Reservoirs Number 6, Number 2, and Number 2 North) within the northwest part of the study area (Figure 1). The United States Geological Survey (USGS) National Hydrography Dataset (NHD) identifies two additional drainageways south of the study area, one draining to Hay Creek and the other draining to West Swan River. A review of topography and aerial imagery indicates that several wetlands extend outside of the study area into other wetlands or waters.

2.4 National Wetlands Inventory

The National Wetlands Inventory (NWI) was developed by the U. S. Fish and Wildlife Service (USFWS) in the late-1970s, based primarily on interpretation of aerial photographs. The NWI dataset was updated in for Northeastern Minnesota in 2016. The NWI best portrays open water wetlands, but often underestimates wetlands with dense shrub or forest canopies. Despite these limitations, the NWI is recognized as a useful resource.

The NWI indicates the presence of several wetlands within the study area. The wetlands mapped included freshwater emergent, shrub, forested, and pond communities with many of the wetlands consisting of a combination of these communities. Figure 2 shows the NWI, and Table 2 provides a general key to wetland types.

2.5 Soils

Soil data for the study area were obtained from the NRCS Web Soil Survey (2023). Approximately 60 percent of the study area soils are mapped as native, with the remaining 40 percent consisting of disturbed soils altered by mining activities.

Eighteen soil map units were identified in the evaluation area, including:

- 544, Cathro muck, occasionally ponded, 0 to 1 percent slopes;
- 549, Greenwood peat;
- 619, Keewatin silt loam;
- 797, Mooselake and Lupton mucky peats;
- 995, Seelyeville-Seelyeville, ponded, complex, 0 to 1 percent slopes;
- 1050, Tailings basin;
- 1003B, Udorthents, loamy (cut and fill land);
- 1043C, Udorthents, nearly level to rolling;
- 622B, Nashwauk fine sandy loam, 1 to 10 percent slopes;
- A1B, Eagleview-Menahga complex, 1 to 8 percent slopes;
- B27A, McQuade-Buhl complex, 0 to 3 percent slopes;
- B28B, Buhl loam, 1 to 5 percent slopes;
- B32A, McQuade-Dora, depressional-Fayal, depressional, complex, 0 to 2 percent slopes;
- B33A, Mcquade-Fayal, depressional, complex, 0 to 2 percent slopes;
- B67A, Rifle soils, hibbing catena, 0 to 1 percent slopes;
- 1044, Slickens;
- 995, Seelyeville-Seelyeville, ponded, complex, 0 to 1 percent slopes; and
- W, Water

Table 3 lists each soil series, hydric rating, drainage classes, and percent abundance within the study area. Approximately 91 percent of the study area is mapped with soils classified predominantly as non-hydric, while 9 percent of the study area is mapped with soils classified as 95 percent hydric or higher. The remaining soils are classified as 60 percent hydric. Figure 3 shows the distribution of soil series in the vicinity of the study area.

2.6 Land Use and Vegetation

The study area is located on private land, where the most significant land use has been mining and logging. The MDNR's 2018 Mine Features dataset shows the tailings basin adjacent to the study area and a series of reservoirs within the northwest portion of the study area (Figure 4).

Pre-settlement vegetation primarily included aspen-birch forests and conifer bogs and swamps.

3.0 Wetland Delineation

3.1 Wetland Delineation Methods

Barr delineated and classified wetlands within the study area in August of 2021 and amended one wetland boundary in September of 2022. Additional wetlands were documented in August 2023 in additional areas identified through project planning. The wetland delineations were conducted according to guidance from the USACE including the Routine On-Site Determination Method as specified in the *1987 U.S. Army Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE, 2012).

Prior to conducting the field delineation, numerous sources of existing information were gathered and reviewed to evaluate wetlands and surficial connections to waterways. Aerial photographs and other data were compiled for the site, which included:

- MDNR elevation data (2-foot contours and hillshade raster images) (2011)
- MDNR mining features (2018)
- MDNR PWI data
- St. Louis County Imagery (2016, 2019)
- U. S. Department of Agriculture (USDA) - Farm Services Administration (FSA) natural color aerial photographs and color-infrared imagery (2017, 2015, 2013, 2010, 2008, and 2003)
- USDA - NRCS Soil Survey data for St. Louis County including attributes for the hydric soil map units
- USFWS NWI data
- USGS 7.5-minute (1:24,000 scale) quadrangle map
- USGS NHD (1:24,000) compilation of perennial/intermittent flow types for rivers, streams, ditches, etc.
- USGS black and white aerial photographs (1991)
- Previous Keetac wetland delineation and monitoring data.

Using the data described above, preliminary wetland mapping was completed at a scale of 1:1,200 (1 inch = 100 feet) or larger, using ArcView© 10.8 Geographic Information System (GIS) software. Areas with any of the following characteristics were mapped as wetlands:

- Areas previously mapped as National Wetlands Inventory (NWI) wetlands
- Areas exhibiting a signature for inundation or surface saturation
- Depressional areas with concave slopes, either linear or fully enclosed (potholes, swales, etc.)
- Areas where the topographic contours indicated lower elevations, flat slopes (contour lines are widely spaced), or a drainageway.

In general, public datasets such as the NWI were mapped at a larger scale and are useful for identifying large or open-water wetlands but are not sufficient for many of the smaller, less obvious wetland areas. The most useful datasets are the high-resolution topography data (2-foot contour elevation lines and hillshade maps) derived from LiDAR and high-resolution aerial photography.

When conducting the field delineation, sample sites were established in both wetland and upland areas, and observations were recorded electronically with Ecobot software in 2021 and BioApp software in 2022 and 2023. Ecobot (2022) and BioApp (Bioapp Incorporated, 2021) are applications designed to aid wetland delineators in collecting, analyzing, and organizing field data. Information including, LRR/MLRA, NRCS soil data, NWI data, wetland indicator status, and vegetation calculations are automatically generated once the data is entered into the application. Additionally, the applications provide suggested hydric soil and hydrology indicators which are reviewed for applicability. The auto-populated, suggested, and manually entered data within the application is then exported to a wetland determination data form (Appendix A) for the project. Once the data is exported, the wetland determination data forms are reviewed to ensure the accuracy of the information presented within the form.

Data were collected for soils, vegetation, and hydrology at each sample site. Soils were reviewed by placing borings in and around wetlands to a depth of at least 24 inches below the ground surface or until rock or coarse fragments impeded the boring. Representative soil samples from each boring were examined for color, texture, and the presence of hydric soil indicators. Soil colors (e.g., 7.5YR 4/2, etc.) were determined using Munsell® soil color charts, and soil textures were classified by feel. The NRCS hydric soil indicators (Version 7.0, 2010) were used to identify hydric soils. Hydrologic conditions were evaluated at each sample site. Plant species at each sample site were identified, and percent areal cover was estimated. Dominant species were determined, with the aid of Ecobot and BioApp applications using the 50/20 rule, and the corresponding wetland indicator status of each plant species was recorded using the current National Wetland Plant List (USACE, 2020). A determination of hydrophytic vegetation status was made using the rapid test, dominance test, and prevalence index as calculated by Ecobot and BioApp applications. Photographs were collected of the study area to document site conditions (Appendix B).

The majority of the field work was completed during the 2021 and 2023 growing seasons, under drier than normal conditions but were generally favorable for wetland delineation. Although some wetland areas lacked inundation or saturation within the upper 12 inches of the ground surface, evidence of wetland hydrology indicators was observable in all wetland areas. Additional area was added to one wetland in 2022 under wetter than normal climatic conditions and both primary and secondary hydrology indicators were observed.

Wetland boundaries were mapped in the field using a Trimble 7x Global Positioning System (GPS) Unit capable of recording positions with sub-foot horizontal accuracy. Delineated wetlands were classified using the USFWS Circular 39 System (U.S. Fish and Wildlife, 1956), the USFWS Cowardin System (Cowardin et al., 1979), and the Eggers and Reed Plant Community Classification System (Eggers and Reed, 1997). Tables 4a, 4b and Figures 6-1 to 6-6 show the dominant Eggers and Reed Plant Community Types, and Tables 5a and 5b includes the subdominant plant community types. A comparison of the various classification systems is provided in Table 2.

3.2 Functional Assessment Methods

Barr used an abbreviated version of the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.4* (MNRAM) to assess the functions and values of the wetlands observed within the

study areas. A summary of the assessment method is included as Appendix C and the assessment results for each wetland are included in Table 5.

3.3 Antecedent Precipitation

Precipitation data were analyzed in comparison to the statistical climatic WETS table data developed by the NRCS specifically for evaluating climatic normalcy in conducting wetland delineations. Gridded precipitation data were downloaded from the Minnesota Climatology Working Group (2021) website and used as a surrogate for on-site precipitation measurements.

The initial delineation was conducted on August 2-4 and 13, 2021. When evaluated using the NRCS method, precipitation data for the three prior months (May through July) indicate drier than normal conditions in all months (Table 1a). Using the NRCS analysis method, Barr determined that hydrologic conditions were drier than normal at the time of the delineation. The U. S. Drought Monitor indicated that the study area was in a severe drought on August 3 and 10 and in an extreme drought on August 17.

During the September 2022 site visit, precipitation data for the three prior months (June through August) indicate normal conditions in June and wetter than normal conditions in July and August (Table 1b). Using the NRCS analysis method, Barr determined that hydrologic conditions were wetter than normal at the time of the September 2022 site visit.

The August 2023 wetland delineation precipitation data for the three prior months (May through July) indicate drier than normal conditions in May, June, and July (Table 1c). Using the NRCS analysis method, the climatic conditions scored a 6 out of 18 and Barr determined that hydrologic conditions were drier than normal at the time of the August 2023 supplemental wetland delineation.

3.4 Site Observations

Barr delineated wetlands within the original exterior tailings basin project area (498 acres) and the supplemental areas (229 acres) and the documented wetlands are shown on (Figures 5-1 to 5-8 and 6-1 to 6-8). Observations and amendments to the 2021 Keetac ETB wetland delineation are summarized below, and wetlands documented within the additional areas are described in Section 3.4.1. Wetland Determination Data Forms are included in Appendix A and representative photographs are included in Appendix B. The delineated wetlands are summarized in Tables 4 and 5.

Wetland KETB-01

Wetland KETB-01 is approximately 0.01 acre in size, and is a fresh (wet) meadow community (Figure 6-1). Dominant vegetation includes speckled alder (*Alnus incana* – FACW), pussy willow (*Salix discolor* – FACW), cottongrass bulrush (*Scirpus cyperinus* – OBL), meadow horsetail (*Equisetum pratense* – FACW), and fowl blue grass (Poa palustris – FACW). Soils are mineral and met the hydric soil indicator for depleted matrix. Wetland hydrology was observed in the wetland as secondary indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed in an area that was disturbed as a result of the construction of the perimeter berm of the tailings basin. In the 1976 and 1981 aerial photographs, it appears the area around the wetland was graded (Figures D2-D3, Appendix D). Historically, this area was an upland forest located on a ridge above Welcome Creek. The original 1952 U.S. Geological Survey (USGS) quadrangle map (Figure D7, Appendix D), which was created prior to construction of the tailings basin, shows that the area of Wetland KETB-01 was located near the top of a ridge on a 10 percent slope where no wetland historically could have existed. Despite a high rating for vegetative diversity, the wetland is rated medium for upland condition and wildlife habitat and low for outlet configuration and public value. The wetland condition overall is rated medium due to the surrounding disturbances from past mining activities (Table 5a). This wetland does not extend outside of the study area. Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with plots SP-01W and SP-02U (Appendix A) and photograph 1 (Appendix B).

Wetland KETB-02

Wetland KETB-02 is approximately 0.10 acre in size and consists of an alder thicket community (Figure 6-1). Dominant vegetation included speckled alder. Soils are mineral, with some reddish soils, and met the hydric soil indicator for red parent material, but the soils represent fill material. At the time of observation, sparsely vegetated concave surface and water stained leaves were observed in the wetland as well as the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that has formed as a result of mining activity in the area. In the 1976 and 1981 aerial photographs, a road can be seen where KETB-02 currently exists (Figures D2-D3, Appendix D). The wetland formed on an old road adjacent to the tailings basin perimeter road. The wetland slopes to the south and is impounded on the southern edge by a berm. Historically, this area was an upland forest located on the slope of a ridge above Welcome Creek with 6 percent slopes (Figure D7, Appendix D). Vegetative diversity, wildlife habitat, and upland condition are rated medium, while outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). This wetland does not extend outside of the study area. Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with plots SP-03W and SP-04U (Appendix A) and photograph 2 (Appendix B).

Wetland KETB-03

Wetland KETB-03 is approximately 1.67 acres in size and consists of an alder thicket community (Figure 6-1). Dominant vegetation includes paper birch (*Betula papyrifera* – FACU), black willow (*Salix nigra* – OBL), speckled alder, smooth scouring-rush (*Equisetum laevigatum* – FACW), and spotted touch-me-not (*Impatiens capensis* – FACW). Wetland boundaries are distinct.

Soils consist of a thin layer of mucky modified loamy clay over a sandy clay loam and met the hydric soil indicators for depleted below dark surface, loamy mucky mineral, and depleted matrix. Hydrology was observed as saturation at the ground surface with a water table at one inch below the ground surface and water-stained leaves. The hydrology within the wetland appears to be influenced by a seep along the perimeter berm of the reclaim pond (Figure 6-1). The plot also met the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test.

This appears to be an incidental wetland that has formed as a result of mining activity in the area. In the 1976 and 1981 aerial photographs, a road can be seen where KETB-03 currently exists (Figures D2-D3, Appendix D). The wetland formed on an old road adjacent to the tailings basin perimeter road. Historically, this area was an upland forest located on a ridge slope above Welcome Creek with a 10 percent slope (Figure D7, Appendix D). Vegetative diversity is rated high, while wildlife habitat and upland condition are rated medium, and outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). This wetland does not extend outside of the study area. The wetland slopes to the north and west and outlets into Wetland KETB-04. Wetland KETB-04 is located at the fringe of Keetac's Reservoir 6. Reservoir 6 outlets to the north via a channel into Reservoir 2. Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with plots SP-05W and SP-06U (Appendix A), and photograph 3 (Appendix B).

Wetland KETB-04

Wetland KETB-04 is 30.42 acres in size, including 18.39 acres of deep marsh community (KETB-04a) and 12.03 acres of deepwater habitat (KETB-04b) delineated within the study area but is part of the larger Reservoir 6 utilized in the Keetac tailings basin operation (Figure 6-1) and is also identified as PWI basin 31122900 (Figure 1). The deepwater habitat was mapped as areas approximated to have depths greater than 9 feet, to ensure they meet the BWSR guidance of 8.2 feet given that the historic contours are 10 foot intervals. Dominant vegetation in the deep marsh community includes hybrid cat-tail (*Typha X glauca* – OBL) and reed canary grass (*Phalaris arundinacea* – FACW). Wetland boundaries are distinct.

Soils consist of a thin layer of mucky modified loamy clay over loamy sand and met the hydric soil indicator for redox dark surface. Hydrology was observed as saturation at 10 inches below the ground surface, water marks, and water-stained leaves. The water marks indicated that water levels in this area are generally much higher but were low due to time of year and the abnormally dry conditions. The wetland also met the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

Wetland KETB-04 is located within and along the fringe of Keetac's Reservoir 6. Much of this wetland formed when Welcome Creek was impounded between 1961 and 1972 to develop Reservoir 6 (Figures D1-D2, Appendix D). Portions of this area were mapped as historical wetland prior to the impoundment (Figure D7, Appendix D), at which time the wetland varied in elevation from below 1410 to about 1420. Currently, water levels in Reservoir 6 are managed at approximately elevation 1434, about 14-24 feet

higher than the historic wetland. Historic wetland within the currently delineated Wetland KETB-04 was mapped based on the historic quad map and the 1961 aerial photos. A total of 9.65 acres of Wetland KETB-04 were present prior to the Welcome Creek impoundment and 15.70 acres are incidental due to the formation of wetland from the Welcome Creek impoundment within non wetland (Figure 6-1). Wildlife habitat and upland condition are rated medium, and vegetative diversity, outlet configuration, and public value are rated low with an overall condition rating of low (Table 5a). The portion of wetland identified is the fringe of Reservoir 6 which extends outside the study area and outlets to the north via a channel and into Reservoir 2. Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-04 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-07W and SP-08U (Appendix A), and photograph 4 (Appendix B).

Wetland KETB-05

Wetland KETB-05 is approximately 0.48 acre in size and is a hardwood swamp community (Figure 6-1). Dominant vegetation includes black ash (*Fraxinus nigra* - FACW, fowl manna grass (*Glyceria striata* – OBL), and late goldenrod (*Solidago gigantea* – FACW). Soils are mineral, reddish in color, and met the hydric soil indicator for red parent material. No direct hydrology was observed but the wetland met the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. Historically, the area of Wetland KETB-05 was the relatively flat ridge draining east and west to natural wetland areas (Figure D7, Appendix D) The perimeter berm of reclaim pond was constructed adjacent to Wetland KETB-05 between 1976 and 1981 (Figures D2-D3, Appendix D). In addition, fill was placed along the west side of the reclaim pond berm with several ditches constructed to allow water to drain away from the berm (Figure D3, Appendix D). The wetland appears to have formed in that ditch feature adjacent to the tailings basin. Vegetative diversity, wildlife habitat, and upland condition are rated medium, and outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). It appears that Wetland KETB-05 could discharge to the west via overland flow into Wetland KETB-07 and into Reservoir 2, but there is no defined channel. Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions for this wetland are documented with plots SP-09W and SP-10U (Appendix A), and photograph 5 (Appendix B).

Wetland KETB-06

Wetland KETB-06 is approximately 0.04 acre in size and is a shrub-carr community (Figure 6-1). Dominant vegetation includes balsam poplar (*Populus balsamifera* – FACW), paper birch, quaking aspen (*Populus tremuloides* – FAC), speckled alder, dwarf red raspberry (*Rubus pubescens* – FACW) and common red

raspberry (*Rubus idaeus* – FAC). Soils consist of loamy sand and met the hydric soil indicator for depleted matrix. At the time of delineation, no direct hydrology indicators were observed, but met the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. In the 1981 aerial photograph, the area of Wetland KETB-06 appears to have been graded as part of the reclaim pond berm construction (Figure D3, Appendix D). The wetland appears to have formed in a depression within the graded area adjacent to the reclaim pond. Historically, the area of Wetland KETB-06 was a relatively flat ridge (Figure D7, Appendix D) with no evidence of wetland features (Figure D1, Appendix D). Vegetative diversity is rated high, wildlife habitat and upland condition are rated medium, while outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-11W and SP-12U (Appendix A) and photograph 6 (Appendix B).

Wetland KETB-07

Wetland KETB-07 is 27.38 acres in size, of which approximately 1.04 acres is within the study area and consists of hardwood swamp community (Figure 6-1). Dominant vegetation includes black ash, paper birch, quaking aspen, speckled alder, meadow horsetail, fowl manna grass, and woodland horsetail (*Equisetum sylvaticum* – FACW). Soils are mineral and met the hydric soil indicator for redox dark surface. At the time of delineation, saturation was observed at 12 inches below ground surface with a water table at 20 inches below ground surface. The secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The 1.04 acre portion of Wetland KETB-07 lying within the study area appears to be incidental, formed as a result of grading activity in the area. The remaining 26.34 acres of Wetland KETB-07 appears to be predominantly naturally occurring. In the 1981 aerial photograph, grading is apparent along the west side of the reclaim pond berm with two drainage ditches allowing drainage to the west away from the berm (Figure D3, Appendix D). The wetland appears to have formed in those ditch features adjacent to the tailings basin. Historically, the portion of Wetland KETB-07 within the study area was a ridge line between wetland complexes to the west and east (Figure D7, Appendix D). Vegetative diversity and wildlife habitat are rated high, outlet configuration and upland condition are rated medium, while public value is rated low with an overall condition rating of medium (Table 5a). The wetland extends outside of the study area to the west and outlets into a larger wetland complex adjacent to Reservoir 2. Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-07 was updated to account for the additional project area.

Site conditions are documented with SP-13W and SP-14U (Appendix A), and photograph 7 (Appendix B).

Wetland KETB-08

Wetland KETB-08 is approximately 0.22 acre in size and consists of a hardwood swamp community (Figure 6-1). Dominant vegetation includes quaking aspen, black ash, and sensitive fern (*Onoclea sensibilis* – FACW). Soils are mineral and met the hydric soil indicator for redox dark surface. At the time of delineation, no direct hydrology was observed but the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

This is a native wetland located in an enclosed depression, within an area that does not appear to have been significantly disturbed during tailings basin construction, but adjacent to historical grading (Figures D2-D5). The historic quad map (Figure D7, Appendix D) shows the wetland in a relatively flat sloped area (~3 percent slopes) near the base of a hill where wetland development would be plausible within a depressional area. The wetland is rated high for all wetland functions evaluated, except vegetative diversity (medium) and public value (low), with an overall rating of high (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-15W and SP-16U (Appendix A), and photograph 8 (Appendix B).

Wetland KETB-09

Wetland KETB-09 is approximately 0.19 acre in size and consists of a fresh (wet) meadow community (Figure 6-1). Dominant vegetation includes black ash, pussy willow, rattlesnake manna grass (*Glyceria canadensis* – OBL), and Canada bluejoint (*Calamagrostis canadensis* – OBL). Soils are mineral and met the hydric soil indicators for depleted below dark surface and depleted matrix. At the time of delineation, no direct hydrology was observed but the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

This is a native wetland located in an enclosed depression, within an area that does not appear to have been significantly disturbed during tailings basin construction, but adjacent to historical grading (Figures D2-D5), similar to Wetland KETB-08. The historic quad map (Figure D7, Appendix D) shows the wetland in a relatively flat sloped area (~3 percent slopes) near the base of a hill where wetland development would be plausible within a depressional area. The wetland is rated high for all wetland functions evaluated, except public value, which is rated low, with an overall rating of high (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-17W and SP-16U (Appendix A) and photograph 9 (Appendix B).

Wetland KETB-10

Wetland KETB-10 is approximately 0.77 acre in size and consists of a shallow marsh community (Figure 6-1). Dominant vegetation includes grey willow (*Salix bebbiana* – FACW) and narrow-leaf cat-tail (*Typha angustifolia* – OBL). Soils consisted on mucky peat over sandy loam and loamy sand and met the hydric soil indicator for depleted matrix. Wetland hydrology within the wetland consisted of saturation at 20 inches below ground surface and also met the secondary indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of excavation activity in the area as evidenced by the 1976 and 1981 aerial photographs (Figures D2-D3, Appendix D). This area was excavated for borrow material used to build the tailings basin perimeter berm The wetland appears to have developed as a result of these activities. Historically, the area of Wetland KETB-10 was on the west slope of a ridge line with 14 percent slopes that would not have supported wetland (Figure D7, Appendix D). Wildlife habitat and upland condition are rated medium, while vegetative diversity, outlet configuration and public value are all rated low with an overall condition rating of low (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with plot SP-18W and SP-19U (Appendix A), and photograph 10 (Appendix B).

Wetland KETB-11

Wetland KETB-11 is a 6.72 acre deep marsh community, of which approximately 3.37 acres lies within the study area (Figure 6-2). Dominant vegetation includes narrow-leaf cat-tail and coon's-tail (*Ceratophyllum demersum* – OBL). Soils consisted of mucky peat over loamy sand and met the hydric soil indicator for 5 cm mucky peat or peat. At the time of delineation, inundation of 3 inches was observed. In addition water marks and the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed in an area that was graded as part of the initial tailings basin perimeter berm construction and subsequent construction efforts. Evidence of grading in the eastern part of Wetland KETB-11 was apparent in the 1976 and 1981 aerial photographs, at which time there was a road running through the western part (Figures D2-D3, Appendix D). By 1991, the western part was completely graded (Figure D5, Appendix D). Historically, this area was an upland forest and cleared area sitting about 10 feet above mapped wetlands to the west (Figure D7, Appendix D). The wetland was rated high for outlet configuration and wildlife habitat, medium for vegetative diversity and upland condition, and low for public value with an overall value of medium (Table 5a). This wetland extends outside of the study area to the west and outlets into Wetland KETB-07, which is located at the fringe of Reservoir 2 (Figures 6-1 and 6-2). Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with plot SP-20W and SP-21U (Appendix A), and photograph 11 (Appendix B).

Wetland KETB-12

Wetland KETB-12 is a 6.14 acre wetland comprised of shallow marsh and shrub-carr communities, of which approximately 1.22 acres lies within the study area (Figure 6-2). Dominant vegetation includes nodding burr-marigold (*Bidens cernua* – OBL), broad-leaf cat-tail (*Typha latifolia* – OBL), and bearded sedge (*Carex comosa* – OBL). Soils consist of mucky peat over mucky loam and met the hydric soil indicator for loamy mucky mineral. Hydrology was observed as saturation at the ground surface with a

water table at 1 inch below the ground surface and water marks. The wetland also met the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

Wetland KETB-12 appears to be partially incidental and partially native. The eastern part of the wetland is located in a historic depression (Figure D7, Appendix D) with a pond feature evident in the 1976 aerial photo before any apparent disturbance was conducted (Figure D2, Appendix D). By 1981, the entire western part of the wetland had been graded as part of the tailings basin perimeter berm construction (Figure D3, Appendix D), which is still apparent in 1991 (Figure D5, Appendix D). A total of 2.40 acres of Wetland KETB-12 was determined to be natural, of which 1.18 acres lies within the study area. A total of 3.74 acres was determined to be incidental, of which 0.04 acre lies within the study area. The wetland was rated high for vegetative diversity and wildlife habitat, medium for outlet configuration and upland condition, and low for public value with an overall value of medium (Table 5a). This wetland extends outside of the study area to the west and outlets into a wetland located at the fringe of Reservoir 2. Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions for this wetland are documented with plots SP-22W and SP-23U (Appendix A), and photograph 12 (Appendix B).

Wetland KETB-13

Wetland KETB-13 is approximately 0.05 acre in size and is a shrub-carr community (Figure 6-2). Dominant vegetation includes speckled alder, balsam poplar, and Canada bluejoint. Soils consist of loam over clay loam that are reddish in color and met the hydric soil indicator for redox depressions. No direct hydrology was observed, but the wetland met the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. In the 1976 and 1981 aerial photographs, the area of the wetland appears to have been graded (Figures D2-D3, Appendix D). The area of Wetland KETB-13 is partially located within a historic depression (Figure D7, Appendix D), but the 1948 aerial photo of the area shows no wetland signatures, therefore the wetland appears to have developed in non-wetland. Vegetative diversity is rated high, upland condition and wildlife habitat are rated medium, while outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-24W and SP-25U (Appendix A), and photograph 13 (Appendix B).

Wetland KETB-14

Wetland KETB-14 is approximately 1.31 acre in size and consists of a shallow marsh community (Figure 6-2). Dominant vegetation includes narrow-leaf cat-tail and arrow-leaf tearthumb (*Persicaria sagittatta* – OBL). Soils consist of loamy sand over clay loam over loamy sand and met the hydric soil indicator for depleted matrix. Saturation was observed at 18 inches below ground surface, and secondary hydrology

indicators for geomorphic position, shallow aquitard, and FAC-neutral test were present. Wetland boundaries are distinct.

This is a native wetland located in an enclosed depression adjacent to an old road and an area that was graded as part of the tailings basin construction. The wetland is located in a historic depression (Figure D7, Appendix D), no grading was evident in any of the historic photos (Figures D1-D5), and evidence of inundation is evident in some historic photos. The wetland is rated high for wildlife habitat, medium for vegetative diversity, outlet configuration, and upland condition, and low for public value with an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-26W and SP-25U (Appendix A), and photograph 14 (Appendix B).

Wetland KETB-15

Wetland KETB-15 is a 0.19 acre fresh (wet) meadow community, of which 0.04 acre lies within the study area (Figure 6-2). Dominant vegetation includes speckled alder, meadow willow (*Salix petiolaris* – FACW), Canada bluejoint, and Tuckerman's sedge (*Carex tuckermanii* – OBL). Soils consist of sandy loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This is a native wetland located in an enclosed depression with no apparent historical disturbance (Figures D1-D7, Appendix D). The wetland is rated high for all wetland functions evaluated, except public values, including overall condition (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-15 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-27W and SP-28U (Appendix A), and photograph 15 (Appendix B).

Wetland KETB-16

Wetland KETB-16 is a 3.17 acre shallow marsh community, of which 1.31 acres lies within the study area (Figure 6-2). Dominant vegetation includes broad-leaf cat-tail and spotted touch-me-not. Soils consist of mucky loam over sand and met the hydric soil indicator for loamy mucky mineral. Hydrology was observed as saturation at 6 inches below ground surface and a water table at 12 inches below the ground surface. The secondary hydrology indicators for geomorphic position and FAC-neutral test were also observed. Wetland boundaries are distinct.

The wetland appears to be native and is located in an enclosed depression, adjacent to a road (Figures D1-D7, Appendix D). Some grading activity was conducted near the wetland in 1976 and 1981. The wetland appears to have become wetter from 1976 to 1981. The wetland is rated high for all wetland functions evaluated, except upland condition which is rated medium and public value which is rated low

(Table 5a). The overall wetland condition is rated high. Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-16 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-29W and SP-28U (Appendix A), and photograph 16 (Appendix B).

Wetland KETB-17

Wetland KETB-17 is a 4.0 acre deep marsh community, of which 1.84 acres lies within the study area (Figure 6-2). Dominant vegetation includes reed canary grass and soft-stem club-rush (*Schoenoplectus tabernaemontani* – OBL). Soils consist of mucky loam over sand and met the hydric soil indicator for loamy mucky mineral. Hydrology was observed as saturation and a water table at the ground surface and the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

The wetland appears to be native and is located in an enclosed depression, adjacent to a road (Figures D.2-D.5, Appendix D). Some grading activity was conducted near the wetland in 1976 and 1981. The wetland appears to have become wetter from 1976 to 1981. The wetland is rated high for wildlife habitat, medium for vegetative diversity, outlet configuration, and upland condition, and low for public value with an overall condition rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-17 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-30W and SP-31U (Appendix A), and photograph 17 (Appendix B).

Wetland KETB-18

Wetland KETB-18 is a 42.0 acre coniferous bog community, of which 14.66 acres lies within the study area (Figure 6-2). Dominant vegetation includes tamarack (*Larix laricina* – FACW), speckled alder, yellow bluebead-lily (*Clintonia borealis* – FAC), and velvet-leaf blueberry (*Vaccinium myrtilloides* – FACW). Soils consist of mucky peat over mucky loam and met the hydric soil indicator for histic epipedon. Hydrology was observed as saturation at the ground surface with a water table at 8 inches below ground surface and the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct. Wetland boundaries are distinct.

The wetland appears to be native and is located in an enclosed depression, adjacent to roads and the tailings basin, but no direct disturbance during construction of the tailings basin (Figures D1-D7, Appendix D). The eastern part of this wetland was logged prior to 1976. Roads and the tailings basin were built in the area around the wetland but appear to have had little impact on the wetland as a whole. The wetland is rated high for vegetative diversity and wildlife habitat, medium for outlet configuration and

upland condition, and low for public value with an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-32W and SP-33U (Appendix A), and photograph 18 (Appendix B).

Wetland KETB-19

Wetland KETB-19 is 0.01 acre in size and consists of a fresh (wet) meadow community (Figure 6-2). Dominant vegetation included American elm (*Ulmus americana* – FACW), green ash (*Fraxinus pennsylvanica* – FACW), balsam poplar, porcupine sedge (*Carex hystericina* – OBL), and rattlesnake manna grass. Soils consist of loamy sand and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

The wetland appears to be native and is located in an enclosed depression with no apparent historical disturbance (Figures D1-D7, Appendix D). The wetland is rated high for all wetland functions evaluated, except public values (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-34W and SP-35U (Appendix A), and photograph 19 (Appendix B).

Wetland KETB-20

Wetland KETB-20 is a 12.82 acre shrub-carr community, of which 0.68 acre lies within the study area (Figure 6-2). Dominant vegetation includes black ash, American elm, speckled alder, American hazelnut (*Corylus americana* – FACU), and spotted touch-me-not. Soils consist of loam over sandy loam and met the hydric soil indicators for depleted matrix and redox dark surface. Hydrology was observed as the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

The wetland is located in a depression and appears to be predominantly native, but the eastern lobe was completely graded by 1981 (Figure D3, Appendix D). The area of Wetland KETB-20 was historically fairly flat with approximately 1.5 percent slope and adjacent to a wetland to the south (Figure D7, Appendix D). The 1961 aerial photo, from before tailings basin construction appears to show wetland signatures in the western lobe, but no predominant signatures in the eastern lobe (Figure D1, Appendix D). Therefore, it appears that 3.10 acres of Wetland KETB-20 is incidental, all lying outside of the study area, and 9.72 acres is native wetland, including 0.68 acre within the study area. The wetland is rated high for all wetland functions evaluated, except public values (Table 5a). This wetland extends outside of the study area to the south and is contiguous with a large wetland complex that outlets into Hay Creek, ultimately discharging into Swan Lake and the Mississippi River.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-27 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-36W and SP-35U (Appendix A), and photograph 20 (Appendix B).

Wetland KETB-21

Wetland KETB-21 is approximately 0.68 acre in size and consists of a shallow marsh community (0.36 acre) and an alder thicket community (0.32 acre) (Figure 6-2). Dominate vegetation in the shallow marsh community includes pussy willow and bristly sedge (*Carex comosa* - OBL*)*. The soil profile consists of 18 inches of loam over clay loam. Redox features were observed starting 3 inches below the ground surface to a depth of at least 24 inches below the ground surface. The observed soil met the criteria for hydric soil indicator depleted matrix. Hydrology was observed as three inches of inundation. The shallow marsh community is bordered by the tailings basin perimeter road to the north and an area of higher elevation to the south, forming distinct boundaries.

Dominant vegetation in the alder thicket community includes speckled alder, cottongrass bulrush, and pointed broom sedge (*Carex scoparia* – FACW). Soils consist of clay loam and met the hydric soil indicators for depleted matrix. Hydrology was observed as the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries in this community are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. In the 1981 and 1989 aerial photographs, the area of the wetland appears to have been graded (Figures D3-D4, Appendix D). Historically, the area of Wetland KETB-21 was located on a shoulder slope (Figure D7, Appendix D), in an area of apparent upland, deciduous forest with no evidence of wetland conditions (Figure D1, Appendix D). Vegetative diversity is rated high, upland condition and wildlife habitat are rated medium, while outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-37W, SP-38U, SP-90W, and SP-91U (Appendix A), and photographs 21 and 56 (Appendix B).

Wetland KETB-22

Wetland KETB-22 is approximately 0.08 acre in size and consists of a shallow marsh community (Figure 6-2). Dominant vegetation includes narrow-leaf cat-tail and nodding burr-marigold. Soils consist of mucky peat over clay loam and met the hydric soil indicators for histic epipedon, depleted below dark surface, and depleted matric. Hydrology was observed as saturation and a water table at the ground surface and the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. In the 1981 and 1989 aerial photographs, the area of the wetland appears to have been graded (Figures D3-D4, Appendix D). Historically, the area of Wetland KETB-22 was located on a shoulder slope (Figure D7, Appendix D), in an area of apparent upland, deciduous forest with no evidence of wetland conditions

(Figure D1, Appendix D). Upland condition and wildlife habitat are rated medium, while vegetative diversity, outlet configuration and public value are rated low with an overall condition rating of low (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-39W and SP-38U (Appendix A).

Wetland KETB-23

Wetland KETB-23 is a 15.0 acre wetland comprised of alder thicket, shallow marsh, and deep marsh communities, of which 10.01 acres lies within the study area (Figure 6-2). Dominant vegetation in the alder thicket includes speckled alder, dwarf red raspberry, and lakebank sedge (*Carex lacustris* – OBL). Soils consist of mucky peat and met the hydric soil indicator for histic epipedon. Hydrology was observed as saturation at the ground surface and a water table at 6 inches below the ground surface. The secondary wetland hydrology indicators for geomorphic position, microtopographic relief, and FAC-neutral test were also observed. Wetland boundaries are distinct.

Wetland KETB-23 appears to be a combination of native and incidental wetland. In the 1981 to 1991 aerial photographs, the shallow and deep marsh communities had been excavated as part of the tailings basin construction. (Figures D3-D5, Appendix D). The alder thicket community and the east half of the deep marsh community show wetland signatures on historic photos (Figure D1, Appendix D). The total delineated wetland includes 2.40 acres of incidental wetland, of which 1.56 acres lies within the study area. Wetland KETB-23 also includes 14.10 acres of natural wetland, in total, of which 9.09 acres lies within the study area. The wetland is rated high for all functions except public value, which is rated low (Table 5a). The wetland appears to outlet to the south outside of the study area into a large wetland complex. Wetland KETB-23 is contiguous with a wetland complex that flows into Hay Creek and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with SP-40W and SP-41U (Appendix A), and photograph 22 (Appendix B).

Wetland KETB-24

Wetland KETB-24 is a 3.18 acre shallow marsh community, of which 2.00 acres lies within the study area (Figure 6-2). Dominant vegetation includes narrow-leaf cat-tail and bearded sedge. Soils consisted of mucky loam over loamy sand and met the hydric soil indicator for depleted below dark surface. Hydrology was observed as 2 inches of inundation and met the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. In the 1981 and 1989 aerial photographs, the area of the wetland appears to have been graded (Figures D3-D4, Appendix D). Historically, the area of Wetland KETB-24 was a forested ridge line with no wetland signatures (Figures D1 and D7, Appendix D). Wildlife habitat was rated high, vegetative diversity and upland condition are rated medium, while outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). The wetland appears to flow south outside of the study area via overland flow to Hay Creek and ultimately into Swan Lake and the Mississippi River.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-24 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-42W and SP-43U (Appendix A), and photograph 23 (Appendix B).

Wetland KETB-25

Wetland KETB-25 is a 36.37 acre alder thicket community, of which 3.82 acres lies within the study area (Figure 6-3). Dominant vegetation includes quaking aspen, speckled alder, pussy willow, spotted touch-me-not, woodland horsetail and lakebank sedge. Soils consist of silt loam over loam and met the hydric soil indicator for depleted matrix. At the time of delineation, hydrology was observed as two inches of inundation and the secondary wetland hydrology indicators for geomorphic position, crayfish burrows, and FAC-neutral test were observed. Wetland boundaries are distinct.

Portions of the wetland appears to be incidental, including the area within the study area, while other parts appear to have been historical, native wetland. that formed as a result of grading activity in the area. Between 1981 and 1991 (Figures D3-D5, Appendix D), all but the south-central part of the wetland appears to have been graded or impounded by grading activities associated with tailings basin construction. Historically, there was a road running through the eastern half of the current wetland footprint, the southern part of Wetland KETB-25 was located along Hay Creek, and the northern part extended upslope, approximately 20 feet higher in elevation (Figure D7, Appendix D). Prior to construction of the tailings basin, the 1961 and 1972 aerial photos show the presence of some wetland signatures in the flat floodplain areas on the north side of Hay Creek, but no evident wetland signatures in the northern part of the wetland, south of Hay Creek, or northeast of the junction between Hay Creek and the road (Figures D1-D2, Appendix D). Therefore, the central portion of Wetland KETB-25 appears to be a natural wetland and the remainder incidental, having formed as a result of tailings basin construction. A total of 14.15 acres of Wetland KETB-25 appear to be natural and 22.22 acres incidental, including the entire wetland within the study area. Vegetative diversity and wildlife habitat were rated high, outlet configuration and upland condition are rated medium, while public value is rated low with an overall condition rating of medium (Table 5a). The wetland outlets to the south outside of the study area and into Hay Creek. Hay Creek outlets into Swan Lake and the Mississippi River.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-27 was updated to account for the additional project area.

Site conditions are documented with SP-44W, SP-45U, SP23-94, and SP23-95 (Appendix A), and photograph 24 (Appendix B).

Wetland KETB-26

Wetland KETB-26 is a 33.49 acre shallow marsh community, of which 20.99 acres lies within the study area (Figure 6-3). Dominant vegetation includes speckled alder, Walter's sedge (*Carex striata* – OBL), and broad-leaf cat-tail. Soils consist mucky loam over silt loam and met the hydric soil indicators for thick dark surface and loamy mucky mineral. Hydrology was observed as saturation and a water table at the ground

surface and the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

The wetland is partially located in an apparent remnant of the Hay Creek floodplain, with the majority of the wetland disturbed by the tailings basin and excavation activity as evidenced in the 1989 and 1991 aerial photos (Figures D4-D5, Appendix D). Much of Wetland KETB-26 was historically farmland along Hay Creek, outside of a narrow floodplain, with no apparent wetland signatures (Figure D1, Appendix D). The narrow floodplain and a broader floodplain area in the northeastern part of the wetland show apparent wetland signatures (Figures D1, D2, and D7, Appendix D). The total delineated wetland includes 26.28 acres of incidental wetland, of which 14.21 acres lies within the study area. Wetland KETB-23 also includes 7.21 acres of natural wetland, in total, of which 6.78 acres lies within the study area. Vegetative diversity and wildlife habitat are rated high, outlet configuration is rated medium, and upland condition and public value are rated low with an overall condition rating of medium (Table 5a). The wetland is isolated by the road along its entire southern extent and has no surficial connection to other wetlands or waterways.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-26 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-46W, SP-47U, SP23-30, and SP23-31 (Appendix A), and photograph 25 (Appendix B).

Wetland KETB-27

Wetland KETB-27 is an 11.28 acre shallow marsh community, of which 1.90 acres lies within the study area (Figure 6-3). Dominant vegetation includes narrow-leaf cat-tail. Soils consist of mucky loam over sandy loam and met the hydric soil indicator for thick dark surface and loamy mucky mineral. Hydrology at the plot location was observed as inundation of two inches and the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading activity in the area. In the 1989 and 1991 aerial photographs, the area of the wetland appears to have been graded and excavated (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-27 was a forested ridge line located between two unnamed creeks with no wetland signatures evident (Figures D1 and D7, Appendix D). Wildlife habitat was rated high, while all other functions are rated low with an overall condition rating of low (Table 5a). The wetland is isolated by the road system surrounding it and has no surficial connection to other wetlands or waterways.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-27 was updated to account for the additional project area.

Site conditions for this wetland are documented with plots SP-48W and SP-49U (Appendix A), and photograph 26 (Appendix B).

Wetland KETB-28

Wetland KETB-28 is approximately 0.71 acre in size and consists of an alder thicket community (Figure 6-

3). Dominant vegetation includes speckled alder and fowl manna grass. Soils are silt loam, reddish in color, and met the hydric soil indicators for redox dark surface and red parent material. Hydrology was observed as the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental, formed as a result of ditching activity adjacent to the tailings basin berm and a road. Modifications to this area during the construction of the tailings basin are apparent in 1989 and 1991 (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-28 was on the western slope of a hill with forested cover and no evidence of wetland signatures (Figures D1, D2, and D7). The wetland was rated medium for vegetative diversity, upland condition, and wildlife habitat and rated low for outlet configuration and public value for an overall rating of medium (Table 5a). The wetland outlets across an old road and into Wetland KETB-29. Wetland KETB-29 outlets in Wetland KETB-27 which is isolated by the road system surrounding it and has no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-50W and SP-51U (Appendix A), and photograph 27 (Appendix B).

Wetland KETB-29

Wetland KETB-29 is a 3.04 acre shallow marsh community, of which 2.42 acres lies within the study area (Figure 6-3). Dominant vegetation includes narrow-leaf cat-tail. Soils consist of mucky loam over loamy sand and met the hydric soil indicator for loamy mucky mineral and depleted below dark surface. Hydrology at the plot location was observed as saturation and a water table at the ground surface and the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of excavation activity in the area. In the 1989 and 1991 aerial photographs, the area of the wetland appears to have been excavated (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-29 was on the western slope of a hill with forested cover and no evidence of wetland signatures (Figures D1, D2, and D7). All wetland functions were rated low except wildlife habitat which was rated high, with an overall condition rating of low (Table 5a). The wetland outlets into Wetland KETB-27 via a notch in an old road. Wetland KETB-27 is isolated by the road system surrounding it and has no surficial connection to other wetlands or waterways.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-29 was updated to account for the additional Study Area.

Site conditions for this wetland are documented with plots SP-52W and SP-53U (Appendix A), and photograph 28 (Appendix B).

Wetland KETB-30

Wetland KETB-30 is approximately 0.04 acre in size and consists of a shrub-carr community (Figure 6-3). Dominant vegetation includes pussy willow, cottongrass bulrush, and narrow-leaf cat-tail. Soils consist of reddish clay loam over reddish sand and met the hydric soil indicator for depleted matrix. Hydrology was

observed as the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that has formed as a result of excavation and grading activity in the area. In the 1989 and 1991 aerial photographs, the area of the wetland appears to have been graded and excavated (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-30 was on a ridge with forested cover and no evidence of wetland signatures (Figures D1, D2, and D7). The wetland was rated low for all functions (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-54W and SP-53U (Appendix A), and photograph 29 (Appendix B).

Wetland KETB-31

Wetland KETB-31 is approximately 0.04 acre in size and consists of a shrub-carr community (Figure 6-3). Dominant vegetation includes pussy willow, cottongrass bulrush, and Canada bluejoint. Soils consist of reddish clay loam and met the hydric soil indicator for red parent material. Hydrology was observed as the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that has formed as a result of excavation and grading activity in the area. In the 1989 and 1991 aerial photographs, this area was graded, excavated, and roads were constructed (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-31 was on a ridge with forested cover and no evidence of wetland signatures (Figures D1, D2, and D7). The wetland was rated medium for vegetative diversity and low for all other functions (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-55W and SP-56U (Appendix A), and photograph 30 (Appendix B).

Wetland KETB-32

Wetland KETB-32 is approximately 0.04 acre in size and consists of a shrub-carr community (Figure 6-3). Dominant vegetation includes pussy willow, cottongrass bulrush, and Canada bluejoint. Soils consist of sandy loam over reddish clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that has formed as a result of excavation and grading activity in the area. In the 1989 and 1991 aerial photographs, this area was graded, excavated, and roads were constructed (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-32 was on a ridge with forested cover and no evidence of wetland signatures (Figures D1, D2, and D7). The wetland was rated medium for vegetative diversity and low for all other functions (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-57W and SP-59U (Appendix A), and photograph 31 (Appendix B).

Wetland KETB-33

Wetland KETB-33 is a 4.28 acre deep marsh community, of which 2.67 acres lies within the study area (Figure 6-3). Dominant vegetation includes broad-leaf pondweed (*Potamogeton natans* – OBL) and grass-leaf arrowhead (*Sagittaria graminea* – OBL). Soils consist of sandy loam and met the hydric soil indicator for depleted matrix. Hydrology at the plot location was observed as inundation of 12 inches and the secondary hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of excavation activity in the area. In the 1989 and 1991 aerial photographs, the area of the wetland appears to have been excavated (Figures D4-5, Appendix D). Historically, the area of Wetland KETB-33 was on a ridge with forested cover and no evidence of wetland signatures (Figures D1, D2, and D7). Vegetative diversity and wildlife habitat were rated high, while outlet configuration, upland condition, and public value were rated low with an overall condition rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions for this wetland are documented with plots SP-58W and SP-59U (Appendix A), and photograph 32 (Appendix B).

Wetland KETB-34

Wetland KETB-34 is a 5.72 acre shallow marsh community, of which 5.41 acres lies within the study area (Figure 6-3). Dominant vegetation includes speckled alder, meadow willow, and narrow-leaf cat-tail. Soils consist of mucky loam over sandy loam over clay loam and met the hydric soil indicators for depleted below dark surface, loamy mucky mineral, and depleted matrix. Hydrology at the plot location was observed as saturation at the ground surface with a water table at two inches below ground surface and the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading and excavation activity in the area. In the 1989 and 1991 aerial photographs, the majority of the wetland appears to have been graded, excavated, and affected by impoundment berms (Figures D4-D5, Appendix D). The southern portion of the wetland appears to have developed wetland characteristics as a result of beaver dam activity downstream. Historically, the area of Wetland KETB-34 was on a ridge with forested cover at the head of a drainage swale leading south, with no evidence of wetland signatures (Figures D1, D2, and D7). Wildlife habitat was rated high, while vegetative diversity and upland condition were rated medium and outlet configuration and public value were rated low with an overall rating of medium (Table 5a). The wetland is contiguous with a series of ponds and wetlands to the south discharging into Hay Creek, which outlets into Swan Lake and ultimately the Mississippi River.

Site conditions for this wetland are documented with plots SP-60W and SP-59U (Appendix A), and photograph 33 (Appendix B).

Wetland KETB-35

Wetland KETB-35 is a 5.82 acre wetland comprised of alder thicket and shallow marsh communities, of which 5.57 acres lies within the study area (Figures 6-3 and 6-4). Dominant vegetation within the alder thicket includes quaking aspen, pussy willow, speckled alder, three-seed sedge (*Carex trisperma* – OBL), and spotted touch-me-not. Dominant vegetation in the shallow marsh includes speckled alder, cottongrass bulrush, and giant manna grass (*Glyceria grandis* – OBL). Soils in the alder thicket consist of silt loam over sandy clay over sandy loam and met the hydric soil indicator for depleted matrix. Soils in the shallow marsh consist of sandy loam over sandy clay and met the hydric soil indicator for depleted matrix. Hydrology within the alder thicket was observed as the secondary hydrology indicators for stunted or stressed plants, geomorphic position, shallow aquitard, microtopographic relief, and FAC-neutral test. Hydrology within the shallow marsh was observed as water marks, algal mat or crust, and aquatic fauna as well as the secondary hydrology indicators for surface soil cracks, drainage patterns, geomorphic position, shallow aquitard, microtopographic relief, and FAC-neutral test. Wetland boundaries are distinct.

The alder thicket portion of the wetland appears to be native and is located in an enclosed depression. The shallow marsh portion of the wetland appears to be incidental, formed as a result of excavation in the area as observed in the 1989 and 1991 aerial photographs (Figures D4-D5, Appendix D). Historically, the alder thicket portion of the wetland was mapped as a depressional wetland on the 1952 USGS quadrangle map (Figure D7, Appendix D) while the shallow marsh area was located in a hummocky landscape. In the 1961 and 1972 aerial photos, the alder thicket portion of the wetland shows clear wetland signatures while the shallow marsh portion of the wetland appears to be upland forest with no wetland signatures (Figures D1-D2, Appendix D). The total delineated wetland includes 1.52 acres of incidental wetland, of which 1.50 acres lies within the study area. Wetland KETB-35 also includes 4.30 acres of natural wetland, in total, of which 4.07 acres lies within the study area. The wetland is rated high for vegetative diversity and wildlife habitat, medium for outlet configuration and upland condition, and low for public value for an overall rating of medium (Table 5a). There appears to be an outlet channel leading south and west from the central part of the wetland, discharging to an unnamed creek (Figure 5-4). That unnamed creek discharges into Hay Creek, which outlets into Swan Lake and ultimately the Mississippi River.

Site conditions for this wetland are documented with plots SP-61W, SP-62U, and SP-63W (Appendix A), and photograph 34 (Appendix B).

Wetland KETB-36

Wetland KETB-36 is approximately 2.26 acres in size and consists of an alder thicket and shallow marsh communities (Figures 6-4). Dominant vegetation within the alder thicket includes speckled alder, Canada bluejoint, and cottongrass bulrush. Soils in the alder thicket consist of loam over sandy loam over clay loam and met the hydric soil indicator for depleted matrix. Hydrology within the alder thicket was observed as the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of grading and excavation activity in the area. In the 1981 through 1991 aerial photographs, grading and excavation are apparent in the area of Wetland KETB-36 (Figures D3-D5, Appendix D). Historically, the wetland was located in a hummocky landscape (Figure D7, Appendix D). In the 1961 and 1972 aerial photos, the shallow marsh portion of the wetland shows apparent wetland signatures while the alder thicket portion of the wetland appears to be upland forest with no wetland signatures (Figures D1-D2, Appendix D). Vegetative diversity is rated high, wildlife habitat and upland condition are rated medium, and outlet configuration and public value are rated low with an overall condition rating of medium (Table 5a). It appears that Wetland KETB-36 discharges south through a swale to Wetland KETB-35 (Figure 5-4), which appears to outlet to an unnamed creek, and subsequently to Hay Creek, Swan Lake, and the Mississippi River.

Site conditions for this wetland are documented with plots SP-64W and SP-65U (Appendix A), and photograph 35 (Appendix B).

Wetland KETB-37

Wetland KETB-37 is approximately 1.34 acre in size and consists of a shrub-carr community (Figure 6-4). Dominant vegetation includes pussy willow, speckled alder, Canada bluejoint, and cottongrass bulrush. Soils consist of sandy loam over a reddish clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental, formed as a result of ditching activity adjacent to the tailings basin berm and a road. In the 1989 and 1991 aerial photographs, this area appears to be excavated as part of the tailings basin berm construction (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-37 ran across a hillslope (Figure D7, Appendix D), and was upland forest with no apparent wetland signatures (Figures D1-D2, Appendix D). The wetland was rated high for vegetative diversity, medium for upland condition and wildlife habitat, and rated low for outlet configuration and public value for an overall rating of medium (Table 5a). The wetland outlets into Wetland KETB-36 which outlets to Wetland KETB-35, thereby discharging to an unnamed creek and eventually to Hay Creek, Swan Lake, and the Mississippi River.

Site conditions are documented with SP-66W and SP-65U (Appendix A), and photograph 36 (Appendix B).

Wetland KETB-38

Wetland KETB-38 is a 17.08 acre alder thicket community, of which 2.27 acres lies within the study area (Figure 6-4). Dominant vegetation includes quaking aspen, pussy willow, speckled alder, lakebank sedge, and swamp red currant (*Ribes triste* – OBL). Soils consist of loam over sandy loam and met the hydric soil indicators for depleted matrix and redox dark surface. Hydrology at the plot location was observed as water stained leaves and the secondary hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

This appears to be a native wetland but has been impacted by grading and farming. The western part of the wetland lies within a natural swale while the eastern part is on a ridge (Figure D7, Appendix D). In the

1961 and 1972 aerial photographs, an active farm covers most of the eastern two-thirds of the wetland with no apparent wetland signatures while the western part is partially forested and shows wetland signatures (Figures D1-D2, Appendix D). In the 1981 aerial photograph, two apparent access roads had been constructed across the northern part of the wetland with a berm along the south side of each road (Figure 5-4) intercepting runoff from the north and directing it to the western part of the wetland. The northern road appears to be about 30 feet in width and the southern road appears to range from about 130 feet to 150 feet in width. The wetland does not appear to have been disturbed after that time, but as more runoff has been directed to the western part of the wetland over the years, the shallow marsh area has grown in size. The wetland was rated high for all functions except public value (Table 5a). The wetland discharges through a series of wetlands along an unnamed creek, eventually into the West Swan River. The West Swan River outlets into the St. Louis River and ultimately into Lake Superior.

Site conditions for this wetland are documented with plots SP-67W and SP-68U (Appendix A), and photograph 37 (Appendix B).

Wetlands KETB-39 and KETB-40

Wetlands KETB-39 and KETB-40 are approximately 0.13 acre and 0.06 acre in size, respectively, and consist of shrub-carr communities (Figure 6-4). The conditions of these wetlands is similar to that of Wetland KETB-37. Dominant vegetation includes pussy willow, speckled alder, Canada bluejoint, and cottongrass bulrush. Soils consist of sandy loam over a reddish clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetlands appear to be incidental, formed as a result of ditching activity adjacent to the tailings basin berm and a road. In the 1989 and 1991 aerial photographs, this area appears to be graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D). Historically, the area of Wetlands KETB-39 and KETB-40 was the top of a hill (Figure D7, Appendix D) with forest cover and no evidence of wetland signatures (Figures D1-D-3, Appendix D). The wetland was rated high for vegetative diversity, medium for upland condition and wildlife habitat, and rated low for outlet configuration and public value for an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-66W and SP-65U (Appendix A), and photographs 38 and 39 (Appendix B).

Wetland KETB-41

Wetland KETB-41 is a 10.83 acre alder thicket community, of which 8.56 acres lies within the study area (Figure 6-4). Dominant vegetation includes speckled alder, spotted touch-me-not, marsh horsetail (*Equisetum palustre* – FACW), and common red raspberry. Soils consist of silt loam over clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary hydrology indicators for geomorphic position, shallow aquitard, microtopographic relief, and FAC-neutral test. Wetland boundaries are distinct.

The wetland appears to be predominantly native, located partially within a depression swale, but has been impacted by farming and a road. Portions of the wetland were historically farmed and a road ran through the eastern part of the wetland (Figures D1-D3, Appendix D). The western part of the wetland was disturbed by tailings basin construction activities and removal of the road in 1989 and 1991 (Figures D4-D5, Appendix D). Historically, the area of Wetland KETB-41 was within a headwaters swale that drained southeasterly to the West Swan River (Figure D7, Appendix D). Wetland signatures are apparent in the 1961 to 1981 aerial photos within the western lobe and northwestern part, but not the remainder of the wetland (Figures D1-D3, Appendix D). The removal of the road, homestead, and driveway appear to have contributed to the development of a more extensive wetland area from the road east, than was present historically. Soils in that area are mapped as Buhl loam, which are classified as 15 percent hydric, which contributes to the likelihood that wetland developed as a result of the tailings basin construction. The total delineated wetland includes 1.75 acres of incidental wetland, all of which lies within the study area. Wetland KETB-41 also includes 9.08 acres of natural wetland, in total, of which 6.81 acres lies within the study area. The wetland is rated high for vegetative diversity, outlet configuration, and wildlife habitat, medium for upland condition, and low for public value with an overall rating of high (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate that Wetland KETB-41 drains southeasterly to the West Swan River which discharges to the St. Louis River and ultimately to Lake Superior.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-41 was updated to account for the additional project area. A narrow ditch that extends into the 2021 Study Area was identified and it positions was recorded.

Site conditions for this wetland are documented with plots SP-69W and SP-70U (Appendix A), and photograph 40 (Appendix B).

Wetland KETB-42

Wetland KETB-42 is approximately 0.02 acre in size and consists of a shrub-carr community (Figure 6-4). Dominant vegetation includes pussy willow, speckled alder, Canada bluejoint, and cottongrass bulrush. Soils consist of sandy loam over a reddish clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental, formed as a result of ditching activity adjacent to the tailings basin berm and a road. In the 1989 and 1991 aerial photographs, this area appears to be graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D). Historically, area of the wetland was adjacent to a road with no evidence of wetland conditions (Figures D1-D3, Appendix D). The wetland was rated high for vegetative diversity and rated low for all other functions, including overall condition (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are representative of conditions documented with SP-66W and SP-65U (Appendix A), and photograph 41 (Appendix B).

Wetland KETB-43

Wetland KETB-43 is approximately 0.41 acre in size and consists of a hardwood swamp community (Figure 6-5). Dominant vegetation includes quaking aspen, black ash, red maple, and dwarf red raspberry. Soils consist of loam and met the hydric soil indicator for depleted matrix. At the time of delineation, no direct hydrology was observed but the secondary wetland hydrology indicators for stunted or stressed plants, geomorphic position, microtopographic relief, and FAC-neutral test were observed. Wetland boundaries are distinct.

This is a native wetland located in an enclosed depression that was historically farmed as seen in the 1961 and 1972 aerial photographs (Figures D1-D2, Appendix D). While the historic photos don't show wetland signatures, there has been no landscape alterations in that area and it appears that the wetland developed naturally upon cessation of farming. The wetland is rated high for all wetland functions evaluated, except public value, which is rated low with an overall rating of high (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-71W and SP-72U (Appendix A), and photograph 42 (Appendix B).

Wetlands KETB-44 and KETB-45

Wetlands KETB-44 and KETB-45 are approximately 0.04 acre and 0.14 acre in size, respectively, and consist of shrub-carr communities (Figure 6-5). The conditions of these wetlands are similar to that of Wetland KETB-37. Dominant vegetation includes pussy willow, speckled alder, Canada bluejoint, and cottongrass bulrush. Soils consist of sandy loam over a reddish clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetlands appear to be incidental, formed as a result of ditching activity adjacent to the tailings basin berm and a road. In the 1989 and 1991 aerial photographs, this area appears to be graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D). Historically, the area of Wetlands KETB-44 and KETB-45 was the top of a hill (Figure D7, Appendix D) with forest cover and no evidence of wetland signatures (Figures D1-D-3, Appendix D). The wetland was rated high for vegetative diversity, medium for upland condition and wildlife habitat, and rated low for outlet configuration and public value for an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-66W and SP-65U (Appendix A), and photograph 43 (Appendix B).

Wetland KETB-46

Wetland KETB-46 is approximately 0.12 acre in size and consists of fresh (wet) meadow community (Figure 6-5). Dominant vegetation includes pussy willow, lakebank sedge, and cottongrass bulrush. Soils consist of mucky loam over clay loam over a reddish clay and met the hydric soil indicator for depleted matrix. Hydrology was observed as the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetlands appear to be incidental, formed as a result of grading and ditching activity adjacent to the tailings basin berm. In the 1989 and 1991 aerial photographs, this area appears to be graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D). Historically, the area of the wetland was located on a ridge line (Figure D7, Appendix D) with forest cover and no apparent wetland signatures (Figures D1-D3, Appendix D). The wetland was rated high for vegetative diversity, medium for upland condition and wildlife habitat, and rated low for outlet configuration and public value with an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-73W and SP-74U (Appendix A), and photograph 44 (Appendix B).

Wetland KETB-47

Wetland KETB-47 is a 51.59 acre shrub-carr community, of which 8.70 acres lies within the study area (Figure 6-5). Dominant vegetation includes speckled alder, black ash, pussy willow, Canada bluejoint, lakebank sedge, and fowl manna grass. Soils consist of muck over mucky loam and met the hydric soil indicator for loamy mucky mineral (F1). Hydrology was observed as inundation of one inch and the secondary wetland hydrology indicators for geomorphic position, microtopographic relief, and FAC-neutral test. Wetland boundaries are distinct.

Wetland KETB-47 is predominantly a native wetland located adjacent to the West Swan River. The southwestern portion of the wetland was farmed historically with no apparent wetland signatures (Figures D1-D2). The southwestern area was graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D), resulting in the development of approximately 2.31 acres of incidental wetland, of which 1.47 acres is within the study area. Soils throughout all but the southwestern part of the wetland are mapped as hydric soils, including Rifle, McQuade-Dora, and Bowstring and Fluvaquents (Figure 4) with some evidence of wetland signatures apparent throughout much of the rest of the wetland in historic photos (Figures D1-D4, Appendix D), including 49.28 acres in total and 7.22 acres within the study area. The wetland was rated high for all functions except for public value, which was rated low (Table 5a). The wetland is directly connected to the West Swan River floodplain wetlands. The West Swan River outlets into the St. Louis River and ultimately into Lake Superior.

Site conditions are documented with SP-77W and SP-78U (Appendix A), and photograph 45 (Appendix B).

Wetland KETB-48

Wetland KETB-48 is approximately 0.37 acre in size and consists of a shallow marsh community (Figure 6-6). Dominant vegetation includes speckled alder, broad-leaf cat-tail, and Canada bluejoint. Soils consist of muck over sandy clay over clay and met the hydric soil indicators for depleted matrix and 2 cm muck. Hydrology was observed as thin muck surface and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetlands appear to be native, but has been disturbed by grading activity all around the wetland. In the 1961 and 1972 aerial photographs the eastern part of the wetland appeared to be farmed with some

evidence of wetland conditions in the western part and by 1981, the entire wetland was farmed (Figures D1-D3, Appendix D). In the 1989 and 1991 aerial photographs, the area around the wetland was graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D). This wetland appeared to become wetter following the grading activity. The wetland was rated high for vegetative diversity, medium for wildlife habitat, and rated low for outlet configuration, upland condition, and public value for an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-75W and SP-76U (Appendix A), and photograph 46 (Appendix B).

Wetland KETB-49

Wetland KETB-49 is approximately 0.09 acre in size and consists of an alder thicket community (Figure 6-6). Dominant vegetation includes paper birch, black ash, speckled alder, and fowl manna grass. Soils consist of loam over silt loam and met the hydric soil indicator for redox dark surface. Hydrology was observed as water stained leaves and the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland is located in an enclosed depression with no apparent historical disturbance (Figures D1-D5, Appendix D). The wetland is rated high for all wetland functions evaluated, except upland condition which is rated medium and public value which is rated low (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-79W and SP-78U (Appendix A), and photograph 47 (Appendix B).

Wetland KETB-50

Wetland KETB-50 is an 8.82 acre shallow marsh community, of which 5.03 acres lies within the study area (Figure 6-5). Dominant vegetation includes speckled alder, lakebank sedge, and broad-leaf cat-tail. Soils consist mucky loam over sandy loam over sandy clay loam and met the hydric soil indicator for loamy mucky mineral. Hydrology was observed as inundation of one inch and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test. Wetland boundaries are distinct.

Wetland KETB-50 is a native wetland with some disturbance from roads and grading. The wetland is bordered by a road to the north and there was a historic road through the eastern portion of the wetland (Figures D1-D5, Appendix D). Some grading activity was conducted to the northwest of the wetland. The wetland is rated high for all wetland functions evaluated, except upland condition which is rated medium and public value which is rated low (Table 5a). The wetland is contiguous with Wetland KETB-47 and KETB-50, which discharges into the West Swan River. The West Swan River outlets into the St. Louis River and ultimately into Lake Superior.

Additional mapping was completed in 2023 and the boundary for Wetland KETB-50 was updated to account for the additional project area.Site conditions are documented with SP-80W and SP-81U (Appendix A), and photograph 48 (Appendix B).

Wetland KETB-51

Wetland KETB-51 is approximately 0.56 acre in size and consists of a fresh (wet) meadow community (Figure 6-6). Dominant vegetation includes speckled alder, pussy willow, and fowl manna grass. Soils consist of muck over mucky peat and met the hydric soil indicator for histosol and hydrogen sulfide. Hydrology was observed as saturation and a water table at the ground surface and the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland is located in an enclosed depression with some historical disturbance directly adjacent to the wetland (Figures D1-D5, Appendix D), but appears to be a natural wetland. The wetland is rated high for vegetative diversity, medium for outlet configuration, upland condition, and wildlife habitat, and low for public value for an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-82W and SP-83U (Appendix A), and photograph 49 (Appendix B).

Wetland KETB-52

Wetland KETB-52 is approximately 0.03 acre in size and consists of a fresh (wet) meadow community (Figure 6-6). Dominant vegetation includes sandbar willow (*Salix interior* – FACW), speckled alder, pussy willow, broad-leaf cat-tail, and lakebank sedge. Soils consist of mucky loam over clay loam and met the hydric soil indicator for loamy mucky mineral and depleted matrix. Hydrology was observed as saturation and a water table at the ground surface and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, microtopographic relief, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland is located in an enclosed depression with some historical disturbance directly adjacent to the wetland (Figures D1-D5, Appendix D). The wetland is rated high for vegetative diversity and outlet configuration, medium for upland condition and wildlife habitat, and low for public value with an overall rating of medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-84W and SP-83U (Appendix A).

Wetland KETB-53

Wetland KETB-53 is approximately 0.04 acre in size and consists of a fresh (wet) meadow community (Figure 6-6). Dominant vegetation includes sandbar willow, Canada bluejoint, and reed canary grass. Soils consist of silt loam over sandy loam and met the hydric soil indicator for redox dark surface. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for geomorphic position, microtopographic, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental, formed as a result of grading and ditching activity adjacent to a road. The road along the south side of the wetland was constructed prior to 1940 and the area was part of a farm operation until 1981 (Figures D1-D3, Appendix D) with no apparent wetland signatures. In the 1989 and 1991 aerial photographs, this area appears to be graded as part of the tailings basin berm

construction (Figures D4-D5, Appendix D), after which, the wetland appears to have developed. The wetland was rated medium for vegetative diversity and wildlife habitat, and rated low for outlet configuration, upland condition, and public value for an overall rating of low (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-85W and SP-86U (Appendix A).

Wetland KETB-54

Wetland KETB-54 is approximately 0.30 acre in size and consists of a shallow marsh community (Figure 6-6). Dominant vegetation includes pussy willow, balsam poplar, reed canary grass, cottongrass bulrush, and narrow-leaf cat-tail. Soils consist of mucky loam over clay over a reddish clay loam and met the hydric soil indicators for loamy mucky mineral and depleted matrix. Hydrology was observed as saturation and a water table at the ground surface and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental, formed as a result of grading activity. The area was part of a farm operation from at least 1940 until 1981 with no apparent wetland signatures (Figures D1-D3, Appendix D). In the 1989 and 1991 aerial photographs, this area appears to be graded as part of the tailings basin berm construction (Figures D4-D5, Appendix D), after which, the wetland appears to have formed. The wetland was rated low for all functions except wildlife habitat which was rated medium (Table 5a). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP-87W and SP-86U (Appendix A), and photograph 50 (Appendix B).

Wetland KETB-55

Wetland KETB-55 is a 3.92 acre wetland comprised of shallow marsh and shrub-carr communities, of which 3.12 acres lies within the study area (Figure 6-6). Dominant vegetation in the shrub-carr community includes balsam poplar, paper birch, speckled alder, pussy willow, sandbar willow, smooth scouring-rush, three-seed sedge, and narrow-leaf cat-tail. Soils consist of mucky loam over clay loam over sandy clay loam and met the hydric soil indicators for depleted below dark surface and loamy mucky mineral. Hydrology was observed as inundation of one inch and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental, formed as a result of grading and excavation activity. The area was predominantly part of a farm operation from at least 1940 until 1981 with no apparent wetland signatures (Figures D1-D3, Appendix D). In the 1989 and 1991 aerial photographs, this area appears to be graded and excavated as part of the tailings basin berm construction (Figures D4-D5, Appendix D), after which, the wetland appears to have formed. The wetland was rated high for vegetative diversity and wildlife habitat, medium for upland condition, and rated low for outlet configuration and public value with an overall rating of medium (Table 5a).

Additional mapping was completed and the boundary for Wetland KETB-55 was updated to show that it connects to the KETB-50 and 47 complex east of the Study Area and discharges into the West Swan River. The West Swan River outlets into the St. Louis River and ultimately into Lake Superior.

Site conditions are documented with SP-88W and SP-89U (Appendix A), and photograph 51 (Appendix B).

3.4.1 Supplemental Wetlands – 2023 Site Visit

Wetland 2023-01

Wetland 2023-01 is an 0.08 acre seasonally flooded basin community of which 0.05 acre lies within the study area (Figure 6-8). Dominant vegetation includes balsam fir, quaking aspen, speckled alder, balsam poplar, Canada bluejoint, dwarf red raspberry, and stalk-grain sedge (*Carex Stipata*, OBL). Soils consist of silt loam over clay loam and met the hydric soil indicator for redox dark surface. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for geomorphic position and FAC-neutral test. Wetland boundaries are distinct.

The wetland appears to be incidental and formed as a result of the construction of a road and adjacent ditch within which the wetland formed. The road along the southeast side of the wetland was constructed between 1961 and 1972 and the area was part of a farm operation prior to the road's construction (Figures D1-8 and D2-8, Appendix D) with no apparent wetland signatures. In subsequent years, the road appears to be become more pronounced as the surrounding area transitioned into a forested community (Figures D2-8 to D5-8, Appendix D). The wetland was rated medium for wildlife habitat and vegetative diversity; and rated low for outlet configuration, upland condition, and public value with an overall rating of low (Table 5b). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP23-01 and SP23-02 (Appendix A) and photograph 1 (Appendix B).

Wetland 2023-02

Wetland 2023-02 is a 0.07 acre hardwood swamp community, of which 0.01 acre was documented within the 2023 Study Area (Figure 6-8). Dominant vegetation includes quaking aspen, balsam fir, red maple, speckled alder, stalk-grain sedge, Canada bluejoint, and marsh horsetail. Soils consist of sandy loam over silt loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland is located in an enclosed depression with some historical disturbance associated with a road in close proximity (Figures D2-8-to D5-8, Appendix D), but appears to be a natural wetland. The wetland is rated high for vegetative diversity, medium for upland condition and wildlife habitat, and low for outlet configuration and public value for an overall rating of medium (Table 5b). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP23-02 and SP23-03 (Appendix A) and photograph 2 (Appendix B).

Wetland 2023-03

Wetland 2023-03 is a 4.56 acre shallow marsh community of which 3.46 acres are within the 2023 Study Area (Figure 6-8). Dominant vegetation at the data plot near the edge of the wetland includes quaking aspen, green ash, white edge sedge (*Carex debilis*, FACW), spotted touch-me-not and Canada bluejoint. Soils consist of mucky loam over silt loam, over sandy clay loam and met the hydric soil indicators for loamy mucky mineral and depleted below dark surface. Hydrology was observed as inundation up to 1 inch in depth, a high water table, and soil saturation at the time of the wetland delineation. Secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-03 was originally identified in 2005 as mitigation Wetland 1a (Barr 2011; Figure 6-8). Wetland 1a was last monitored in 2010, at which time it was identified as having shallow marsh and hardwood swamp communities present. Signs of beaver activity including fresh beaver chews, a beaver hut, and unvegetated beaver slides were observed within and adjacent to the Wetland. Since its original documentation, Wetland 1a is now predominantly a shallow marsh wetland community and will be hereafter referred to as Wetland 2023-03.

Mitigation Wetland 1, which abuts the north side of Wetland 2023-03 is located in an area that was historically a flat headwater wetland forming the beginning of a stream (Figure D7-8, Appendix D). Between 1989 and 1991, the perimeter tailings basin berm was constructed along the southwest side of what is now Wetland 1 and on the west side of 2023-03 (Figure D5-8, Appendix D). Wetland 2023-03 was on a west facing slope draining towards a stream. Some historic wetland signatures are apparent prior to 1991, so it appears 2023-03 is a native wetland. Wetland 2023-03 appears to be dominated by shrubs and trees from the 1960s and 1980s (Figures D1-8 through D4-8, Appendix D). Following construction of the Exterior Tailings Basin perimeter berm, the area of Wetland 2023-03 became wetter throughout the 1990s (Figures D5-8 and D6-8, Appendix D). The wetland is rated high for vegetation diversity, medium for wildlife habitat, and low for outlet configuration, upland condition, and public value (Table 5b). The wetland extends north and west outside of the 2023 Study Area. Review of aerial photography and topography indicates that Wetland 2023-03 likely overflows to the south and east, ultimately reaching the West Swan River. However, there does not appear to be a perennial surface water connection throughout the series of ditches and wetlands leading to the West Swan River.

Site conditions are documented with SP23-04 and SP23-05 (Appendix A) and photograph 3 (Appendix B).

Wetland 2023-04

Wetland 2023-04 is a 0.43 acre shrub-carr wetland community, of which 0.30 acre lies within the study area (Figure 6-8). Dominant vegetation includes sandbar willow, pussy willow, giant mana grass, and cottongrass bulrush. Soils consist of silt loam over clay loam and met the hydric soil indicator for depleted below dark surface and depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and the FAC-neutral test. Wetland boundaries are distinct.

Wetland 2023-04 is thought to be incidental in origin. Historically, the area of Wetland 2023-04 was on a southwest facing slope with a grade of about 2 percent with a mix of forest cover and agricultural activity and a homestead located about 100 feet to the east (Figures D1-8, D2-8, D3-8, and D7-8, Appendix D). The historic photos don't show any clear indications of wetland hydrology. Between 1989 and 1991, the tailings basin berm was constructed along the west side of the wetland (Figures D4-8 and D5-8, Appendix D) which also shows that the area of the wetland had been graded. The tailings basin berm blocked the natural flow path from the area, impounding the area and apparently, establishing the wetland. At the time of the site visit, steep un-natural banks gave way to a flat wetland. Wetland 2023-04 appears to overflow through a series of ditches and wetlands to the West Swan River, similar to 2023-03.

Site conditions are documented with SP23-06 and SP23-07 (Appendix A) and photograph 4 (Appendix B).

Wetland 2023-05

Wetland 2023-05 is a 0.15 acre hardwood swamp wetland community, of which 0.14 acre lies within the study area (Figure 6-8). Dominant vegetation includes quaking aspen, pussy willow, and pointed broom sedge. Soils consist of loam over clay loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test. Wetland boundaries are distinct.

The wetland appears to be incidental and formed as a result of the construction of a road and adjacent ditch within which the wetland formed. The road along the southeast side of the wetland was constructed between 1961 and 1972 and the area was part of a farm operation prior to the road's construction (Figures D1 - D2, Appendix D) with no apparent wetland signatures. In subsequent years, the road appears to be become more pronounced as the surrounding area transitioned into a forested community (Figures D2-D5, Appendix D). The wetland was rated high for vegetative diversity; medium for wildlife habitat; and low for outlet configuration, upland condition, and public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-05 has a direct, perennial surface water connection to other wetlands or waterways, but the wetland appears to overflow to the West Swan River following the same path as 2023-03 and 2023-04 (Figure 6-8).

Site conditions are documented with SP23-08 and SP23-09 (Appendix A) and photograph 5 (Appendix B).

Wetland 2023-06

Wetland 2023-06 is a 0.29 acre hardwood swamp wetland community, of which 0.21 acre lies within the study area (Figure 6-8). Dominant vegetation includes quaking aspen, green ash, red maple, bladder sedge (*Carex intumescens* – FACW), dwarf red raspberry, and northern lady hair fern (*Athyrium angustum* – FAC). Soils consist of loam over loamy very fine sand and met the hydric soil indicator for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for geomorphic position, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be natural in origin with no obvious indication that the area was historically altered (D1-8- to D6-8, Appendix D). However, the site visit did find evidence of grading near the edges of the wetland. The wetland was rated high for vegetative diversity, medium for upland condition and

wildlife habitat and low for outlet configuration and public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-06 has a direct surface water connection to other wetlands or waterways and the field visit confirmed this.

Site conditions are documented with SP23-10 and SP23-11 (Appendix A) and photograph 6 (Appendix B).

Wetland 2023-07

Wetland 2023-07 is a 0.26 acre alder thicket wetland community, all of which lies within the study area (Figure 6-8). Dominant vegetation includes speckled alder, nodding sedge (*Carex gynandra* – OBL), rattlesnake manna grass (*Glyceria canadensis* – OBL), black ash and paper birch. Soils consist of mucky loam over silt loam and loamy sand. Soils met the hydric soil indicator for loamy mucky mineral. Secondary wetland hydrology indicators for surface soil cracks, geomorphic position, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The area of Wetland 2023-07 was historically shrub covered on a southeast facing slope with a grade of about 2.5 percent (Figure D7-8, Appendix D). There is evidence of wetness connecting to a wetland shown on the 1952 topographic map (Figures D1-8 and D7-8, Appendix D). There is evidence of grading and excavation south of the wetland between the years of 1981 and 1998, such that the land is now about 6 feet lower than the wetland (Figure 5-8). The grading in the area does not appear to have altered the area significantly, so it appears that Wetland 2023-07 is a natural wetland. The wetland was rated High for vegetative diversity, rated medium for upland condition, and wildlife habitat, and rated low for outlet configuration and public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-07 connects to other wetlands or waterways, but observations made during the site visit paired with desktop review of topography data identified that Wetland 2023-07 is part of the Wetland KETB-55 complex, which ultimately connects to the West Swan River (Figure 6-6).

Site conditions are documented with SP23-12 and SP23-13 (Appendix A) and photograph 7 (Appendix B).

Wetland 2023-08

Wetland 2023-08 is a 0.02 acre shrub-carr community, which is entirely within the study area (Figure 6-8). Wetland was sparsely vegetated with dominant vegetation consisting of black willow. Soils consist of very fine sand over very fine sandy loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to have formed as a result of the construction of a road creating an adjacent ditch. The road along the northwest side of the wetland was constructed between 1961 and 1972 and the area was part of a farm operation prior to the road's construction (Figures D1-8 and D2-8, Appendix D) with no apparent wetland signatures. In subsequent years, the road appears to have become more pronounced as the surrounding area transitioned into a forested community (Figures D2-8 to D5-8, Appendix D). The wetland was rated medium for vegetative diversity and low for wildlife habitat, outlet configuration,

upland condition, and public value for an overall rating of low (Table 5b). Site observations and a review of PWI, NHD, and topography data indicate no surficial connection to other wetlands or waterways.

Site conditions are documented with SP23-14 and SP23-15 (Appendix A) and photograph 8 (Appendix B).

Wetland 2023-09

Wetland 2023-09 is a 0.65 acre alder thicket wetland community of which 0.65 acre lies within the study area (Figures 6-6 and 6-7). Dominant vegetation includes balsam fir, quaking aspen, paper birch, speckled alder, dwarf red raspberry and soft-leaf sedge (*Carex disperma* – OBL). Soils are a clay loam and met the hydric soil indicator for redox depressions. Secondary wetland hydrology indicators for drainage patterns, shallow aquitard, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The presence on berms on either side of Wetland 2023-09 indicates that the wetland is not natural in origin. Historical aerial imagery reveals that a road/trail was developed in this area between the years of 1972 and 1981, which was further refined through the 1980s (Figures D2-6, D3-6, and D4-6, Appendix D). Prior to this time frame, the was forested on a east facing slope with about 3 percent grade and no wetland signatures. The road berm impeded the natural flow to the east and created the long linear wetland by impoundment. The wetland was rated high for vegetative diversity and wildlife habitat, medium for upland condition and outlet configuration, and rated low for public value for an overall rating of medium (Table 5b). Field observations and review of PWI, NHD, and topography data provide no indication that Wetland 2023-09 connects to other wetlands or waterways (Figure 6-4).

Site conditions are documented with SP23-16 and SP23-17 (Appendix A) and photograph 9 (Appendix B).

Wetland 2023-10

Wetland 2023-10 is a 0.46 acre hardwood swamp wetland community, of which 0.08 acre lies within the study area (Figure 6-7). Dominant vegetation includes black ash, common buckthorn, dwarf red raspberry, greater bladder sedge and Canada bluejoint. Soils consist of loam over silt loam and met the hydric soil indicator for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for microtopographic relief and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be natural in origin with no indication that the area was historically disturbed (Figures D1-6 to D6-6, Appendix D). While no wetland signatures are evident, the wetland lies within a subtle drainage swale sloped to the east (Figure 5-7). The wetland was rated high for wildlife habitat, and vegetative diversity, medium for outlet configuration, upland condition, and low for public value for an overall rating of medium (Table 5b). The wetland boundary was not completely documented as it extended past the 2023 Study Area. Review of PWI, NHD, and topography data provide no indication that Wetland 2023-10 connects to other wetlands or waterways (Figure 6-5).

Site conditions are documented with SP23-18 and SP23-19 (Appendix A) and photograph 10 (Appendix B).

Wetland 2023-11
Wetland 2023-11 is a 0.01 acre sedge meadow wetland community, which lies entirely within the study area (Figure 6-6). Dominant vegetation includes quaking aspen and pointed broom sedge. Soils are loamy and met the hydric soil indicator for redox dark surface. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

The area of Wetland 2023-11 was historically forested with no evidence of land disturbance in the area (D1-6 to D6-6, Appendix D), and therefore, appears to be a natural wetland. The wetland was rated high for wildlife habitat, outlet configuration and upland condition, medium for vegetative diversity, and low for and public value for an overall rating of high (Table 5b). Field observations confirmed that Wetland 2023-11 does not connect to other wetlands or waterways (Figure 6-4).

Site conditions are documented with SP23-20 and SP23-21 (Appendix A) and photograph 11 (Appendix B).

Wetland 2023-12
Wetland 2023-12 is a 0.01 acre seasonally flooded basin wetland community, all within the study area (Figure 6-6). Dominant vegetation consists of Canada bluejoint. Soils are represented by a very fine sandy loam and met the hydric soil indicator for depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for drainage patterns, geomorphic position, and the FAC-neutral test. Wetland boundaries are distinct.

Wetland 12 is at the north end of an upland ditch that drains to the south (Figure 5-6). Historical aerial photographs indicate that a road or trail has been present in this area since prior to 1961 (Figures D1-6 and D2-6, Appendix D). It appears that Wetland 2023-12 developed within the road ditch constructed prior to 1961. The wetland was rated high for vegetative diversity, medium for outlet configuration and upland condition, and rated low for wildlife habitat and public value for an overall rating of Medium (Table 5b). Review of PWI and NHD data provide no indication that Wetland 2023-12 connects to other wetlands or waterway via the upland channel on the southeast side of the wetland.

Site conditions are documented with SP23-97 and SP23-98 (Appendix A) and photograph 12 (Appendix B).

Wetland 2023-13
Wetland 2023-13 is a 0.04 acre hardwood swamp community, which lies entirely within the study area (Figure 6-6). Dominant vegetation includes quaking aspen, black ash, balsam fir, beaked hazelnut, dwarf red raspberry, and greater bladder sedge. Soils consist of very fine sandy loam and met the hydric soil indicators for depleted below dark surface and depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for drainage patterns, geomorphic position, microtopographic relief, and the FAC-neutral test were also observed. Wetland boundaries are distinct.

The wetland is natural in origin with no indication that the area was historically disturbed as it has remained forested through the years of aerial review (D1-6 to D6-6, Appendix D). The wetland was rated

high for wildlife habitat, vegetative diversity, outlet configuration, and upland condition, and was rated low for public value for an overall rating of high (Table 5b). Review of PWI, NHD, topography data, and site observations provide no indication that Wetland 2023-13 connects to other wetlands or waterways (Figure 5-6).

Site conditions are documented with SP23-22 and SP23-23 (Appendix A) and photograph 13 (Appendix B).

Wetland 2023-14

Wetland 2023-14 is a 0.25 acre hardwood swamp wetland community, entirely within the study area (Figure 6-6). Dominant vegetation includes quaking aspen, black ash, greater bladder sedge, and dwarf red raspberry. Soils consist of very fine sandy loam over loam and clay loam and met the hydric soil indicators for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for drainage patterns, shallow aquitard, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland is natural in origin with no indication that the area was historically disturbed as it has remained forested through the years of aerial review (D1-6 to D6-6, Appendix D). The wetland was rated high for wildlife habitat, vegetative diversity, outlet configuration, and upland condition, but was rated low for public value. The overall rating of wetland 2023-14 is high (Table 5b). Review of PWI, NHD, topography data, and site observations provide no indication that Wetland 2023-14 connects to other wetlands or waterways (Figure 5-6).

Site conditions are documented with SP23-24 and SP23-25 (Appendix A) and photograph 14 (Appendix B).

Wetland 2023-15

Wetland 2023-15 is a 0.10 acre fresh (wet) meadow wetland community, of which 0.06 acre lies within the study area (Figure 6-6). Dominant vegetation includes speckled alder, pointed broom sedge, woodland horsetail (*Equisetum sylvaticum* – FACW), and dwarf red raspberry. Soils consist of sandy loam and met the hydric soil indicator depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-15 developed on a trail that has been present since prior to 1961 (D1-6, Appendix D). Although the trail was overgrown and not recognizable at the time of the site visit, evidence of berms and grading were noted near the wetland edges with two spoil piles present that indicate historic excavation (Figure 5-6). The wetland was rated high for vegetative diversity, medium for upland condition and wildlife habitat, and low for public value and outlet configuration for an overall rating of medium (Table 5b). Review of PWI, NHD, topography data, and site observations provide no indication that Wetland 2023-14 connects to other wetlands or waterways (Figure 5-6).

Site conditions are documented with SP23-26 and SP23-27 (Appendix A).

Wetland 2023-16

Wetland 2023-16 is a 0.11 acre hardwood swamp wetland community, of which 0.02 acre lies within the study area (Figure 6-6). Dominant vegetation includes quaking aspen, black ash, red maple, and soft-leaf sedge. Soils consist of sandy loam and met the hydric soil indicators for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for microtopographic relief and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland is natural in origin with no evidence of historic disturbance other than minor tree clearing (Figures D1-6 to D4-6, Appendix D). The wetland was rated high for wildlife habitat, vegetative diversity, outlet configuration, and upland condition, but was rated low for public value. The overall rating of wetland 2023-16 is high (Table 5b). Review of PWI, NHD, topography data, and site observations provide no indication that Wetland 2023-14 connects to other wetlands or waterways (Figure 5-6).

Site conditions are documented with SP23-28 and SP23-29 (Appendix A) and photograph 15 (Appendix B).

Wetland 2023-17

Wetland 2023-17 is a 0.54 acre hardwood swamp wetland community of which 0.50 acre lies within the study area (Figure 6-4). Dominant vegetation includes black ash, red maple, American hazelnut (*Corylus americana* – FACU), Ostrich fern (*Matteuccia struthiopteris* – FAC), spotted touch-me-not, and dwarf red raspberry. Soils consist of fine sandy loam over loamy fine sand and sandy clay loam and met the hydric soil indicators for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of impoundment from grading activity south of the wetland. Historically, the area of Wetland 2023-17 was forested with no evidence of wetness in a relatively flat area with south facing slopes of about 1.5 percent grade (Figures D1-4 and D7-4, Appendix D). Between 1972 and 1981, the area south of the wetland was graded as part of the tailings basin construction (Figures D2-4 and D4-4, Appendix D) resulting in a berm along south and east sides blocking natural drainage from the area (Figure 5-4). The wetland appears to have formed as result of the berm impoundment. Vegetative diversity is rated high, upland condition and wildlife habitat are rated medium, while outlet configuration and public value are rated low with an overall condition rating of medium (Table 5b). Site observations and a review of PWI, NHD, and topography data indicate the wetland would overflow from its southwest side, but there is no surficial connection to other wetlands or waterways (Figure 5-4).

Site conditions are documented with SP23-32 and SP23-33 (Appendix A) and photograph 16 (Appendix B).

Wetland 2023-18

Wetland 2023-18 is a 0.01 acre alder thicket wetland community, entirely within the study area (Figure 6-4). Dominant vegetation includes quaking aspen, balsam poplar, speckled alder, pussy willow, fowl

bluegrass (*Poa palustris* – FACW) and sensitive fern (*Onoclea* sensibilis – FACW). Soils consist of sandy loam over loamy very fine sand and sand and met the hydric soil indicator for depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

This wetland appears to be an incidental wetland that formed as a result of extensive grading in the area. Historically, the area of Wetland 2023-18 was a hilly area of apparent glacial moraine lying between two large wetland complexes to the northeast and southwest (Figure D7-4, Appendix D). In the 1976 aerial photographs, the area of the wetland appears to have been graded as part of the tailings basin construction (Figure D2-4, Appendix D). Dating back to the 1940's the area of Wetland 2023-18 was in an area of apparent upland, deciduous forest with no evidence of wetland conditions. The wetland developed at the toe of an approximately 12 foot high road embankment on the north side with an excavated depressional area to the south (Figure 5-4). Vegetative diversity is rated high, while upland condition and wildlife habitat are rated medium, and outlet configuration and public value are rated low, giving the wetland an overall condition rating of medium (Table 5b). Site observations and a review of PWI, NHD, and topography data indicate the wetland lies within a closed depression with no outlet or surficial connection to other wetlands or waterways (Figure 5-4).

Site conditions are documented with SP23-34 and SP23-35 (Appendix A) and photograph 17 (Appendix B).

Wetland 2023-19

Wetland 2023-19 is a 0.21 acre alder thicket wetland community of which 0.21 acre lies within the study area (Figure 6-4). Dominant vegetation includes speckled alder and sensitive fern. Soils, consisting of clay loam over loamy sand and fine sand, met the hydric soil indicator for depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and the FAC-neutral test were observed. Wetland boundaries are distinct.

This appears to be an incidental wetland that formed as a result of extensive grading in the area. Historically, the area of Wetland 2023-19 was a hilly area of apparent glacial moraine lying between two large wetland complexes to the northeast and southwest (Figure D7-4, Appendix D). In the 1976 aerial photographs, the area of the wetland appears to have been graded as part of the tailings basin construction (Figure D2-4, Appendix D). Dating back to the 1940's the area of Wetland 2023-19, similar to Wetland 2023-18, was in an area of apparent upland, deciduous forest with no evidence of wetland conditions. The wetland developed within an excavated depression at the toe of an approximately 12 foot high road embankment on the north side (Figure 5-4). Vegetative diversity and wildlife habitat are rated high, while upland condition is rated medium, and public value and outlet configuration are rated low, giving the wetland an overall condition rating of medium (Table 5b). Site observations and a review of PWI, NHD, and topography data indicate the wetland lies within a closed depression with no outlet or surficial connection to other wetlands or waterways.

Site conditions are documented with SP23-34 and SP23-36 (Appendix A) and photograph 18 (Appendix B).

Wetland 2023-20

Wetland 2023-20 is a 1.06 acre alder thicket wetland community, of which 0.06 acre lies within the study area (Figure 6-2). Dominant vegetation includes balsam poplar, speckled alder, dwarf red raspberry, sensitive fern, wild strawberry, and water hemlock. Soils consist of loam over clay loam and sand, meeting the hydric soil indicator for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental within the Study Area and the western extent of the wetland is likely naturally occurring. Grading activities were extensive in this area in the 1970s and 1980s as part of the tailings basin construction (Figures D2-4 to D5-4, Appendix D), which resulted in the enlargement and conversion of the natural wetland (Figure 5-4). The wetland was rated high for vegetative diversity and wildlife habitat and low for outlet configuration, upland condition, and public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-20 connects to other wetlands or waterways (Figure 5-4).

Site conditions are documented with SP23-37 and SP23-38 (Appendix A) and photograph 19 (Appendix B).

Wetland 2023-21

Wetland 2023-21 is a 0.46 acre seasonally flooded basin wetland community, of which 0.01 acre lies within the Study Area (Figure 6-4). Dominant vegetation includes beaked hazelnut, speckled alder, retorse sedge, and lady fern. Soils consist of loam over clay loam and loamy sand which met the hydric soil indicators for depleted below dark surface and depleted matrix. Hydrology was observed as saturation and the secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be incidental as the area was graded with no evidence of historic wetland conditions. Historical aerial photographs are not available for this area that date back before the disturbance, but the historic quadrangle map shows the area as an apparent small hill with no wetland indicators (Figure D7-4, Appendix D). Significant grading throughout the area is apparent in 1989, as part of the tailings basin construction, resulting in steep cuts, berms, and a flat area where the wetland developed (Figure D4-4, Appendix D). The wetland was rated high for vegetative diversity and wildlife habitat, medium for outlet configuration, and low for upland condition and public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-21 connects to other wetlands or waterways (Figure 5-4).

Site conditions are documented with SP23-38 and SP23-39 (Appendix A) and photograph 20 (Appendix B).

Wetland 2023-22

Wetland 2023-22 is a 0.59 acre alder thicket wetland community, of which 0.02 acre lies within the Study Area (Figure 6-4). Dominant vegetation includes speckled alder, Canada bluejoint, American water

horehound (*Lycopus* americanus – OBL) and field horsetail (*Equisetum arvense* – FAC). Soils consist of loam over silt loam and very fine sandy loam. Soils met the hydric soil indicators for depleted below dark surface and depleted matrix. Hydrology was observed as water-stained leaves and the secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

In 1976, the area resembled a deciduous, upland forest (D2-4, Appendix D) encompassing two upland hill slopes with a saddle in between and elevations of about 1430 to slightly higher (D7-4, Appendix D). Extensive excavation and grading was conducted in the area of the wetland in the 1980s (Figures D3-4 and D4-4, Appendix D), which resulted in a flat area at elevation 1426, in which the wetland formed (Figure 5-4). The wetland was rated high for wildlife habitat; medium for vegetative diversity, outlet configuration, upland condition; and low for public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-22 connects to other wetlands or waterways (Figure 5-4).

Site conditions are documented with SP23-40 and SP23-41 (Appendix A) and photograph 21 (Appendix B).

Wetland 2023-23

Wetland 2023-23 is a 0.11 acre fresh (wet) meadow wetland community located entirely within the Study Area (Figure 6-4). Dominant vegetation includes quaking aspen, sensitive fern, mad-dog skullcap (*Scutellaria* lateriflora – OBL) and greater bladder sedge. Soils consist of loam over very fine sandy loam and met the hydric soil indicators for depleted below dark surface and depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be natural in origin with no indication that the area was historically disturbed (D1-4 to D6-4, Appendix D) and current ground elevations (Figure 5-4) match historic elevations closely (Figure D7-4, Appendix D). The wetland was rated high for wildlife habitat, vegetative diversity, and upland condition; medium for outlet configuration; and low for public value for an overall rating of high (Table 5b). Review of PWI, NHD, and topography data provided no indication that Wetland 2023-23 connects to other wetlands or waterways, and observations made during the site visit confirmed that (Figure 5-4).

Site conditions are documented with SP23-42 and SP23-43 (Appendix A) and photograph 22 (Appendix B).

Wetland 2023-24

Wetland 2023-24 is of three nearly connected alder thicket wetland communities, 2023-24a, which is 0.01 acres all within the Study Area; 2023-24b, which is 2.19 acres of which 0.29 acre is within the Study Area; and 2023-24c, which is 0.07 acre and lies outside the Study Area (Figure 6-3). Dominant vegetation includes speckled alder, bittersweet nightshade (*Solanum dulcamara* – FAC) and American manna grass (*Glyceria grandis* – OBL). Soils consist of loam over clay loam and sandy clay loam. The soils met the hydric

soil indicator for depleted matrix. Hydrology was observed as a high water table and saturation; the secondary wetland hydrology indicators for dry-season water table, geomorphic position, shallow aquitard, and the FAC-neutral test were also observed. Wetland boundaries are distinct.

The area of Wetlands 2023-24a-c was historically a forested, northwest facing hillslope with grades ranging from about 2 percent to 5 percent and elevations ranging from about 1424-1430 with no apparent wetland signatures (Figures D1-3, D2-3, D7-3, Appendix D). Around 1976, a road had been graded through the northern part of 2023-24b and along the south side of 2023-24c (Figure D2-3, Appendix D). Between 1989 and 1991, the entire extent of 2023-24b and 2023-24c had been graded (Figures D4-3 and D5-3, Appendix D). Wetlands 2023-24b and 2023-24c developed within the footprint of the grading activities between 1989 and 1991, while Wetland 2023-24a was never disturbed and appears to be a natural wetland. The wetland was rated high for upland condition; medium for outlet configuration; and low for vegetative diversity, wildlife habitat, and public value for an overall rating of medium (Table 5b). Review of topography data in conjunction with field observations indicate no surficial connection to downstream wetlands or waters (Figure 5-3).

Site conditions are documented with SP23-44 and SP23-45 (Appendix A) and photograph 23 (Appendix B).

Wetland 2023-25

Wetland 2023-25 is a 0.04 acre seasonally flooded basin wetland community located entirely within the Study Area (Figure 6-3). The wetland was sparsely vegetated; the only vegetation present comprised of sensitive fern and northern bugleweed (*Lycopus uniflorus* – OBL). Soils consist of loam over loamy sand and met the hydric soil indicator for depleted below dark surface. Hydrology was observed as a sparsely vegetated concave surface and water-stained leaves. The secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were also observed. Wetland boundaries are distinct.

Wetland 2023-25 does not appear to be natural in origin as the wetland is 3 to 4 feet lower in elevation than all of the surrounding areas and contains a near vertical bank. The area was historically forested with no evidence of wetland signatures (Figure D1-3, Appendix D). Earth work is present in the 1976 aerial photograph (D2-3, Appendix D) and It is likely that this area was historically a borrow pit, that has since developed into a wetland community. The wetland was rated low for all metrics resulting in an overall rating of low (Table 5b). Field observations confirmed that there are no surficial connections to other wetlands or water bodies (Figure 5-3).

Site conditions are documented with SP23-46 and SP23-47 (Appendix A) and photograph 24 (Appendix B).

Wetland 2023-26

Wetland 2023-26 is a 0.16 acre sedge meadow wetland community located entirely within the Study area (Figure 6-3). Dominant vegetation includes speckled alder, shining willow (*Salix lucida* – FACW), woolgrass (*Scirpus cyperinus* – OBL) and common beaked sedge (*Carex utriculata* – OBL). Soils consist of clay loam and met the hydric soil indicators for depleted below dark surface and depleted matrix. Secondary

wetland hydrology indicators for drainage patterns, geomorphic position, and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-26 follows an established roadway on the west side of the tailings basin. Wetland 2023-26 appears to be incidental, having developed following the construction of the road associated grading in the area between 1961 and 1976 (Figures D1-3 and D2-3, Appendix D). The wetland was rated high for vegetative diversity, and rated low for wildlife habitat, outlet configuration, upland condition, and public value for an overall rating of low (Table 5b). Field observations confirmed that Wetland 2023-26 does not have a surficial connection to other wetlands or waterways (Figure 6-1).

Site conditions are documented with SP23-48 and SP23-49 (Appendix A) and photograph 25 (Appendix B).

Wetland 2023-27

Wetland 2023-27 is a 0.37 acre alder thicket wetland community located entirely within the Study Area (Figure 6-2). Dominant vegetation includes balsam fir, speckled alder, Canada bluejoint, and reed canary grass. Soils consist of clay loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position, shallow aquitard, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-27 appears to have developed following grading activities that occurred between the years of 1989 and 1991 (Figures D4-2 and D5-2, Appendix D). Prior to this time period, the area appears to have been forested and located in a slightly sloping upland hilltop with no apparent wetland signatures (Figures D1-2, D3-2, D7-2, Appendix D). The wetland was rated medium for wildlife habitat, outlet configuration, and upland condition; and low for vegetation diversity and public value for an overall rating of medium (Table 5b). Field observations confirmed that Wetland 2023-27 does not connect to other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-50 and SP23-51 (Appendix A) and photograph 26 (Appendix B).

Wetland 2023-28

Wetland 2023-28 is a 1.05 acre fresh (wet) meadow wetland community, entirely within the Study Area (Figure 6-2). Dominant vegetation includes balsam poplar, pointed broom sedge and rough bentgrass (*Agrostis scabra* – FAC). Soils consist of loam over very fine sandy loam and clay loam. Soils met the hydric soil indicator for redox dark surface. Secondary wetland hydrology indicators for geomorphic position, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland appears to be natural in origin with wetland signatures apparent in 1961 (Figure D1-2, Appendix D). An east-west ditch was constructed north of the wetland between 1961 and 1972 and converted into the O'Brien Diversion Channel (Figures D1-2 and D2-2, Appendix D), but that did not appear to affect the wetland signficantly. Part of this wetland had been logged in the recent past. The wetland was rated high for vegetative diversity and outlet configuration, medium for upland condition

and wildlife habitat, and low for public value for an overall rating of medium (Table 5b). Field observation and desk top data provide no indication that Wetland 2023-28 connects to other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-52 and SP23-53 (Appendix A) and photograph 27 (Appendix B).

Wetland 2023-29

Wetland 2023-29 is a 0.15 acre fresh (wet) meadow wetland community, entirely within the Study Area (Figure 6-2). Dominant vegetation includes quaking aspen, black ash, beaked hazelnut, fowl bluegrass, spotted touch-me-not, fringed brome (*Bromus ciliatus* – FACW), and bittersweet nightshade. Soils consist of loam over sandy clay loam and very fine sandy loam. The hydric soil indicators for depleted below dark surface and depleted matrix were met. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-29 appears to have developed as a result of recent and historical activities. Historically, the construction of O'Brien Diversion Channel left spoil piles north of this wetland, preventing and impounding flow (Figures D1-2 and D2-2, Appendix D). The area naturally sloped to north so the area was impounded with no defined outlet, thus developing into wetland. More recently, logging activities have further disturbed the soils and vegetation. The wetland was rated high for vegetative diversity, medium for upland condition, and low for outlet configuration, wildlife habitat, and public value for an overall rating of medium (Table 5b). The site visit confirmed that Wetland 2023-29 does not have a surficial connection to other wetlands or waterbodies (Figure 5-2).

Site conditions are documented with SP23-53 and SP23-54 (Appendix A) and photograph 28 (Appendix B).

Wetland 2023-30

Wetland 2023-30 is a 0.09 acre shrub-carr wetland community, of which 0.04 acre lies within the Study Area (Figure 6-3). Dominant vegetation includes speckled alder, pussy willow and reed canary grass. Soils consist of loam over silt loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position and FAC-neutral test were observed. Wetland boundaries are distinct.

The area of Wetland 2023-30 was historically a forested ridge slope facing northwest with grades of about 10 percent and no evidence of wetland conditions (Figure D7-3, Appendix D). By 1976, a berm had been constructed on the east side of 2023-30 and across the Welcome Creek valley, impounding the wetland area located to the northeast (Figure D2-3, Appendix D). At the same time, a road was constructed on the west side of 2023-30, effectively impounding the area. By 1981, the entire area surrounding and encompassing 2023-30 had been graded, which left a water-filled depression in the location of 2023-30 (Figure D3-3, Appendix D). The wetland developed as a result of the access roads, grading and berming as part of the tailings basin construction (figure D2-3, Appendix D). The wetland was rated low for all metrics

resulting in an overall rating of low (Table 5b). Field review provided no indication that Wetland 2023-30 connects to other wetlands or waterways and is isolated in the landscape (Figure 5-3).

Site conditions are documented with SP23-55 and SP23-56 (Appendix A) and photograph 29 (Appendix B).

Wetland 2023-31

Wetland 2023-31 is a 1.02 acre deep marsh wetland community, of which 0.46 acre lies within the study area (Figure 6-3). Dominant vegetation includes speckled alder, pussy willow and narrow-leaf cattail. Soils consist of mucky peat over silt loam and sandy loam. Soils met the hydric soil indicators for stratified layers, depleted below dark surface, and depleted matrix. Hydrology was observed as saturation and water-stained leaves. The secondary wetland hydrology indicators for dry-season water table, geomorphic position, and the FAC-neutral test were also observed. Wetland boundaries are distinct.

Wetland 2023-31 is located within and along the fringe of Keetac's Reservoir 2. Much of this wetland formed when Welcome Creek was impounded between 1961 and 1972 to develop Reservoir 2 (Figures D1-3 and D2-3, Appendix D). The lower part of the Welcome Creek valley was mapped as historical wetland prior to the impoundment (Figure D7-3, Appendix D), at which time the wetland elevation was around 1400 (Figure D7-3, Appendix D). Currently, water levels in Reservoir 2 are managed at approximately elevation 1413, about 1 feet higher than the historic wetland. Historic wetland within the currently delineated Wetland 2023-31 was mapped based on the historic quad map and the 1961 aerial photos. A total of 0.36 acre of Wetland 2023-31 was present prior to the Welcome Creek impoundment and 0.66 acre is incidental due to the formation of wetland from the Welcome Creek impoundment within non wetland (Figure 6-3). Wildlife habitat and upland condition are rated medium and vegetative diversity, outlet configuration, and public value are rated low with an overall condition rating of low (Table 5b). The portion of wetland identified is the fringe of Reservoir 2 which extends out of the study area and outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with SP23-56 and SP23-57 (Appendix A) and photograph 30 (Appendix B).

Wetland 2023-32

Wetland 2023-32 is a 0.01 acre seasonally flooded basin wetland community, entirely within the study area (Figure 6-3). Dominant vegetation includes speckled alder, Canada bluejoint and red-osier dogwood. Soils consist of mucky loam and met the hydric soil indicator for two centimeters of muck (A10). Hydrology indicator for water-stained leaves was observed along with the secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test. Wetland boundaries are distinct.

Positioned between the toe of the road and a rise in elevation, this wetland likely formed following grading activities during the road construction between 1961 and 1976 (Figures D1-3 and D2-3, Appendix D). No wetland indicators or signatures were observed in the 1961 aerial photo and the 1952 USGS Quadrangle shows the area as upland. The wetland was rated medium for vegetative diversity, and rated

low for wildlife habitat, outlet configuration, upland condition, and public value for an overall rating of low (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-05 connects to other wetlands or waterways, but observations made during the site visit identified an upland drainage that, when water levels are high, water would overflow flow northwest out of the ditch and into Wetland 2023-03 (Figure 5-3).

Site conditions are documented with SP23-58 and SP23-59 (Appendix A) and photograph 31 (Appendix B).

Wetland 2023-33

Wetland 2023-33 is comprised of two parts, 2023-33a, which is a 33.69 acre deep marsh, of which 2.56 acres lies within the Study Area and 2023-33b, which is a 1.61 acre shrub carr wetland community, of which 1.03 acres falls within the Study Area (Figures 6-2 and 6-3). Dominant vegetation within the deep marsh community includes narrow-leaf cattail and reed canary grass. Soils within the deep marsh are sandy clay loam, which met the hydric soil indicator for depleted matrix. Hydrology indicators include algal mat/crust and aquatic fauna, as well as secondary wetland hydrology indicators for saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Wetland boundaries are distinct.

In comparison, the vegetation in the shrub-carr community is dominated by meadow willow (*Salix petiolaris* – FACW), speckled alder, pussy willow, nodding bur-marigold (*Bidens cernua* – OBL), awl-fruited sedge (*Carex stipata* – OBL), marsh horsetail (*Equisetum palustre* – FACW), greater bladder sedge, and lake sedge. The soils consisted of a mucky loam over clay loam meeting the soils indicator for loamy mucky mineral. Saturation and water-stained leaves were observed as the hydrology indicators. Secondary indicators of dry-season water table and the FAC-neutral test were also observed. Wetland boundaries are distinct.

Wetland 2023-33 (including 2023-33a and 2023-33b) is located within and along the fringe of Keetac's Reservoir 6 and is an extension of KETB-04. Much of this wetland formed when Welcome Creek was impounded between 1961 and 1972 to develop Reservoir 6 (Figures D1-D2, Appendix D). Portions of 2023-33a were mapped as historical wetland/stream prior to the impoundment (Figure D7, Appendix D), at which time the wetland varied in elevation from about 1400 in the southwest part to about 1420 in the northeast part. Currently, water levels in Reservoir 6 are managed at approximately elevation 1434, about 14-34 feet higher than the historic wetland. Historic wetland within the currently delineated Wetlands KETB-04 and 2023-33 was mapped based on the historic quad map and the 1961 aerial photos (Figures D1-2, D1-3, D7-2, and D7-3, Appendix D). A total of 2.69 acres of Wetland KETB-04 and 0.64 acres of Wetland 2023-33a were present prior to the Welcome Creek impoundment and 15.70 acres of KETB-04 and 33.05 acres of 2023-33a are incidental due to the formation of wetland from the Welcome Creek impoundment within non wetland (Figure 6-1). Wetland 2023-33b was historically farmland with a forested area in the middle, a road running through the east side, an no apparent wetland signatures (Figures D1-2 and D7-2, Appendix D). Elevations in the area of 2023-33b were historically about 1435-1440 and drained to the northwest (Figure D7-2, Appendix D). Prior to 1976, a road was constructed on the north side of 2023-33b (Figure D2-2, Appendix D) and the area on the east and south sides was

graded by 1981 (Figure D3-2, Appendix D). The road constructed as part of the tailings basin construction blocked the drainage path from 2023-33 and that impoundment resulted in the development of the wetland. Therefore, Wetland 2023-33b is an incidental wetland. Wildlife habitat and upland condition are rated medium, and vegetative diversity, outlet configuration, and public value are rated low with an overall condition rating of low (Table 5b). The portion of wetland identified is the fringe of Reservoir 6 which extends outside the study area and outlets to the south via a channel and into Reservoir 2. Reservoir 2 outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with SP58, SP23-60 and SP23-67 (Appendix A) and photographs 32 and 33 (Appendix B).

Wetland 2023-34

Wetland 2023-34 is a 0.01 acre fresh (wet) meadow wetland community, which lies entirely within the Study Area (Figure 6-2). Dominant vegetation includes field horsetail, Kentucky bluegrass and reed canary grass. Soils consist of sandy clay loam over clay loam and silt loam which met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position, shallow aquitard, and FAC-neutral test were observed. Wetland boundaries are distinct.

In the 1961 aerial imagery, Wetland 2023-34 is near a larger wetland boundary, but does not appear to connect to the wetland and the aerial signature suggests that the area was in agricultural production (Figure D1-2, Appendix D). by the time the 1976 aerial imagery was taken, the tailings basin road had been constructed and grading and berming had occurred in this location to construct the road (Figure D2-2, Appendix D). It appears that Wetland 2023-34 developed as a result of the road being constructed. The wetland was rated low for all metrics resulting in an overall rating of low (Table 5b). Site observations confirm that Wetland 2023-34 does not have a surficial connection to other wetlands or waterbodies (Figure 5-2).

Site conditions are documented with SP23-61 and SP23-62 (Appendix A) and photograph 34 (Appendix B).

Wetland 2023-35

Wetland 2023-35 is a 0.12 acre hardwood swamp wetland community, of which 0.02 acre lies within the Study Area (Figure 6-2). Dominant vegetation includes quaking aspen, speckled alder, Canada bluejoint and Canada anemone (*Anemone canadensis* – FACW). Soils consist of loam over very fine sandy loam and met the hydric soil indicators for depleted below dark surface, redox dark surface, and depleted matrix. Saturation was observed as a primary hydrology indicator. Secondary wetland hydrology indicators for drainage patterns and the FAC-neutral test were also observed. Wetland boundaries are distinct.

The wetland appears to be natural in origin with no indication that the area was historically disturbed (Figures D1-2 to D6-2, Appendix D). The wetland was rated high for vegetation diversity, medium for outlet configuration, upland condition, and wildlife habitat, and rated low for public value for an overall rating of medium (Table 5b). Wetland 2023-35 is part of a large wetland, which appears to drain south

through a road culvert to Reservoir 2. (Figure 5-2). Reservoir 2 then outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with SP23-62 and SP23-63 (Appendix A) and photograph 35 (Appendix B).

Wetland 2023-36

Wetland 2023-36 is a 0.13 acre seasonally flooded basin wetland community, located entirely within the Study Area (Figure 6-2). Dominant vegetation includes pussy willow, quaking aspen, Canada bluejoint and woolgrass. Soils consist of silt loam and met the hydric soil indicator for redox depressions. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

The wetland does not appear to be natural in origin. The wetland is narrow and linear, following the tailings basin road. The wetland contains steep slopes on all sides, indicating that the area was excavated and has now developed into wetland. The area most likely developed into a wetland following grading activities that took place between 1961 and 1976 (D1–2 and D2-2, Appendix D). The wetland was rated high for vegetative diversity, and rated low for wildlife habitat, outlet configuration, upland condition, and public value for an overall rating of low (Table 5b). The site visit confirmed that Wetland 2023-36 does not have a surficial connection to other wetlands or waterways and is confined to the roadside ditch (Figure 5-2).

Site conditions are documented with SP23-64 and SP23-65 (Appendix A) and photograph 36 (Appendix B).

Wetland 2023-37

Wetland 2023-37 is comprised of two parts, 2023-37a, which is a 1.53 acre shrub-carr community, of which 1.25 acres lies within the Study Area and 2023-37b, which is a 1.61 acre hardwood swamp wetland community, which lies just outside of the Study Area (Figure 6-2). Dominant vegetation includes speckled alder, meadow willow, sensitive fern, red raspberry, marsh horsetail, and lady fern. Soils consist of silt loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-37a formed as a result of the tailing basin access road construction between 1961 and 1976 (D1-2 and D2-2, Appendix D), while 2023-37b appears to be a natural wetland. Historically, the area of Wetland 2023-37a was agricultural land with a road through the eastern part and no evidence of wetness, while 2023-37b was forested (Figure D1-2, Appendix D). By 1976, an additional road was constructed along the south side of 2023-37a as part of the tailings basin construction (Figure D2-2, Appendix D). Wetland likely developed in this location due to the access road construction resulting in a slight depression. The wetland was rated high for vegetative diversity, medium for upland condition, and low for wildlife habitat, outlet configuration, and public value for an overall rating of medium (Table 5b). Review of historical imagery, PWI, NHD, and topographic data does not suggest that Wetland 2023-37 has a surficial connection to other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-65 and SP23-66 (Appendix A) and photograph 37 (Appendix B).

Wetland 2023-38

Wetland 2023-38 is a 0.12 acre seasonally flooded basin wetland community, located entirely within the Study Area (Figure 6-2). Dominant vegetation includes black ash, quaking aspen, pussy willow, speckled alder, Canada bluejoint and American manna grass. Soils consist of silt loam and met the hydric soil indicator for redox depressions. Secondary wetland hydrology indicators for drainage patterns, geomorphic position, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The area of Wetland 2023-38 was historically forested with no wetland signatures on a west facing slope of about 6.5 percent grade (Figures D1-2 and D7-2, Appendix D). The entire area of Wetland 2023-38 was altered during the 1970s and 1980s with the development of a road by 1976 and additional grading down to the shore of Reservoir 6 (Figures D2-2, D3-2, D4-2, Appendix D). Wetland 2023-38 likely formed as a result of the tailing basin access road construction and other grading, which resulted in the road berm blocking the natural drainage to the west, and a berm on the south side fully impounding the area. The wetland was rated high for vegetative diversity and low for upland conditions, wildlife habitat, outlet configuration, and public value for an overall rating of low (Table 5b). Wetland 2023-38 is confined to the 2023 Study Area and has no surficial connection to other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-92 and SP23-93 (Appendix A) and photograph 38 (Appendix B).

Wetland 2023-39

Wetland 2023-39 is a 0.31 acre seasonally flooded basin wetland community, entirely within the Study Area (Figure 6-2). Dominant vegetation includes black ash, quaking aspen, pussy willow, speckled alder, Canada bluejoint and American manna grass. Soils consist of silt loam and met the hydric soil indicator for redox depressions. Secondary wetland hydrology indicators for drainage patterns, geomorphic position, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-39 represents nearly an identical historical context as 2023-38, except that this wetland was on the top of a hill, historically (D1-2 and D7-2, Appendix D). Historic scraping and grading in this area is common and the sediment was likely used to construct the access road leaving behind a depression with berms on the north and south sides that eventually developed into a wetland. The wetland was rated high for vegetative diversity and rated low for upland conditions, wildlife habitat, outlet configuration, and public value for an overall rating of low (Table 5b). Wetland 2023-39 is confined to the 2023 Study Area and has no surficial connection to other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-92 and SP23-93 (Appendix A) and photograph 38 (Appendix B).

Wetland 2023-40

Wetland 2023-40 is comprised of two parts, 2023-40a, which is a 0.26 acre fresh (wet) meadow community, entirely within the Study Area and 2023-40b, which is a 0.55 acre deep marsh wetland community, of which 0.17 acre lies just within the Study Area (Figure 6-2). Dominant vegetation in 2023-40a includes speckled alder, pussy willow, and reed canary grass. Soils consist of muck and met the hydric soil indicator for 2 cm muck. Primary wetland hydrology indicators observed include aquatic fauna and thin muck surface. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Dominant vegetation in 2023-40b includes speckled alder, meadow willow, pussy willow, narrow-leaf cattail and woolgrass. Soils consist of sandy loam over loamy sand and met the hydric soil indicator for redox dark surface. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Historically, the area of Wetland 2023-40a was a mix of grass, shrub and tree cover with no evidence of wetland conditions (Figure D1-2, Appendix D). The area of Wetland 2023-40b was historically a mix of shrubs, trees, manicured yard, and a building with no evidence of wetland conditions (Figure D1-2, Appendix D). Wetland 2023-40a likely formed as a result of the tailing basin access road construction between 1961 and 1976 (D1-2 and D2-2, Appendix D) and still functions as an effective roadside ditch transporting water into the O'Brien Diversion channel. Wetland 2023-40b developed in the O'Brien diversion channel and along the shoreline of Reservoir Six after it was impounded, all of which also occurred between 1961 and 1976 (D1-2 and D2-2, Appendix D). The wetland was rated low for all metrics except outlet configuration, resulting in an overall rating of low (Table 5b). Wetland 2023-40 is outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River (Figure 5.2).

Site conditions are documented with SP23-68 and SP23-69 (Appendix A) and photograph 39 (Appendix B).

Wetland 2023-41

Wetland 2023-41 is a 0.23 acre alder thicket wetland community, of which 0.20 acre lies within the Study Area (Figure 6-2). Dominant vegetation includes speckled alder, nodding bur-marigold and reed canary grass. Soils consist of very fine sandy loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

The area of Wetland 2023-41 was historically in an area that appears to have been relatively flat with possible evidence of wetness in the form of dark trees and a possible depressional landform, but it is not conclusive (Figures D1-2 and D7-2, Appendix D). In the 1970s and 1980s, a road was constructed on the north side of 2023-41 and a ditch was constructed south of the wetland area (Figures D2-2, D3-2, Appendix D), which resulted in berms on the north and south sides of the wetland (Figure 5-2). Wetland 2023-41 likely formed in the depressional area left between the berms, but it is difficult to determine the presence or absence of historic wetland, so it is concluded that the wetland is naturally occurring. The wetland was rated low for all metrics, resulting in an overall rating of low (Table 5b). Wetland 2023-41

overflows out of the southwest corner of the wetland towards Reservoir Six, but has no perennial surficial connection to downstream waters (Figure 5-2).

Site conditions are documented with SP23-70 and SP23-73 (Appendix A) and photograph 40 (Appendix B).

Wetland 2023-42

Wetland 2023-42 is a 0.02 acre seasonally flooded basin wetland community that lies entirely within the Study Area (Figure 6-2). Dominant vegetation consists of Canada bluejoint. Soils consist of silt loam with a hydric soil indicator for redox dark surface. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Historically, the area of Wetland 2023-42 was at the crest of a small knoll with forested cover and no apparent wetland signatures (Figures D1-2 and D7-2, Appendix D). From sometime before 1976 to 1981, roads were constructed on the north and east sides of the wetland and a ditch on the south side (Figures D2-2 and D3-2, Appendix D). Wetland 2023-42 likely formed as a result of the construction activities impounding the wetland. The wetland was rated low for all metrics, resulting in an overall rating of low (Table 5b). While Wetland 2023-42 appears to overflow south to the Wetland 2023-33a ditch, there is no perennial surficial connection to that or any other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-72 and SP23-73 (Appendix A) and photograph 41 (Appendix B).

Wetland 2023-43

Wetland 2023-43 is a 22.89 acre fresh (wet) meadow wetland community, of which 0.03 acre lies within the Study Area (Figure 6-2). Dominant vegetation includes quaking aspen and reed canary grass. Soils consist of silt loam and met the hydric soil indicator for depleted matrix. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Wetland 2023-43 is not natural as it is part of a constructed tailings pond, as noted on the 1952 USGS Quadrangle (D7-2, Appendix D). The feature has been on the landscape since at least 1952 and has remained relatively unchanged since 1961 (Figures D1–2 to D6-2, Appendix D). Wetland 2023-43 is surrounded by steep slopes on the west, south, and east sides and is topographically enclosed. For multiple reasons wetland 2023-43 was rated as low for all metrics resulting in an overall rating of low (Table 5b). Review of PWI, NHD, and topography data combined with limited field observations indicate that Wetland 2023-43 has no perennial surficial connection to other wetlands or waterways (Figure 5-2).

Site conditions are documented with SP23-74 and SP23-75 (Appendix A) and photograph 42 (Appendix B).

Wetland 2023-44

Wetland 2023-44 is comprised of three parts, 2023-44a, which is a 0.42 acre fresh (wet) meadow community, of which 0.41 acre lies within the Study Area; 2023-44b, which is a 1.31 acre shrub carr wetland community, of which 0.13 acre lies just within the Study Area; and 2023-44c, which is an 11.82 acre fresh (wet) meadow wetland community, of which 0.55 acre lies within the Study Area (Figure 6-1). Dominant vegetation within the 2023-44a fresh (wet) meadow community includes meadow willow, quaking aspen and reed canary grass. Soils were a silt loam which did not meet hydric soil indicator requirements. However, the plot was located in a constructed ditch depression and lower in elevation than surrounding areas. Auger refusal was noted at three inches below the ground surface due to coarse fragments. Soils were determined to be hydric based on professional judgment given the depressional setting and predominantly FACW vegetation, recognizing that hydrologic characteristics were not present due to severe drought conditions. Secondary hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Dominant vegetation within the 2023-44c fresh (wet) meadow community includes black ash, quaking aspen, Canada bluejoint, and reed canary grass. Soils consist of very fine sandy loam over fine sandy loam and met the hydric soil indicators for depleted below dark surface, redox dark surface, and depleted matrix. Secondary wetland hydrology indicators for geomorphic position, microtopographic relief, and the FAC-neutral test were observed. Wetland boundaries are distinct.

The 2023-44b shrub-carr community has dominant vegetation consisting of sandbar willow (*Salix interior* – FACW), pussy willow, and reed canary grass. Soils are characterized by a silt loam over sandy loam and SO meeting hydric soil indicators for depleted below dark surface and depleted matrix. Secondary hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

The Wetland 2023-44 complex contains a mix of natural origin and incidental wetland. Between the late 1940s and 1952, a tailings basin was constructed along the west side of what was delineated as the Wetland 2023-44 complex (Figure D7-1, Appendix D). Prior to the historic tailings basin construction, the land sloped from the northeast to southwest. The construction of the historic tailings basin, with a levee around the east, south, and west sides; blocked the natural drainage path and forced water to drain south along the east side of the tailings basin. That southerly drainage was facilitated by a ditch constructed along the east side of the historic tailings basin, but was not sufficient to avoid impounding the lowest areas. Between 1961 and 1972, a road was constructed along the west side of the 2023-44 complex, which connected to the southeast corner of the historic tailings basin and fully impounded 2023-44b, which was fully inundated by 1981 (Figures D1-1, D2-1, and D3-1, Appendix D). Wetland 2023-44a appears to have developed a result of the historic tailings basin being constructed prior to 1952 and the tailings basin access road construction between 1961 and 1972, with no evidence of wetland historically. While Wetland 2023-44b is slightly lower in elevation, there is no evidence to suggest historic wetland conditions were present and also appears to have developed as a result of the same activities. Historic aerial photos for the area of Wetland 2023-44c appear to show several lower elevation valleys, which may have supported wetland conditions before the historic tailings basin was constructed. Therefore, it appears that Wetland 2023-44c is likely a naturally occurring wetland. However, the historic and modern tailings basin activities

acted as an impoundment and raised the surface water levels in the area, thus killing all the trees in the wetland, changing the community from a hardwood swamp to a fresh (wet) meadow. The wetland was rated medium for wildlife habitat, outlet configuration, upland condition, and rated low for vegetation diversity and public value for an overall rating of medium (Table 5b). Review of PWI, NHD, and topography data provide no indication that Wetland 2023-44 ha a surficial connection to other wetlands or waterways (Figure 5-1).

Site conditions are documented with SP23-76, SP23-77, SP23-78, SP23-79 and SP23-80 (Appendix A) and photographs 43, 44 and 45 (Appendix B).

Wetland 2023-45

Wetland 2023-45 is a 0.52 acre alder thicket wetland community, of which 0.01 acre lies within the Study Area (Figure 6-1). Dominant vegetation includes quaking aspen, speckled alder, sandbar willow, and reed canary grass. Soils consist of silty clay loam over a silt loam; soils met the hydric soil indicator for redox depressions. Primary hydrology indicators were observed to be water marks and water-stained leaves. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were also observed. Wetland boundaries are distinct.

Wetland 2023-45 likely formed as a result of the tailing basin access road construction between 1961 and 1976 (Figures D1-1 and D2-2, Appendix D). Historically, the area of Wetland 2023-45 was forested with no signs of wetland conditions (Figure D1-1, Appendix D). Between 1961 and 1972, a road was constructed west of the wetland and the Reservoir Two North impoundment had also been established (Figure D2-1, Appendix D). Between 1972 and 1981, the area west of the road had been graded, leaving two depressional areas in the location of 2023-45. Wetland 2023-45 developed as a result of tailings basin construction activities, which left behind closed depressions that eventually formed into a wetland. The wetland was rated low for all metrics, resulting in an overall rating of low (Table 5b). Wetland 2023-45 is surrounded by berms with the lowest overflow approximately 3 feet above the wetland boundary on the north side, and clearly has no surficial connection to other wetlands or waterways (Figure 5-1).

Site conditions are documented with SP23-81 and SP23-82 (Appendix A) and photograph 46 (Appendix B).

Wetland 2023-46

Wetland 2023-46 is a 0.15 acre hardwood swamp wetland community, of which 0.01 acre lies within the Study Area (Figure 6-1). Dominant vegetation includes quaking aspen, red maple, black ash, speckled alder, pointed broom sedge and interrupted fern (*Osmunda claytoniana* – FAC). Soils consist of silt loam over very fine sand and met the hydric soil indicator for depleted matrix. Algal mat/crust was observed as a primary hydrology indicator with additional secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test also observed. Wetland boundaries are distinct.

Historically, the area of Wetland 2023-46 was forested on an east facing slope with a grade of about 10 percent and no evidence of wetland signatures (Figures D1-1 and D7-1, Appendix D). Between 1961 and 1972, the area of 2023-46 had been graded, a road was constructed to the northwest, and the Reservoir

Two North impoundment had been established to the east (Figure D2-1, Appendix D). The grading work associated with development of the tailings basin left a relatively flat shelf about 10 feet above Reservoir Two North where Wetland 2023-46 developed (Figure 5-1). The wetland was high for vegetative diversity, rated medium for outlet configuration, upland condition, and wildlife habitat, and rated low for public value, resulting in an overall rating of medium (Table 5b). It appears that Wetland 2023-46 overflows to the east into Reservoir Two North, but there is no perennial surficial connection to other wetlands or waterways (Figure 5-1).

Site conditions are documented with SP23-83 and SP23-84 (Appendix A) and photograph 47 (Appendix B).

Wetland 2023-47

Wetland 2023-47 is a 0.02 acre seasonally flooded basin wetland community, of which 0.01 acre lies within the Study Area (Figure 6-1). Dominant vegetation includes mountain maple (*Acer spicatum* – FACU), speckled alder, woolgrass, marsh horsetail and dwarf red raspberry. Soils consist of very fine sandy loam which met the hydric soil indicator for redox depressions. Sparsely vegetated concave surface and water-stained leaves were observed as a primary hydrology indicators. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were also observed. Wetland boundaries are distinct.

Historically, the area of Wetland 2023-47 was forested on an east facing slope with a grade of about 10 percent and no evidence of wetland signatures (Figures D1-1 and D7-1, Appendix D). Between 1961 and 1972, the area of 2023-47 had been graded, a road was constructed to the northwest, and the Reservoir Two North impoundment had been established to the east (Figure D2-1, Appendix D). The grading work associated with development of the tailings basin left a relatively flat shelf about 14 feet above Reservoir Two North where Wetland 2023-47 developed (Figure 5-1). The wetland was rated low for all metrics, resulting in an overall rating of low (Table 5b). It appears that Wetland 2023-47 could overflow to the east into Reservoir Two North, but there is no perennial surficial connect to other wetlands or waterways (Figure 5-1).

Site conditions are documented with SP23-84 and SP23-85 (Appendix A) and photograph 48 (Appendix B).

Wetland 2023-48

Wetland 2023-48 is a 0.16 acre shallow marsh wetland community, of which 0.06 acre lies within the Study Area (Figure 6-1). Dominant vegetation includes speckled alder, sandbar willow, Canada bluejoint and narrow-leaf cattail. Soils consist of a silty clay loam and met the hydric soil indicator for depleted matrix. Saturation to a depth of 8 inches was observed serving as a primary hydrology indicator. Also observed were two secondary wetland hydrology indicators: geomorphic position and the FAC-neutral test. Wetland boundaries are distinct.

Historically, the area of Wetland 2023-48 was forested on an south to southwest facing slope with a grade of about 5 percent, no evidence of wetland signatures, and a north to south road located about 300 feet to the east (Figures D1-1 and D7-1, Appendix D). Between 1961 and 1972, a road was constructed to the

northwest of the area of 2023-48 (Figure D2-1, Appendix D). Between 1972 and 1981, additional roads had been constructed on the east and north sides of the wetland (Figures D2-1 and D3-1, Appendix D). The grading work associated with development of the tailings basin left a relatively flat area where Wetland 2023-48 developed (Figure 5-1). The wetland was medium for wildlife habitat, and rated low for vegetative diversity, outlet configuration, upland condition, and public value, resulting in an overall rating of low (Table 5b). It appears that Wetland 2023-48 could overflow to the south and southwest, eventually getting to Reservoir Two North, but there is no perennial surficial connection to other wetlands or waterways (Figure 5-1).

Site conditions are documented with SP23-86 and SP23-87 (Appendix A) and photograph 49 (Appendix B).

Wetland 2023-49

Wetland 2023-49 is comprised of five parts: 2023-49a, which is a 0.27 acre shallow marsh community, of which 0.21 acre lies within the Study Area; 2023-49b, which is a 0.01 acre shallow marsh wetland community, which lies entirely within the Study Area; 2023-49c, which is an 0.14 acre shallow marsh wetland community, which lies entirely within the Study Area; 2023-49d, which is an 0.78 acre hardwood swamp wetland community, of which 0.20 acre lies within the Study Area; and 2023-49e, which is an 0.88 acre deep marsh wetland community, of which 0.70 acre lies within the Study Area (Figure 6-1). Dominant vegetation in the 2023-49a shallow marsh community consisted entirely of narrow-leaf cattail. Soils were observed to be silt loam meeting the hydric soil indicator for redox dark surface. Primary hydrology indicators observed to be saturation at the soil surface and the presence of an algal mat/crust. Secondary wetland hydrology indicators for geomorphic position and the FAC-neutral test were observed. Wetland boundaries are distinct.

Historically, the area of Wetlands 2023-49a to 2023-49c was forested on northeast or southwest facing slopes with grades ranging from about 5 to 10 percent, no evidence of wetland signatures, and a north to south road located about 50 feet east of 2023-49a (Figures D1-1 and D7-1, Appendix D). Historically, the area of Wetland 2023-49d was forested, on a southwest facing slope with grades ranging from about 5-8 percent, some evidence of wetland conditions within the eastern saddle area, and Welcome Creek crossing the wetland in the western part (Figures D1-1 and D7-1, Appendix D). Historically, the area of Wetland 2023-49e was on a northeast facing slope with grades ranging from about 4-10 percent, with some potential evidence of wetlands and Welcome Creek crossing the eastern part (Figures D1-1 and D7-1, Appendix D).

Between 1961 and 1972, a road was constructed northwest of all components of Wetland 2023-49, including crossing Welcome Creek, for which flow appears to have been maintained through a culvert under the road (Figure D2-1, Appendix D). Between 1972 and 1981, a road was constructed on the southeast side of 2023-49a and 2023-49b, as well as between them (Figure D3-1, Appendix D). In addition, extensive grading had been completed within the footprint of all components of Wetland 2023-49, except 2023-49e, during that same period (Figure D3-1, Appendix D). Wetland 2023-49a developed as a result of the road construction and grading fulling impounding the area, which outlets under the road to the southwest into 2023-49b. Wetland 2023-49b developed as a result of a small depression left after

grading of the area. Wetland 2023-49c developed in a ditch-like feature remaining after grading the area, which drains into 2023-49d. Wetland 2023-49d was completely altered by the project, but with some evidence of historic wetland, it cannot be concluded to be an incidental wetland. While there was some grading of the northern part of Wetland 2023-49e, there was evidence of historic wetland, so the wetland is deemed natural, despite the wetland community type change that resulted from development of Reservoir 2 North.

Wetlands 2023-49a through 49c are connected by a series of culverts that allow flow under the basin roads and into Reservoir 2 North through 2023-49d and 2023-49e. Reservoir 2 North then outlets to O'brien Creek via the O'Brien Diversion channel or Reservoir 6 via Welcome Creek (Figures 5-1 to 5-3), ultimately outletting into Swan Lake and the Mississippi River in either case. The wetland was medium for outlet configuration and scored low for vegetation diversity, wildlife habitat, upland condition, for public value, resulting in an overall rating of low (Table 5b). Wetland 2023-49 is not confined to the 2023 Study Area and connects to Wetland-49 and Reservoir 2 North (Figure 5-1).

Site conditions are documented with SP23-88 (Appendix A) and photograph 50 (Appendix B).

Wetland 2023-50

Wetland 2023-50 is comprised of four parts, 2023-50a, which is a 2.61 acre hardwood swamp community, of which 1.26 acres lie within the Study Area; 2023-50b, which is an 0.08 acre shallow marsh wetland community, which lies entirely within the Study Area; 2023-50c, which is a 0.33 acre shallow marsh wetland community, which lies entirely within the Study Area; and 2023-50d, which is a 0.26 acre hardwood swamp wetland community, of which 0.10 acre lies within the Study Area (Figure 6-1). Dominant vegetation within the 2023-50a hardwood swamp community includes black ash, quaking aspen, speckled alder and Canada bluejoint. Soils consist of very fine sandy loam over sandy loam and met the hydric soil indicators for depleted below dark surface, redox dark surface, and depleted matrix. Water-stained leaves were observed within the wetland achieving a primary hydrology indicator. Secondary wetland hydrology indicators for drainage patterns, geomorphic position, microtopographic relief, and the FAC-neutral test were also observed. Wetland boundaries are distinct.

Dominant vegetation within the 2023-50c shallow marsh community includes speckled alder, pussy willow and narrow-leaf cattail. Soils were observed to be muck over clay loam meeting the hydric soil indicator for histic epipedon. Four inches of surface water were present meeting primary hydrology indicators for surface water, high water table, and saturation. Secondary hydrology indicators of geomorphic position, shallow aquitard, and the FAC-neutral test were also observed. Wetland boundaries are distinct.

The area of Wetlands 2023-50a and 50c historically spanned the Welcome Creek valley with indications of wetland throughout much of the area (Figures D1-1 and D7-1, Appendix D). The area of Wetland 2023-50d historically appeared to follow a drainageway leading to Welcome Creek with some faint wetland evidence. Therefore, Wetland components 2023-50a, 50c, and 50d appear to be natural wetlands. The area of Wetland 2023-50b was historically forested on a west facing slope with grades ranging from about 6-12 percent and spanning an elevation range of about 20 feet with no wetland signatures (Figures D1-1 and D7-1, Appendix D). Between 1961 and 1972, a road was constructed on the southeast side of the

wetland, which appears to have included a drainage ditch feature, within which Wetland 2023-50b formed (Figures D2-1 and D3-1, Appendix D). The wetland was high for vegetation diversity, medium for wildlife habitat, outlet configuration, upland condition, and scored low for public value, resulting in an overall rating of medium (Table 5b). Wetland 2023-50 is not confined to the 2023 Study Area and connects to Wetland-49 and Reservoir 2 North (Figure 5-1). Reservoir 2 North then outlets into Hay Creek via the O'Brien Diversion channel and ultimately outlets into Swan Lake and the Mississippi River.

Site conditions are documented with SP23-89, SP23-90 and SP23-91 (Appendix A) and photographs 51 and 52 (Appendix B).

3.4.2 Wetland Functional Assessment

An abbreviated functional assessment was completed on each of the 55 wetlands delineated in the 2021 study area. Thirteen of the wetlands were rated as high quality, 31 were rated as medium quality, and 11 were rated as low quality. The same assessment was done on the 50 wetlands delineated in the 2023 Study Area. Five of the wetlands were rated as high quality, 24 were rated as medium quality, and 21 were rated as low quality. The level of disturbance in the 2023 Survey Area was greater than that observed in the 2021 survey area and explains why more medium and low scoring wetlands were encountered. The high quality wetlands are typically native, have high diversity in vegetative species, and little to no disturbance. The medium quality wetlands are either dominated by native or non-native species, with variable species diversity, and variable disturbance. The low quality wetlands typically have low species diversity, high non-native cover, and have high levels of disturbance. Table 5 shows the functional assessment data for each wetland.

3.4.3 Uplands

Uplands in the study area typically consist of mature, mixed forest plant communities dominated by quaking aspen (*Populus tremuloides* – FAC), balsam fir (*Abies balsamea* – FAC), white spruce (*Picea glauca* – FACU), paper birch (*Betula papyrifera* – FACU), red maple (*Acer rubrum* – FAC), mountain maple (*Acer spicatum* – FACU), beaked hazelnut (*Corylus cornuta* – FACU), common red raspberry (*Rubus idaeus* – FAC), honeysuckle (*Diervilla lonicera* – UPL), sarsaparilla (*Aralia nudicaulis* - FACU), large-leaf aster (*Eurybia macrophylla* – UPL), bracken fern (*Pteridium aquilinum* – FACU), orange hawkweed (*Hieracium aurantiacum* – UPL), Virginia strawberry (*Fragaria virginiana* – FACU), Pennsylvania sedge (*Carex pensylvanica* – UPL), bird's foot trefoil (*Lotus corniculatus* – FACU), hairy sweet cicely (*Osmorhiza claytonia* – FACU). Soil textures are typically loams or sandy loams with high-chroma matrix colors and no redoximorphic features. These areas typically have flat or convex slopes, which divert water to depressions and swales. Upland areas typically do not exhibit evidence of prolonged inundation, or soil saturation within 12 inches of the ground surface. Photographs 55-60 in Appendix B are representative of these conditions.

3.5 Wetland Summary

Barr surveyed the study area during the 2021 growing season and mapped 55 wetland areas. The 55 wetlands cover 370.47 acres in total, including 159.02 acres within the study area, which is approximately 32 percent of the study area (Table 4a). The plant communities in the study area (as defined by Eggers

and Reed, including deep water habitat) include shallow marsh (32.0 percent), deep marsh (17.7 percent), alder thicket (18.5 percent), coniferous bog (7.9 percent), shrub-carr (6.6 percent), hardwood swamp (2.2 percent), fresh (wet) meadow (0.6 percent), and deepwater habitat (14.6 percent). In addition, one deep water habitat was identified, encompassing 137.81 acres total, of which 27.11 fell within the study area.

Barr returned during the 2023 growing season to document wetlands in the 2023 Study Area and mapped 50 additional wetland areas. The 50 wetlands cover 98.52 acres in total, including 19.38 acres within the study area, which is approximately 8 percent of the study area (Table 4b). The plant communities in the study area (as defined by Eggers and Reed) include shallow marsh (22.2 percent), deep marsh (20.0 percent), alder thicket (10.8 percent), seasonally flooded basin (3.6 percent), shrub-carr (14.3 percent), hardwood swamp (14.7 percent), fresh (wet) meadow (13.6 percent), and sedge meadow (0.9 percent).

Barr used limited field observations and desktop techniques to map wetland boundaries that extend outside of the study areas, which is needed for understanding total wetland sizes and surface water connections. However, a decision pertaining to wetland community types and boundaries is only sought for the wetlands within the study area. These field delineated boundaries as well as the estimated wetland boundaries beyond the study area are shown on Figures 6-1 to 6-8 and summarized in Table 4.

4.0 Regulatory Implications

Wetlands in Minnesota are protected under federal, state, and local laws. The USACE administers Section 404 of the Clean Water Act (CWA), which regulates the placement of dredged or fill material into waters of the U.S. Waters of the U.S. are defined by CWA regulations (33 CFR 328.3(a)), and CWA jurisdiction is currently based on the USEPA and USACE, August 29, 2023, announcement of a final rule amending the 2023 definition of waters of the United States. The USACE has the authority to determine the jurisdictional status of wetlands under Section 404 of the CWA. Details on topographic setting, outlets, and flow paths for each wetland are included in Table 5 and descriptions in Section 3.4. Our initial review indicates that some wetland communities may be determined jurisdictional, while others may be determined non-jurisdictional. The U.S. Army Corps of Engineers should be consulted to verify the jurisdictional status of wetlands with respect to their authority to administer Section 404 of the CWA.

Minnesota's WCA is administered by a Local Government Unit (LGU) or by the MDNR for activities associated with projects requiring a permit to mine. The WCA regulates filling, draining, and excavating wetlands. The WCA does not regulate impacts to "incidental" wetlands. Incidental wetlands are defined as "…wetlands that the landowner can demonstrate, to the satisfaction of the local government unit, were created by pits, stockpiles, or tailings basins, and by actions the purpose of which was not to create the wetland…" (M.R. 8420.0930, Subp. 1). In addition, incidental wetlands are further defined in M.R. 8420.0105, Subp. 2.D. as follows:

> *This chapter does not regulate impacts to incidental wetlands. "Incidental wetlands" are wetland areas that the landowner can demonstrate, to the satisfaction of the local government unit, were created in nonwetland areas solely by actions, the purpose of which was not to create the wetland. Incidental wetlands include drainage ditches, impoundments, or excavations constructed in*

nonwetlands solely for the purpose of effluent treatment, containment of waste material, storm water retention or detention, drainage, soil and water conservation practices, and water quality improvements and not as part of a wetland replacement process that may, over time, take on wetland characteristics.

Several of the delineated wetlands were created by grading, excavating, or the tailings basin, or for drainage purposes and therefore, may be considered "incidental." Those wetlands are characterized in Table 4 and within the wetland descriptions in Section 3.4. A review of historical imagery documents the history of activity in this area and several years of imagery are presented in Appendix D.

Barr recommends that Keetac request regulatory concurrence with the delineation findings, and a jurisdictional determination. In addition, Keetac should complete all appropriate regulatory consultations prior to impacting any unpermitted wetland areas.

5.0 Reference

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Tables

Table 1a
Antecedent Precipitation Analysis

NRCS method - Rainfall Documentation Worksheet Hydrology Tools for Wetland Determination
NRCS Engineering Field Handbook Chapter 19

Date	8/2/2021	**Landowner/Project**	Keetac Exterior Tailings Basin
Weather Station	MN Climotolgy Office	**State**	Minnesota
County	Itasca	**Growing Season**	2021
Photo/obs Date	2-Aug-21	**Soil Name**	Various

shaded cells are locked or calculated

Long-term rainfall statistics (from WETS table or State Climatology Office)

	Month	30% chance <	30% chance >	Precip	Condition **D**ry, **W**et, **N**ormal	Condition Value	Month Weight Value	Product of Previous 2 Columns
1st Prior Month*	July	2.59	4.560	**2.46**	D	1	3	3
2nd Prior Month*	June	3.29	5.160	**2.17**	D	1	2	2
3rd Prior Month*	May	2.21	3.280	1.35	D	1	1	1
							Sum	**6**

*compared to photo/observation date

Note: If sum is	
6 - 9	prior period has been drier than normal
10 - 14	prior period has been normal
15 - 18	prior period has been wetter than normal

Condition value:
Dry =1
Normal =2
Wet =3

Conclusions: **prior period has been drier than normal**

Table 1b
Antecedent Precipitation Analysis

NRCS method - Rainfall Documentation Worksheet Hydrology Tools for Wetland Determination
NRCS Engineering Field Handbook Chapter 19

Date	9/29/2022	**Landowner/Project**	Keetac Exterior Tailings Basin
Weather Station	MN Climotolgy Office	**State**	Minnesota
County	Itasca	**Growing Season**	2022
Photo/obs Date	29-Sep-22	**Soil Name**	Various

shaded cells are locked or calculated

Long-term rainfall statistics (from WETS table or State Climatology Office)

	Month	30% chance <	30% chance >	Precip	Condition Dry, Wet, Normal	Condition Value	Month Weight Value	Product of Previous 2 Columns
1st Prior Month*	August	2.10	4.130	**4.41**	W	3	3	9
2nd Prior Month*	July	1.65	4.680	**5.32**	W	3	2	6
3rd Prior Month*	June	2.10	5.460	3.45	N	2	1	2
							Sum	**17**

*compared to photo/observation date

Note: If sum is	
6 - 9	prior period has been drier than normal
10 - 14	prior period has been normal
15 - 18	prior period has been wetter than normal

Condition value:
Dry =1
Normal =2
Wet =3

Conclusions: **prior period has been wetter than normal**

Table 1c
Antecedent Precipitation Analysis

NRCS method - Rainfall Documentation Worksheet Hydrology Tools for Wetland Determination
NRCS Engineering Field Handbook Chapter 19

Date	9/13/2023	**Landowner/Project**	Keetac Exterior Tailings Basin
Weather Station	MN Climotolgy Office	**State**	Minnesota
County	Itasca	**Growing Season**	2023
Photo/obs Date	14-Aug-23	**Soil Name**	Various

shaded cells are locked or calculated

Long-term rainfall statistics (from WETS table or State Climatology Office)

	Month	**30% chance <**	**30% chance >**	**Precip**	Condition **D**ry, **W**et, **N**ormal	Condition Value	Month Weight Value	Product of Previous 2 Columns
1st Prior Month*	July	2.73	4.530	**2.3**	D	1	3	3
2nd Prior Month*	June	3.62	5.390	**2.28**	D	1	2	2
3rd Prior Month*	May	2.53	3.210	1.84	D	1	1	1
							Sum	**6**

*compared to photo/observation date

Note: If sum is	
6 - 9	prior period has been drier than normal
10 - 14	prior period has been normal
15 - 18	prior period has been wetter than normal

Condition value:
Dry =1
Normal =2
Wet =3

Conclusions: **prior period has been drier than normal**

Table 2
Wetland Communities, Classification Systems, and Common Vegetation
Adapted from Eggers and Reed (1997)

Wetland Plant Community Types (Eggers and Reed 1997)	Classification of Wetlands and Deep Water Habitats of the United States (Cowardin et al. 1979)	Circular 39 (Shaw and Fredine 1971)	Examples of Common Vegetation
Shallow, Open Water	Palustrine or lacustrine, littoral; aquatic bed; submergent, floating, and floating-leaved (PAB; 2, 4, 5; G, H; and L2EM; 2; G, H; and L2AB; 2, 4, 5; G, H)	Type 5: Inland open fresh water	White water-lily, Yellow water lily, Northern milfoil, Largeleaf pondweed
Deep Marsh	Palustrine or lacustrine, littoral; aquatic bed; submergent, floating-leaved; and emergent; persistent and nonpersistent (PEM; 1, 2; F, G, H; and PAB; 2, 4, 5; F, G; and PUB; F, G; and L2EM; 2; F, G; and L2AB; 2, 4, 5; F, G)	Type 4: Inland deep fresh marsh	Bulrushes, Cattail, Duckweed, Water shield
Shallow Marsh	Palustrine; emergent; persistent and nonpersistent (PEM; 1, 2; C)	Type 3: Inland shallow fresh marsh	Cattails, Reed canary grass, Common reed
Sedge Meadow	Palustrine; emergent; narrow leaved persistent (PEM1B)	Type 2: Inland fresh meadow	Sedges, Canada bluejoint, Fowl bluegrass
Fresh (Wet) Meadow	Palustrine; emergent; broad and narrow-leaved persistent (PEM1B)	Type 1: Seasonally flooded basin of flat; Type 2: Inland fresh meadow	Reed canary grass, Sawtooth sunflower, Joe-pye-weed, Giant goldenrod
Wet to Wet-Mesic Prairie	Palustrine; emergent; broad- and narrow leaved persistent (PEM1; A, B)	Type 1: Seasonally flooded basin of flat; Type 2: Inland fresh meadow	Cattail, gayfeather, Prairie cordgrass, Slender rush, Black bentgrass
Calcareous Fen	Palustrine; emergent; narrow-leaved persistent; and scrub (PEM; 1; B)	Type 2: Inland fresh meadow	Dioecious sedge, Beaked spikerush, Needle beakrush, Shrubby cinquefoil
Open Bog	Palustrine; moss/lichen; and scrub/shrub; broad-leaved evergreen (PSS; 2, 3, 4, 7; B)	Type 8: Bog	Bog moss, Leatherleaf, Bog rosemary, Cranberry
Coniferous Bog	Palustrine; forested: needle-leaved evergreen and deciduous (PFO; 2, 4, 6, 7; B)	Type 8: Bog	Tamarack, Black spruce, Cotton grass, Leatherleaf
Shrub-Carr	Palustrine; scrub/shrub; broad leaved deciduous (PSS; 1, 6; B, C)	Type 6: Shrub swamp	Meadow willow, Pussy willow, Uptight Sedge, Canada blue-joint grass
Alder Thicket	Palustrine; scrub/shrub; broad-leaved deciduous (PSS; 1, 6; B, C)	Type 6: Shrub swamp	Speckled Alder, American elder, Narrowleaf meadowsweet, Cinnamon fern
Hardwood Swamp	Palustrine; forested; broad-leaved deciduous (PFO; 1, 6; A, B, C)	Type 7: Wooded swamp	Black ash, Lake sedge, Ostrich fern, Marsh marigold
Coniferous Swamp	Palustrine; forested; needle-leaved deciduous and evergreen (PFO; 2 4, 6, 7; B, C)	Type 7: Wooded swamp	Northern white cedar, Cinnamon fern, Yellow birch
Floodplain Forest	Palustrine; forested; broad-leaved deciduous (PFO; 1, 6; A)	Type 1: Seasonally flooded basin or flat	Silver maple, Canada wood-nettle, Canada hornwort, Green ash
Seasonally Flooded Basin	Palustrine; flat; emergent; persistent and non-persistent (PEMA)	Type 1: Seasonally flooded basin or flat	Willow-weed, Pennsylvania smartweed, Barnyard grass, White goosefoot

Table 3
Soil Series Summary

Map Unit Symbol	Map Unit Name	Hydric Classification (percent)	Area (acres)	Abundance (percent)
1003B	Udorthents, loamy (cut and fill land)	0%	106.8	14.7%
1043C	Udorthents, nearly level to rolling	5%	115.4	15.9%
1044	Slickens	0%	0.5	0.1%
1050	Tailings basin	0%	48.6	6.7%
544	Cathro muck, occasionally ponded, 0 to 1 percent slopes	100%	0.1	0.01%
549	Greenwood-Greenwood, ponded, complex, 0 to 1 percent slopes	100%	11.9	1.6%
619	Keewatin silt loam	6%	27.1	3.7%
622B	Nashwauk fine sandy loam, 1 to 10 percent slopes	7%	28.3	3.9%
797	Mooselake and Lupton soils, 0 to 1 percent slopes	100%	10.8	1.5%
872	Pengilly-Winterfield association	75%	0.1	0.01%
995	Seelyeville-Seelyeville, ponded, complex, 0 to 1 percent slopes	100%	1.6	0.2%
A1B	Eagleview and Menahga soils, 1 to 8 percent slopes	5%	109.6	15.1%
B27A	Mcquade-Buhl complex, 0 to 3 percent slopes	60%	91.8	12.6%
B28B	Buhl loam, 1 to 5 percent slopes	15%	90.8	12.5%
B32A	Mcquade-Dora, depressional-Fayal, depressional, complex, 0 to 2 percent slopes	100%	1.2	0.2%
B33A	Mcquade-Fayal, depressional, complex, 0 to 2 percent slopes	95%	32.6	4.5%
B67A	Rifle soils, hibbing catena, 0 to 1 percent slopes	100%	4.3	0.6%
W	Water		45.4	6.2%
		Total:	**726.9**	**100.0%**

Table 4a
Wetland Summary
2021 Study Area

Wetland ID	Dominant Eggers and Reed Classification	Secondary Eggers and Reed Classification	Dominant Circular 39 Type	Secondary Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Field-delineated?	Quality	Total Area (ac)	Area Within Study Boundaries (ac)	Estimated Origin	Incidental Area Within Study Area (ac)	Major Watershed
KETB-01	Fresh (wet) Meadow		2		PEM1A		Yes	Medium	0.01	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
KETB-02	Alder Thicket		6		PSS1B		Yes	Medium	0.10	0.10	Incidental	0.10	Miss. River-Grand Rapids #9
KETB-03	Alder Thicket		6		PSS1B		Yes	Medium	1.67	1.67	Incidental	1.67	Miss. River-Grand Rapids #9
KETB-04a	Deep Marsh		4		PEM1F		Yes	Low	23.69	22.90	Incidental/ Natural	20.21	Miss. River-Grand Rapids #9
KETB-04b	Deep Water						Yes	Low	137.81	27.11	NA	NA	Miss. River-Grand Rapids #9
KETB-05	Hardwood Swamp		7		PFO1B		Yes	Medium	0.48	0.48	Incidental	0.48	Miss. River-Grand Rapids #9
KETB-06	Shrub-carr		6		PSS1B		Yes	Medium	0.04	0.04	Incidental	0.04	Miss. River-Grand Rapids #9
KETB-07	Hardwood Swamp		7		PFO1B		Yes	Medium	29.46	2.62	Incidental/ Natural	1.04	Miss. River-Grand Rapids #9
KETB-08	Hardwood Swamp		7		PFOB1B		Yes	High	0.22	0.22	Natural	0	Miss. River-Grand Rapids #9
KETB-09	Fresh (wet) Meadow		2		PEM1B		Yes	High	0.19	0.19	Natural	0	Miss. River-Grand Rapids #9
KETB-10	Shallow Marsh		3		PEM1C		Yes	Low	0.77	0.77	Incidental	0.77	Miss. River-Grand Rapids #9
KETB-11	Deep Marsh		4		PEM1F		Yes	Medium	6.72	3.37	Incidental	3.37	Miss. River-Grand Rapids #9
KETB-12a	Shallow Marsh	Shrub-carr	3	6	PEM1C	PSS1B	Yes	Medium	2.03	1.17	Incidental/ Natural	0	Miss. River-Grand Rapids #9
KETB-12b	Shrub-carr		6		PSS1B		Yes	Medium	4.12	0.04	Incidental/ Natural	0.04	Miss. River-Grand Rapids #9
KETB-13	Shrub-carr		6		PSS1B		Yes	Medium	0.05	0.05	Incidental	0.05	Miss. River-Grand Rapids #9
KETB-14	Shallow Marsh		3		PEM1C		Yes	Medium	1.31	1.31	Natural	0	Miss. River-Grand Rapids #9
KETB-15	Fresh (wet) Meadow		2		PEM1B		Yes	High	0.23	0.18	Natural	0	Miss. River-Grand Rapids #9
KETB-16	Shallow Marsh		3		PEM1C		Yes	High	3.17	1.67	Natural	0	Miss. River-Grand Rapids #9
KETB-17	Deep Marsh		4		PEM1F		Yes	Medium	4.00	2.01	Natural	0	Miss. River-Grand Rapids #9
KETB-18	Coniferous Bog		8		PFO4B		Yes	Medium	42.00	14.66	Natural	0	Miss. River-Grand Rapids #9
KETB-19	Fresh (wet) Meadow		2		PEM1B		Yes	High	0.01	0.01	Natural	0	Miss. River-Grand Rapids #9
KETB-20	Shrub-carr		6		PSS1B		Yes	High	11.29	0.68	Natural	0	Miss. River-Grand Rapids #9
KETB-21a	Alder Thicket		3	6	PEM1C	PSS1B	Yes	Medium	0.32	0.32	Incidental	0.32	Miss. River-Grand Rapids #9
KETB-21b	Shallow Marsh		3		PEM1C		Yes	Medium	0.36	0.36	Incidental	0.36	Miss. River-Grand Rapids #9
KETB-22	Shallow Marsh		3		PEM1C		Yes	Low	0.08	0.08	Incidental	0.08	Miss. River-Grand Rapids #9
KETB-23a	Deep Marsh		6		PSS1B		Yes	High	2.02	2.02	Incidental/ Natural	0.51	Miss. River-Grand Rapids #9
KETB-23b	Alder Thicket	Deep Marsh	6	4	PSS1B	PEM1F	Yes	High	11.09	6.95	Incidental/ Natural	0	Miss. River-Grand Rapids #9
KETB-23c	Shallow Marsh	Deep Marsh	6	4	PSS1B	PEM1F	Yes	High	1.93	1.04	Incidental/ Natural	1.04	Miss. River-Grand Rapids #9
KETB-24a	Shallow Marsh		3		PEM1C		Yes	Medium	3.19	2.58	Incidental	2.58	Miss. River-Grand Rapids #9
KETB-24b	Hardwood Swamp		7		PFO1B		Yes	Medium	6.82	0.32	Natural	0	Miss. River-Grand Rapids #9
KETB-25a	Alder Thicket		6		PSS1B		Yes	Medium	5.06	3.83	Incidental/ Natural	3.83	Miss. River-Grand Rapids #9
KETB-25b	Shallow Marsh		3		PEM1C		Yes	Medium	30.02	0.95	Incidental/ Natural	0.95	Miss. River-Grand Rapids #9
KETB-26	Shallow Marsh		3		PEM1C		Yes	Medium	33.58	25.91	Incidental/ Natural	18.70	Miss. River-Grand Rapids #9
KETB-27	Shallow Marsh		3		PEM1C		Yes	Low	11.64	3.85	Incidental	3.85	Miss. River-Grand Rapids #9
KETB-28	Alder Thicket		6		PSS1B		Yes	Medium	0.71	0.71	Incidental	0.71	Miss. River-Grand Rapids #9
KETB-29	Shallow Marsh		3		PEM1C		Yes	Low	3.07	3.07	Incidental	3.07	Miss. River-Grand Rapids #9
KETB-30	Shrub-carr		6		PSS1A		Yes	Low	0.04	0.04	Incidental	0.04	Miss. River-Grand Rapids #9
KETB-31	Shrub-carr		6		PSS1B		Yes	Low	0.04	0.04	Incidental	0.04	Miss. River-Grand Rapids #9
KETB-32	Shrub-carr		6		PSS1B		Yes	Low	0.04	0.04	Incidental	0.04	Miss. River-Grand Rapids #9
KETB-33	Deep Marsh		4		PEM1F		Yes	Medium	4.28	2.67	Incidental	2.67	Miss. River-Grand Rapids #9
KETB-34	Shallow Marsh		3		PEM1C		Yes	Medium	5.72	5.41	Incidental	5.41	Miss. River-Grand Rapids #9
KETB-35a	Alder Thicket	Shallow Marsh	6	3	PSS1B	PEM1C	Yes	Medium	4.30	4.07	Natural	0	Miss. River-Grand Rapids #9
KETB-35b	Shallow Marsh		3		PEM1C		Yes	Medium	1.52	1.50	Incidental	1.50	Miss. River-Grand Rapids #9
KETB-36a	Alder Thicket	Shallow Marsh	6	3	PSS1B	PEM1C	Yes	Medium	1.91	1.91	Incidental	1.91	Miss. River-Grand Rapids #9
KETB-36b	Shallow Marsh		3		PEM1C		Yes	Medium	0.35	0.35	Incidental	0.35	Miss. River-Grand Rapids #9
KETB-37	Shrub-carr		6		PSS1B		Yes	Medium	1.34	1.34	Incidental	1.34	Miss. River-Grand Rapids #9
KETB-38	Alder Thicket		6		PSS1B		Yes	High	17.08	2.27	Natural	0	St. Louis River #3
KETB-39	Shrub-carr		6		PSS1B		Yes	Medium	0.13	0.12	Incidental	0.12	St. Louis River #3
KETB-40	Shrub-carr		6		PSS1B		Yes	Medium	0.06	0.06	Incidental	0.06	St. Louis River #3
KETB-41	Alder Thicket		6		PSS1B		Yes	High	12.71	12.57	Incidental/ Natural	1.99	St. Louis River #3
KETB-42	Shrub-carr		6		PSS1B		Yes	Low	0.02	0.02	Incidental	0.02	St. Louis River #3
KETB-43	Hardwood Swamp		7		PFO1B		Yes	High	0.41	0.41	Natural	0	St. Louis River #3
KETB-44	Shrub-carr		6		PSS1B		Yes	Medium	0.04	0.04	Incidental	0.04	St. Louis River #3
KETB-45	Shrub-carr		6		PSS1B		Yes	Medium	0.14	0.14	Incidental	0.14	St. Louis River #3
KETB-46	Fresh (wet) Meadow		2		PEM1B		Yes	Medium	0.12	0.12	Incidental	0.12	St. Louis River #3
KETB-47	Shrub-carr		6		PSS1B		Yes	High	51.59	8.70	Incidental/ Natural	1.47	St. Louis River #3
KETB-48	Shallow Marsh		3		PEM1C		Yes	Medium	0.37	0.37	Natural	0	St. Louis River #3
KETB-49	Alder Thicket		6		PSS1B		Yes	High	0.09	0.09	Natural	0	St. Louis River #3
KETB-50	Shallow Marsh		3		PEM1C		Yes	High	8.95	5.07	Natural	0	St. Louis River #3
KETB-51	Fresh (wet) Meadow		2		PEM1B		Yes	Medium	0.56	0.56	Natural	0	St. Louis River #3
KETB-52	Fresh (wet) Meadow		2		PEM1B		Yes	Medium	0.03	0.03	Natural	0	St. Louis River #3
KETB-53	Fresh (wet) Meadow		2		PEM1B		Yes	Low	0.04	0.04	Incidental	0.04	St. Louis River #3
KETB-54	Shallow Marsh		3		PEM1C		Yes	Low	0.30	0.30	Incidental	0.30	St. Louis River #3
KETB-55a	Shrub-carr		6		PSS1C		Yes	Medium	0.86	0.86	Incidental	0.86	St. Louis River #3
KETB-55b	Shallow Marsh		3		PEM1C		Yes	Medium	16.02	3.75	Incidental	3.75	St. Louis River #3
								Wetland Total	**370.47**	**159.02**		**85.97**	
								Deep Water Total	**137.81**	**27.11**			

Table 4b
Wetland Summary
2023 Additional Study Areas

Wetland ID	Dominant Eggers and Reed Classification	Dominant Circular 39 Type	Dominant Cowardin Type	Field-delineated?	Quality	Total Area (ac)	Area Within Study Boundaries (ac)*	Estimated Origin	Incidental Area Within Study Area (ac)	Major Watershed
2023-01	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.08	0.05	Incidental	0.05	St. Louis River #3
2023-02	Hardwood Swamp	7	PFO1A	Field	Medium	0.07	0.01	Natural	0	St. Louis River #3
2023-03	Shallow Marsh	3	PEMC	Field	Medium	4.56	3.46	Natural	0	Miss. River-Grand Rapids #9
2023-04	Shrub-carr	6	PSS1C	Field	Low	0.43	0.30	Incidental	0.30	Miss. River-Grand Rapids #9
2023-05	Hardwood Swamp	7	PFO1A	Field	Medium	0.15	0.14	Incidental	0.14	St. Louis River #3
2023-06	Hardwood Swamp	7	PFO1A	Field	Medium	0.29	0.21	Natural	0	St. Louis River #3
2023-07	Alder Thicket	6	PSS1B	Field	Medium	0.26	0.26	Natural	0.26	St. Louis River #3
2023-08	Shrub-carr	6	PSS1B	Field	Low	0.02	0.02	Incidental	0.02	St. Louis River #3
2023-09	Alder Thicket	6	PSS1B	Field	Medium	0.68	0.65	Incidental	0.65	St. Louis River #3
2023-10	Hardwood Swamp	7	PFO1A	Field	Medium	0.46	0.08	Natural	0	St. Louis River #3
2023-11	Sedge Meadow	2	PEM1B	Field	High	0.01	0.01	Natural	0	St. Louis River #3
2023-12	Seasonally Flooded Basin	1	PEM1A	Field	Medium	0.01	0.01	Incidental	0.01	St. Louis River #3
2023-13	Hardwood Swamp	7	PFO1A	Field	High	0.04	0.04	Natural	0	St. Louis River #3
2023-14	Hardwood Swamp	7	PFO1A	Field	High	0.25	0.25	Natural	0	St. Louis River #3
2023-15	Fresh (wet) Meadow	2	PEM1B	Field	Medium	0.10	0.06	Incidental	0.06	St. Louis River #3
2023-16	Hardwood Swamp	7	PFO1A	Field	High	0.11	0.02	Natural	0	St. Louis River #3
2023-17	Hardwood Swamp	7	PFO1A	Field	Medium	0.54	0.50	Incidental	0.50	Miss. River-Grand Rapids #9
2023-18	Alder thicket	6	PSS1B	Field	Medium	0.01	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-19	Alder thicket	6	PSS1B	Field	Medium	0.21	0.20	Incidental	0.20	Miss. River-Grand Rapids #9
2023-20	Alder thicket	6	PSS1B	Field	Medium	1.06	0.06	Natural/Incidental	0.06	Miss. River-Grand Rapids #9
2023-21	Seasonally Flooded Basin	1	PEM1A	Field	Medium	0.46	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-22	Alder thicket	6	PSS1C	Field	Medium	0.59	0.02	Incidental	0.02	Miss. River-Grand Rapids #9
2023-23	Fresh (wet) Meadow	2	PEM1B	Field	High	0.11	0.11	Natural	0	Miss. River-Grand Rapids #9
2023-24a	Alder Thicket	6	PSS1C	Field	Medium	0.01	0.01	Natural	0	Miss. River-Grand Rapids #9
2023-24b	Alder Thicket	6	PSS1C	Field	Medium	2.19	0.29	Incidental	0.29	Miss. River-Grand Rapids #9
2023-24c	Alder Thicket	6	PSS1C	Field	Medium	0.07	0.00	Incidental	0	Miss. River-Grand Rapids #9
2023-25	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.04	0.04	Incidental	0.04	Miss. River-Grand Rapids #9
2023-26	Sedge Meadow	2	PEM1B	Field	Low	0.16	0.16	Incidental	0.16	Miss. River-Grand Rapids #9
2023-27	Alder Thicket	6	PSS1B	Field	Medium	0.37	0.37	Incidental	0.37	Miss. River-Grand Rapids #9
2023-28	Fresh (wet) Meadow	2	PEM1B	Field	Medium	1.05	1.05	Natural	0	Miss. River-Grand Rapids #9
2023-29	Fresh (wet) Meadow	2	PEM1B	Field	Medium	0.15	0.15	Incidental	0.15	Miss. River-Grand Rapids #9
2023-30	Shrub-carr	6	PSS1B	Field	Low	0.09	0.04	Incidental	0.04	Miss. River-Grand Rapids #9
2023-31	Deep Marsh	4	PEM1H	Field	Low	1.02	0.46	Natural/Incidental	0.32	Miss. River-Grand Rapids #9
2023-32	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.01	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-33a	Deep Marsh	4	PEM1G	Field	Low	33.69	2.56	Natural/Incidental	1.93	Miss. River-Grand Rapids #9
2023-33b	Shrub-carr	6	PSS1C	Field	Low	1.61	1.03	Incidental	1.03	Miss. River-Grand Rapids #9
2023-34	Fresh (wet) Meadow	2	PEM1B	Field	Low	0.01	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-35	Hardwood Swamp	7	PFO1A	Field	Medium	0.12	0.02	Natural	0	Miss. River-Grand Rapids #9
2023-36	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.13	0.13	Incidental	0.13	Miss. River-Grand Rapids #9
2023-37a	Shrub-carr	6	PSS1B	Field	Medium	1.53	1.25	Incidental	1.25	Miss. River-Grand Rapids #9
2023-37b	Hardwood Swamp	7	PFO1A	Field	Medium	1.61	0.00	Natural	0	Miss. River-Grand Rapids #9
2023-38	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.12	0.12	Incidental	0.12	Miss. River-Grand Rapids #9
2023-39	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.31	0.31	Incidental	0.31	Miss. River-Grand Rapids #9
2023-40a	Fresh (wet) Meadow	2	PEM1B	Field	Low	0.26	0.26	Incidental	0.26	Miss. River-Grand Rapids #9
2023-40b	Deep Marsh	4	PEM1H	Field	Low	0.55	0.17	Incidental	0.17	Miss. River-Grand Rapids #9
2023-41	Alder Thicket	6	PSS1B	Field	Low	0.23	0.20	Natural	0	Miss. River-Grand Rapids #9
2023-42	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.02	0.02	Incidental	0.02	Miss. River-Grand Rapids #9
2023-43	Fresh (wet) Meadow	2	PEM1B	Field	Low	22.89	0.03	Incidental	0.03	Miss. River-Grand Rapids #9
2023-44a	Fresh (wet) Meadow	2	PEM1B	Field	Medium	0.42	0.41	Incidental	0.41	Miss. River-Grand Rapids #9
2023-44b	Shrub-carr	6	PSS1C	Field	Medium	1.31	0.13	Incidental	0.13	Miss. River-Grand Rapids #9
2023-44c	Fresh (wet) Meadow	2	PEM1B	Field	Medium	11.82	0.55	Natural	0	Miss. River-Grand Rapids #9
2023-45	Alder Thicket	6	PSS1C	Field	Low	0.52	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-46	Hardwood Swamp	7	PFO1B	Field	Medium	0.15	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-47	Seasonally Flooded Basin	1	PEM1A	Field	Low	0.02	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-48	Shallow Marsh	3	PEM1C	Field	Low	0.16	0.06	Incidental	0.06	Miss. River-Grand Rapids #9
2023-49a	Shallow Marsh	3	PEM1C	Field	Low	0.27	0.21	Incidental	0.21	Miss. River-Grand Rapids #9
2023-49b	Shallow Marsh	3	PEM1C	Field	Low	0.01	0.01	Incidental	0.01	Miss. River-Grand Rapids #9
2023-49c	Shallow Marsh	3	PEM1C	Field	Low	0.14	0.14	Incidental	0.14	Miss. River-Grand Rapids #9
2023-49d	Hardwood Swamp	7	PFO1A	Field	Low	0.78	0.20	Natural	0	Miss. River-Grand Rapids #9
2023-49e	Deep Marsh	4	PEM1H	Field	Low	0.88	0.70	Natural	0	Miss. River-Grand Rapids #9
2023-50a	Hardwood Swamp	7	PFO1C	Field	Medium	2.61	1.26	Natural	0	Miss. River-Grand Rapids #9
2023-50b	Shallow Marsh	3	PEM1C	Field	Medium	0.08	0.08	Incidental	0.08	Miss. River-Grand Rapids #9
2023-50c	Shallow Marsh	3	PEM1C	Field	Medium	0.33	0.33	Natural	0	Miss. River-Grand Rapids #9
2023-50d	Hardwood Swamp	7	PFO1A	Field	Medium	0.26	0.10	Natural	0	Miss. River-Grand Rapids #9
					Wetland Total	**98.52**	**19.38**		**10.00**	

Table 5a
Wetland Functional Assessment Results
2021 Study Area

Wetland ID	KETB-01	KETB-02	KETB-03	KETB-04	KETB-05	KETB-06	KETB-07	KETB-08	KETB-09	KETB-10	KETB-11	KETB-12	KETB-13	KETB-14
Date	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021
Field Team	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2
Community 1 Eggers and Reed	Fresh (wet) Meadow	Alder Thicket	Alder Thicket	Deep Marsh	Hardwood Swamp	Shrub-carr	Hardwood Swamp	Hardwood Swamp	Fresh (wet) Meadow	Shallow Marsh	Deep Marsh	Shallow Marsh	Shrub-carr	Shallow Marsh
Community 1 %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	60%	100%	100%
Wetland Plot ID	SP-01W	SP-03W	SP-05W	SP-07W	SP-09W	SP-11W	SP-13W	SP-15W	SP-17W	SP-18W	SP-20W	SP-22W	SP-24W	SP-26W
Upland Plot ID	SP-02U	SP-04U	SP-06U	SP-08U	SP-10U	SP-12U	SP-14U	SP-16U	SP-16U	SP-19U	SP-21U	SP-23U	SP-25U	SP-25U
Community 2 Eggers and Reed												Shrub-carr		
Community 2 %												40%		
Wetland Plot ID														
Upland Plot ID														
Community 3 Eggers and Reed														
Community 3 %														
Wetland Plot ID														
Upland Plot ID														
Topographic Setting	Depressional - isolated	Depressional - isolated	Slope/ Depressional - tributary	Depressional - tributary	Depressional/ Slope - tributary	Depressional - isolated	Depressional - tributary	Depressional - isolated	Depressional - isolated	Depressional - isolated	Depressional - tributary	Depressional - tributary	Depressional - isolated	Depressional - isolated
Vegetative Diversity[1]	H (1.0)	M (0.5)	H (1.0)	L (0.1)	M (0.5)	H (1.0)	H (1.0)	M (0.5)	H (1.0)	L (0.1)	M (0.5)	H (1.0)	H (1.0)	M (0.5)
Outlet Configuration[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	H (1.0)	H (1.0)	L (0.1)	H (1.0)	M (0.5)	L (0.1)	M (0.5)
Upland Condition[1]	M (0.5)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	H (1.0)	H (1.0)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	M (0.5)
Wildlife Habitat[1]	M (0.5)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	H (1.0)	H (1.0)	H (1.0)	M (0.5)	H (1.0)	H (1.0)	M (0.5)	H (1.0)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.44	0.34	0.44	0.26	0.34	0.44	0.62	0.72	0.82	0.26	0.62	0.62	0.44	0.52
Overall Condition	Medium	Medium	Medium	Low	Medium	Medium	Medium	High	High	Low	Medium	Medium	Medium	Medium
Human Disturbance[1]	H - tailings basin	H - road, tailings basin	H - road, tailings basin	High- impoundment, tailings basin	High - tailings basin	High - tailings basin	High - tailings basin	Low	Low	High - grading	High - tailings basin	High - tailings basin	Medium - road	Medium - roads
Photo[2]	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Comments on history, origin, and connectivity	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is impounded on the east sides by the perimeter berm of the tailings basin. This area was historically graded during the construction of the tailings basin. The wetland appears to have formed from tailings basin construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located on an abandoned road and impounded on the south side by a berm. This area was historically disturbed by the construction of the tailings basin. The wetland appears to have formed from road construction activities.	Wetland is located on an abandoned road and outlets into Wetland KETB-04. Wetland KETB-04 is located at the fringe of Keetac's Reservoir 6. The water in Reservoir 6 discharges via a channel to the north into Reservoir 2. Water from Reservoir 2 is routed into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This area was historically disturbed by the construction of the tailings basin. The wetland appears to have formed from tailings basin construction activities.	Wetland is located in the fringe of Keetac's Reservoir 6. The water in Reservoir 6 discharges via a channel to the north into Reservoir 2. Water from Reservoir 2 is routed into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This wetland was formed by the impoundment of Welcome Creek prior to 1972.	Wetland is located in a ditch adjacent to the tailings berm and on a hillslope, with no surficial outlets evident. This wetland appears to have formed as a result of ditch construction.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to the tailings basin berm in an area that was historically graded. The wetland appears to have formed as a result of tailings basin construction activities.	Wetland is located in ditches adjacent to the tailings basin and on a slope. The wetland outlets into a large wetland complex adjacent to Reservoir 2. The water in Reservoir 2 is routed into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. The wetland appears to have formed from tailings basin construction ac activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was historically excavated as part of tailings basin construction activities. Wetland appears to have formed as a result of construction activities.	Wetland is located in a depression. The wetland outlets into Wetland KETB-07. Wetland KETB-07 outlets into a large wetland complex adjacent to Reservoir 2. The water in Reservoir 2 is routed into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This area was graded as part of the construction of the tailings basin. Wetland appears to have formed as a result of grading activity.	Wetland is located in a depression. The wetland outlets into a large wetland complex adjacent to Reservoir 2. The water in Reservoir 2 is routed into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This area was graded as part of the construction of the tailings basin. Wetland appears to have formed as a result of grading activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was graded as part of the tailings basin construction. Wetland appears to have formed from construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but appears to have been partially disturbed by roads.

[1]Ratings based on MnRAM; see Appendix C.

[2]See Appendix B: Photo Log.

Table 5a
Wetland Functional Assessment Results
2021 Study Area

Wetland ID	KETB-15	KETB-16	KETB-17	KETB-18	KETB-19	KETB-20	KETB-21	KETB-22	KETB-23	KETB-24	KETB-25	KETB-26	KETB-27	KETB-28
Date	8/4/2021	8/4/2021	8/4/2021	8/4/2021	8/4/2021	8/4/2021	8/4/2021 and 9/29/2022	8/4/2021	8/4/2021	8/4/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021
Field Team	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	AMJ2, MJS2	MJS2	MJS2	MJS2	MJS2
Community 1 Eggers and Reed	Fresh (wet) Meadow	Shallow Marsh	Deep Marsh	Coniferous Bog	Fresh (wet) Meadow	Shrub-carr	Shallow Marsh	Shallow Marsh	Alder Thicket	Hardwood Swamp	Shallow Marsh	Shallow Marsh	Shallow Marsh	Alder Thicket
Community 1 %	100%	100%	100%	100%	100%	100%	53%	100%	70%	70%	85%	100%	100%	100%
Wetland Plot ID	SP-27W	SP-29W	SP-30W	SP-32W	SP-34W	SP-36W	SP-90W	SP-39W	SP-40W	SP-42W	SP-44W	SP-46W	SP-48W	SP-50W
Upland Plot ID	SP-28U	SP-28U	SP-31U	SP-33U	SP-35U	SP-35U	SP-91U	SP-38U	SP-41U	SP-43U	SP-45U	SP-47U	SP-49U	SP-51U
Community 2 Eggers and Reed							Alder Thicket		Deep Marsh	Shallow Marsh	Alder Thicket			
Community 2 %							47%		20%	30%	15%			
Wetland Plot ID							SP-37W				SP23-95	SP23-30		
Upland Plot ID							SP-38U					SP23-31		
Community 3 Eggers and Reed									Shallow Marsh					
Community 3 %									10%					
Wetland Plot ID														
Upland Plot ID														
Topographic Setting	Depressional - isolated	Depressional - isolated	Depressional - isolated	Depressional - isolated	Depressional - isolated	Depressional - tributary	Depressional - isolated	Depressional - isolated	Depressional - tributary	Depressional - tributary	Depressional - tributary	Depressional-isolated	Depressional-isolated	Depressional-isolated
Vegetative Diversity[1]	H (1.0)	H (1.0)	M (0.5)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	L (0.1)	H (1.0)	M (0.5)	H (1.0)	H (1.0)	L (0.1)	M (0.5)
Outlet Configuration[1]	H (1.0)	H (1.0)	M (0.5)	M (0.5)	H (1.0)	H (1.0)	L (0.1)	L (0.1)	H (1.0)	L (0.1)	M (0.5)	M (0.5)	L (0.1)	L (0.1)
Upland Condition[1]	H (1.0)	M (0.5)	M (0.5)	M (0.5)	H (1.0)	H (1.0)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	M (0.5)	L (0.1)	L (0.1)	M (0.5)
Wildlife Habitat[1]	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	M (0.5)	M (0.5)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	M (0.5)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.82	0.72	0.52	0.62	0.82	0.82	0.44	0.26	0.82	0.44	0.62	0.54	0.28	0.34
Overall Condition	High	High	Medium	Medium	High	High	Medium	Low	High	Medium	Medium	Medium	Low	Medium
Human Disturbance[1]	Low	Low - road	Medium - roads, grading	Medium - roads	Low	Low	High - grading	High - ditch, roads	Medium - grading, tailings basin	High - grading	High - roads, grading	High - roads, grading	High - roads, grading	High - roads, tailings basin
Photo[2]	15	16	17	18	19	20	21	None	22	23	24	25	26	27
Comments on history, origin, and connectivity	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but appears to have been partially disturbed by roads.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but has been disturbed by grading and roads.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but has been disturbed by roads.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native.	Wetland is located in a depression. The wetland extends outside of the study area into a large wetland complex. The wetland complex outlets into Hay Creek which outlets into Swan Lake and ultimately reaches the Mississippi River. The wetland appears to be native but have been disturbed by road and grading activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. The wetland is impounded on the east side by a road and on the west side by a berm. The wetland is located in an area that was graded as part of the tailings basin construction. Wetland appears to have formed as a result of grading activities.	Wetland is located in a ditch feature in an area that was graded as part of the tailings basin construction. The wetland is impounded on all sides and lacks a surficial outlet. Wetland appears to have formed as a result of construction activity.	Wetland is located in a depression. The wetland is part of a large complex that extends outside of the study area to the south. The wetland complex outlets into Hay Creek which outlets into Swan Lake and ultimately reaches the Mississippi River. The wetland appears to be native but has been impacted grading activity on the west and north sides.	Wetland is located in a depression. The wetland outlets outside of the study area and into a large wetland complex adjacent to Hay Creek. Hay Creek outlets into Swan Lake and ultimately reaches the Mississippi River. The wetland is located in an area that was excavated and graded as part of the tailings basin construction. The wetland appears to have formed as a result of construction activities.	Wetland is located in a depression. The wetland outlets outside of the study area into Hay Creek. Hay Creek outlets into Swan Lake and ultimately reaches the Mississippi River. The portion of wetland located within the study area was graded as part of the tailings basin construction and appears to have developed wetland conditions as a result. . Portions of the wetland located outside of the study area are native.	Wetland is located in a depression. The wetland is located in an area that used to be Hay Creek. Hay Creek outlets into Swan Lake and ultimately reaches the Mississippi River. The north and east sides of the wetland are located in an area that was graded as part of the tailings basin construction. A small portion on the west side of the wetland is remnant piece of Hay Creek. A majority of the wetland appears to have formed as a result of construction activity.	Wetland is located in a depression. The wetland is isolated by the road system surrounding it. This area was graded as part of the tailings basin construction and the wetland appears to have formed as a result of this activity.	Wetland is located in ditch feature adjacent to the tailings basin berm. The wetland outlets into Wetland KETB-29 which outlets into Wetland KETB-27. Wetland KETB-27 is isolated by the road system surrounding it. The wetland is located adjacent to roads and the tailings basin berm and appears to have been constructed to move water in this area..

[1]Ratings based on MnRAM; see Appendix C.

[2]See Appendix B: Photo Log.

Table 5a
Wetland Functional Assessment Results
2021 Study Area

Wetland ID	KETB-29	KETB-30	KETB-31	KETB-32	KETB-33	KETB-34	KETB-35	KETB-36	KETB-37	KETB-38	KETB-39	KETB-40	KETB-41	KETB-42
Date	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/4/2021	8/13/2021	8/13/2021	8/4/2021	8/4/2021	8/4/2021	8/4/2021	8/4/2021
Field Team	MJS2	MJS2	MJS2	MJS2	MJS2	MJS2	CJE, PLL	MJS2	MJS2	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL
Community 1 Eggers and Reed	Shallow Marsh	Shrub-carr	Shrub-carr	Shrub-carr	Deep Marsh	Shallow Marsh	Alder Thicket	Alder Thicket	Shrub-carr	Alder Thicket	Shrub-carr	Shrub-carr	Alder Thicket	Shrub-carr
Community 1 %	100%	100%	100%	100%	100%	100%	75%	85%	100%	100%	100%	100%	100%	100%
Wetland Plot ID	SP-52W	SP-54W	SP-55W	SP-57W	SP-58W	SP-60W	SP-61W	SP-64W	SP-66W	SP-67W	SP-66W	SP-66W	SP-69W	SP-66W
Upland Plot ID	SP-53U	SP-53U	SP-56U	SP-59U	SP-59U	SP-59U	SP-62U	SP-65U	SP-65U	SP-68U	SP-65U	SP-65U	SP-70U	SP-65U
Community 2 Eggers and Reed							Shallow Marsh	Shallow Marsh						
Community 2 %							25%	15%						
Wetland Plot ID							SP-63W							
Upland Plot ID							SP-62U							
Community 3 Eggers and Reed														
Community 3 %														
Wetland Plot ID														
Upland Plot ID														
Topographic Setting	Depressional-isolated	Depressional-isolated	Depressional-isolated	Depressional-isolated	Depressional-isolated	Depressional - tributary	Depressional - tributary	Depressional - tributary	Depressional - tributary	Depressional - tributary	Depressional-isolated	Depressional-isolated	Depressional - tributary	Depressional-isolated
Vegetative Diversity[1]	L (0.1)	L (0.1)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)
Outlet Configuration[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	H (1.0)	L (0.1)	L (0.1)	H (1.0)	L (0.1)
Upland Condition[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	M (0.5)	M (0.5)	L (0.1)
Wildlife Habitat[1]	H (1.0)	L (0.1)	L (0.1)	L (0.1)	H (1.0)	H (1.0)	H (1.0)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	M (0.5)	H (1.0)	L (0.1)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.28	0.1	0.18	0.18	0.46	0.44	0.62	0.44	0.44	0.82	0.44	0.44	0.72	0.28
Overall Condition	Low	Low	Low	Low	Medium	Medium	Medium	Medium	Medium	High	Medium	Medium	High	Low
Human Disturbance[1]	High - roads, grading	High - grading, ditch	High - roads, ditch	High - roads, ditch	High - roads, grading	High - roads, grading	High - grading	High - grading	High - tailings basin, ditch	Medium - grading, farming	High - tailings basin, ditch	High - tailings basin, ditch	Medium - tailings basin, farming	High - road
Photo[2]	28	29	30	31	32	34	34	35	36	37	38	39	40	41
Comments on history, origin, and connectivity	Wetland is located in a depression and is impounded on the west side by an old road. The wetland outlets into Wetland KETB-27 via a notch in an old road. Wetland KETB-27 is isolated by the road system surrounding it. The wetland is located in an area that was graded as part of the tailings basin construction. The wetland appears to have formed as a result of construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was graded as part of the tailings basin construction. Wetland appears to have formed as a result of construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to a road in an area that was graded as part of the tailings basin construction. Wetland appears to have formed as a result of construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to a road in an area that was graded as part of the tailings basin construction. Wetland appears to have formed as a result of construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was excavated as part of the tailings basin construction. Wetland appears to have formed as a result of construction activities.	Wetland is located in a depression. Wetland outlets outside of the project area in a series of ponds and wetlands and eventually into Hay Creek. Hay Creek outlets into Swan Lake and ultimately reaches the Mississippi River. The wetland is located in an area that was excavated as part of the tailings basin construction. The wetland appears to have formed as a result of construction activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. The eastern part of the wetland is located in an area that was excavated as part of the tailings basin construction. This part of the wetland appears to have formed as a result of construction activity while the western part of the wetland appears to be native but has been disturbed by nearby mining activity.	Wetland is located in a depression. Wetland outlets into KETB-37 which in an enclosed depression with no surficial outlets. Wetland is located in an area that was graded as part of tailings basin construction. This wetland appears to have formed as a result of construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. The wetland is located in a ditch feature adjacent to the tailings basin berm. This area was graded as part of the tailings basin construction activity. The wetland appears to have formed as a result of construction activities.	Wetland is located in a depression. Wetland outlets outside of the study area through a series of wetlands and ponds and into the West Swan River. The West Swan River outlets into the St. Louis River and ultimately reaches Lake Superior. This wetland appears to be native but has been disturbed by historic grading and farming activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in a ditch adjacent to the tailings basin berm. This area was graded during the construction of the tailings basin berm. The wetland appears to have formed as a result of construction activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in a ditch adjacent to the tailings basin berm. This area was graded during the construction of the tailings basin berm. The wetland appears to have formed as a result of construction activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but has been disturbed by farming and the tailings basin construction.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located on a former road. Wetland appears to have formed as a result of soil compaction.

[1]Ratings based on MnRAM; see Appendix C.

[2]See Appendix B: Photo Log.

Table 5a
Wetland Functional Assessment Results
2021 Study Area

Wetland ID	KETB-43	KETB-44	KETB-45	KETB-46	KETB-47	KETB-48	KETB-49	KETB-50	KETB-51	KETB-52	KETB-53	KETB-54	KETB-55
Date	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021
Field Team	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL	CJE, PLL
Community 1 Eggers and Reed	Hardwood Swamp	Shrub-carr	Shrub-carr	Fresh (wet) Meadow	Shrub-carr	Shallow Marsh	Alder Thicket	Shallow Marsh	Fresh (wet) Meadow	Fresh (wet) Meadow	Fresh (wet) Meadow	Shallow Marsh	Shallow Marsh
Community 1 %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	80%
Wetland Plot ID	SP-71W			SP-73W	SP-77W	SP-75W	SP-79W	SP-80W	SP-82W	SP-84W	SP-85W	SP-87W	
Upland Plot ID	SP-72U			SP-74U	SP-78U	SP-76U	SP-78U	SP-81U	SP-83U	SP-83U	SP-86U	SP-86U	
Community 2 Eggers and Reed													Shrub-carr
Community 2 %													20%
Wetland Plot ID													SP-88W
Upland Plot ID													SP-89U
Community 3 Eggers and Reed													
Community 3 %													
Wetland Plot ID													
Upland Plot ID													
Topographic Setting	Depressional-isolated	Depressional-isolated	Depressional-isolated	Depressional-isolated	Slope-flow-through	Depressional-isolated	Depressional-isolated	Depressional - tributary	Depressional-isolated	Depressional-isolated	Depressional-isolated	Depressional-isolated	Depressional-isolated
Vegetative Diversity[1]	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	M (0.5)	L (0.1)	H (1.0)
Outlet Configuration[1]	H (1.0)	L (0.1)	L (0.1)	L (0.1)	H (1.0)	L (0.1)	H (1.0)	H (1.0)	M (0.5)	H (1.0)	L (0.1)	L (0.1)	L (0.1)
Upland Condition[1]	H (1.0)	M (0.5)	M (0.5)	M (0.5)	H (1.0)	L (0.1)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	L (0.1)	L (0.1)	M (0.5)
Wildlife Habitat[1]	H (1.0)	M (0.5)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	H (1.0)	H (1.0)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	H (1.0)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.82	0.44	0.44	0.44	0.9	0.36	0.72	0.72	0.52	0.62	0.26	0.18	0.54
Overall Condition	High	Medium	Medium	Medium	High	Medium	High	High	Medium	Medium	Low	Low	Medium
Human Disturbance[1]	Low - farming	High - tailings basin, ditch	High - tailings basin, ditch	High - tailings basin, ditch	Meidium - grading	High - grading	Medium - tailings basin	Medium -roads	Medium	Medium - grading	High - grading, roads	High - grading, roads	High - grading
Photo[2]	42	43	None	44	45	46	47	48	49	None	None	50	51
Comments on history, origin, and connectivity	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but was historically disturbed by farming.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in a ditch adjacent to the tailings basin berm. This area was graded during the construction of the tailings basin berm. The wetland appears to have formed as a result of construction activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in a ditch adjacent to the tailings basin berm. This area was graded during the construction of the tailings basin berm. The wetland appears to have formed as a result of construction activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in a ditch adjacent to the tailings basin berm. This area was graded during the construction of the tailings basin berm. The wetland appears to have formed as a result of construction activity.	Wetland is located on a slope adjacent to the West Swan River. The West Swan River outlets into the St. Louis River and ultimately reaches Lake Superior. Parts of the wetland adjacent to the tailings basin have been disturbed by grading activity while other portions of the wetland are native.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but has been disturbed by grading activities surrounding the wetland.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native.	Wetland is located in a depression. Wetland outlets into Wetland KETB-47 which is adjacent to the West Swan River. The West Swan River outlets into the St. Louis River and ultimately reaches Lake Superior. Wetland is native but has been disturbed by a road running through the wetland.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but has been disturbed by a roads adjacent to the wetland.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is native but has been disturbed by grading adjacent to the wetland.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to a road and in an area that was graded as part of the tailings basin construction. Wetland appears to have fromed as a result of construction activites.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was excavated as part of the tailings basin construction. Wetland appears to have fromed as a result of construction activites.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was excavated as part of the tailings basin construction. Wetland appears to have fromed as a result of construction activites.

[1]Ratings based on MnRAM; see Appendix C.
[2]See Appendix B: Photo Log.

Table 5b
Wetland Functional Assessent Results
2023 Additional Study Areas

Wetland ID	2023-01	2023-02	2023-03	2023-04	2023-05	2023-06	2023-07	2023-08	2023-09	2023-10	2023-11	2023-12	2023-13
Date	8/14/2023	8/14/2023	8/14/2023	8/14/2023	8/14/2023	8/14/2023	8/14/2023	8/14/2023	8/15/2023	8/15/2023	8/15/2023	8/15/2023	8/15/2023
Field Team	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2
Community 1 Eggers and Reed	Seasonally Flooded Basin	Hardwood Swamp	Alder Thicket	Shrub-carr	Hardwood Swamp	Hardwood Swamp	Alder Thicket	Shrub-carr	Alder Thicket	Hardwood Swamp	Sedge Meadow	Seasonally Flooded Basin	Hardwood Swamp
Community 1 %	100	100	100	100	100	100	100	100	100	100	100	100	100
Wetland Plot ID	SP23-01	SP23-03	SP23-04	SP23-06	SP23-08	SP23-10	SP23-13	SP23-14	SP23-16	SP23-18	SP23-20	SP23-97	SP23-22
Upland Plot ID	SP23-02	SP23-02	SP23-05	SP23-07	SP23-09	SP23-11	SP23-12	SP23-15	SP23-17	SP23-19	SP23-21	SP23-98	SP23-23
Community 2 Eggers and Reed	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 2 %	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 3 Eggers and Reed	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 3 %	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Topographic Setting	Depressional – no obvious inlets or outlets	Depressional – no obvious inlets or outlets	Depressional – no obvious inlets or outlets	Depressional - no obvious inlets or outlets	Depressional – Tributary	Depressional – no obvious inlets or outlets	Slope	Depression - no obvious inlets or outlets	Depression - flow through	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depressional - flow-through	Depression - no obvious inlets or outlets
Vegetative Diversity[1]	M (0.5)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	M (0.5)	H (1.0)	H (1.0)	M (0.5)	H (1.0)	H (1.0)
Outlet Configuration[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	H (1.0)
Upland Condition[1]	L (0.1)	M (0.5)	L (0.1)	L (0.1)	M (0.5)	M (0.5)	M (0.5)	L (0.1)	M (0.5)	M (0.5)	H (1.0)	M (0.5)	H (1.0)
Wildlife Habitat[1]	M (0.5)	M (0.5)	M (0.5)	L (0.1)	L (0.1)	M (0.5)	M (0.5)	L (0.1)	H (1.0)	H (1.0)	H (1.0)	L (0.1)	H (1.0)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.26	0.44	0.36	0.28	0.36	0.44	0.44	0.18	0.62	0.62	0.82	0.44	0.82
Overall Condition	Low	Medium	Medium	Low	Medium	Medium	Medium	Low	Medium	Medium	High	Medium	High
Human Disturbance[1]	High - road, impoundment	Low	High - tailings basin, impoundment	High - tailings basin, impounded	High - road, impoundment	Medium - grading	Medium - grading	High - road, impoundment, grading	Medium - historical trail	Low	Low	Medium - road	Low
Photo[2]	1	2	3	4	5	6	7	8	9	10	11	12	13
Comments on history, origin, and connectivity	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is impounded on the southeast side by a road and a berm on the northwest side. The wetland appears to have formed from the road construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Human disturbance is adjacent to the wetland, but the disturbance has had minimal, if any, effect on the wetland.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is impounded on the southeast side by a road and a berm on the northwest side. The wetland appears to have following the construction of the road/berm.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Human disturbance is adjacent to the wetland on nearly all sides.	Wetland is located in a ditch feature. The wetland is impounded on all sides and appears to outflow into Wetland 2023-03 via a surficial upland drainage feature. It is not likely that this is a frequent occurance.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. A constructed berm is present on the southern edge indicating historical disturbance however the wetland appears to be natural in origin.	Wetland is located in a closed depression with no deifinitive outlets evident. The wetland connects to KETB-55 outside of the Study Area to the northeast. Wetland appears to be of natural origin.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Wetland is impounded by a berm, road and hillslope topography.	Wetland is located in a depression with no difinitave surficial outlets present. Wetland has formed on a historic logging trail.	Wetland is located in a depression with no surficial outlets present. Wetland appears to be natural in origin and is located adjacent to historical disturbances from logging. The historical logging trails do not appear to extend into the wetland.	Wetland is located in a topographically enclosed depression with no surficial outlets present. There is evidence of disturbance. Wetland appears to to be a naturally occurring wetland.	Wetland is located in a depression, A surficial outlet is evident on the south side of the wetland, but is 1 to two feet higher in elevation than the wetland. The channel does not exhibit wetland features.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland appears to be natural in origin.

[1]Ratings based on MnRAM; see Appendix C.
[2]See Appendix B: Photo Log.

Table 5b
Wetland Functional Assessent Results
2023 Additional Study Areas

Wetland ID	2023-14	2023-15	2023-16	2023-17	2023-18	2023-19	2023-20	2023-21	2023-22	2023-23	2023-24	2023-25	2023-26
Date	8/15/2023	8/15/2023	8/15/2023	8/16/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023
Field Team	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2
Community 1 Eggers and Reed	Hardwood Swamp	Fresh (wet) Meadow	Hardwood Swamp	Hardwood Swamp	Alder Thicket	Alder Thicket	Alder Thicket	Seasonally Flooded Basin	Alder thicket	Fresh (wet) Meadow	Alder Thicket	Seasonally Flooded Basin	Sedge meadow
Community 1 %	100	100	100	100	100	100	100	100	100	100	100	100	100
Wetland Plot ID	SP23-24	SP23-26	SP23-28	SP23-32	SP23-35	SP23-36	SP23-37	SP23-39	SP23-40	SP23-42	SP23-44	SP23-47	SP23-48
Upland Plot ID	SP23-25	SP23-27	SP23-29	SP23-33	SP23-34	SP23-34	SP23-38	SP23-38	SP23-41	SP23-43	SP23-45	SP23-46	SP23-49
Community 2 Eggers and Reed	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 2 %	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	-	-	-	-	-	-	-	SP23-94	-
Community 3 Eggers and Reed	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 3 %	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Topographic Setting	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - flow through	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets
Vegetative Diversity[1]	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	M (0.5)	H (1.0)	L (0.1)	L (0.1)	H (1.0)
Outlet Configuration[1]	H (1.0)	L (0.1)	H (1.0)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	M (0.5)	M (0.5)	M (0.5)	L (0.1)	L (0.1)
Upland Condition[1]	H (1.0)	M (0.5)	H (1.0)	M (0.5)	M (0.5)	M (0.5)	L (0.1)	L (0.1)	M (0.5)	H (1.0)	H (1.0)	L (0.1)	L (0.1)
Wildlife Habitat[1]	H (1.0)	M (0.5)	H (1.0)	M (0.5)	M (0.5)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	L (0.1)	L (0.1)	L (0.1)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.82	0.44	0.82	0.44	0.44	0.54	0.46	0.54	0.52	0.72	0.36	0.1	0.28
Overall Condition	High	Medium	High	Medium	Medium	Medium	Medium	Medium	Medium	High	Medium	Low	Low
Human Disturbance[1]	Low	Medium - grading	Low	Medium - grading	Medium - grading	Medium - grading	Medium - grading	Medium - grading, berming	Medium - grading	Low	Medium - grading	High - grading and excavation	Medium - road, grading
Photo[2]	14		15	16	17	18	19	20	21	22	23	24	25
Comments on history, origin, and connectivity	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland appears to be natural in origin.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland appears to be natural in origin.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland appears to be natural in origin.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Presence of berms and multiple shallow concavities suggest the wetland is not natural in origin and may be a result of grading during historical logging or mining activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland is located in an area that was historically graded. Wetland appears to have formed as a result of grading activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland is located in an area that washistorically graded. Wetland appears to have formed as a result of grading activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland has steep bermed edges on all sides of the wetland; wetland does not appear to be natural in origin within the Study Area.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland is located in a bermed area that was graded as part of historical logging in the area. Wetland appears to have formed as a result of grading activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland is located in a bermed area that was historically graded from either logging or mining activities. Wetland appears to have formed as a result of grading activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland appears to be natural in origin. Presence of down trees and stumps indicate the historical beaver activity.	Wetland is located in depressions, surficial outlets are evident. Wetlands 2023-24b and 2023-24c developed within historical grading footprint with no evidence of historic wetland conditions. Wetland 2023-24a appears to be natural with no historic disturbance.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Steep banks impound the wetland on all sides. Erosion observed on the banks of the landform. Wetland appears to be a result of historical grading and excavation activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located at the base of the slope associated with a nearby road; wetland does not appear to be natural in origin and functions as a road ditch.

[1]Ratings based on MnRAM; see Appendix C.
[2]See Appendix B: Photo Log.

Table 5b
Wetland Functional Assessent Results
2023 Additional Study Areas

Wetland ID	2023-27	2023-28	2023-29	2023-30	2023-31	2023-32	2023-33	2023-34	2023-35	2023-36	2023-37	2023-38	2023-39
Date	8/17/2023	8/17/2023	8/17/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023
Field Team	CJE / AMJ2	CJE / AMJ2	CJE / AMJ2	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO
Community 1 Eggers and Reed	Alder Thicket	Fresh (wet) Meadow	Fresh (wet) Meadow	Shrub-carr	Deep Marsh	Seasonally Flooded Basin	Deep Marsh	Fresh (wet) Meadow	Hardwood Swamp	Seasonally Flooded Basin	Shrub-carr	Seasonally Flooded Basin	Seasonally Flooded Basin
Community 1 %	100	100	100	100	100	100	95	100	100	100	100	100	100
Wetland Plot ID	SP23-50	SP23-52	SP23-54	SP23-55	SP23-57	SP23-59	SP23-60	SP23-61	SP23-63	SP23-64	SP23-66	SP23-92	SP23-92
Upland Plot ID	SP23-51	SP23-53	SP23-53	SP23-56	SP23-56	SP23-58	SP23-58	SP23-62	SP23-62	SP23-65	SP23-65	SP23-93	SP23-93
Community 2 Eggers and Reed	-	-	-	-	-	-	Shrub-Carr	-	-	-	Hardwood Swamp	-	-
Community 2 %	-	-	-	-	-	-	5	-	-	-	50	-	-
Wetland Plot ID	-	-	-	-	-	-	SP23-67	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 3 Eggers and Reed	-	-	-	-	-	-	-	-	-	-	-	-	-
Community 3 %	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Topographic Setting	Depression - no obvious inlets or outlets	Depressional – Tributary	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depressional - flow through	Depression - no obvious inlets or outlets	Lacustrine Fringe	Depression - no obvious inlets or outlets	Depression - Tributary	Depression - no obvious inlets or outlets	Depression - Tributary	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets
Vegetative Diversity[1]	L (0.1)	H (1.0)	H (1.0)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	H (1.0)	H (1.0)	H (1.0)	H (1.0)	H (1.0)
Outlet Configuration[1]	M (0.5)	H (1.0)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Upland Condition[1]	M (0.5)	M (0.5)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	L (0.1)
Wildlife Habitat[1]	M (0.5)	M (0.5)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.34	0.62	0.36	0.1	0.26	0.18	0.26	0.1	0.52	0.28	0.36	0.28	0.28
Overall Condition	Medium	Medium	Medium	Low	Low	Low	Low	Low	Medium	Low	Medium	Low	Low
Human Disturbance[1]	Medium - grading	High - logging and grading	High - logging and grading	High - road	High- impoundment, tailings basin	High - road	High- impoundment, tailings basin	High - logging and grading	High - logging and grading	High - road ditch	High - logging and grading	High - road, grading, excavation	High - road
Photo[2]	26	27	28	29	30	31	32 and 33	34	35	36	37	38	38
Comments on history, origin, and connectivity	Wetland is located in a topographically enclosed depression with no surficial outlets present. Wetland appears to have formed as a result of historical grading activities based upon presence of scraping and berming features.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Area was recently logged; slash, stumps and woody debris present throughout wetland. Wetland was approximately 50% logged at the time of wetland delineation; wetland community type may have differed prior to logging activities but was likely natural in origin. Wetland gently slopes to the east.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Area was recently logged; slash, stumps and woody debris present throughout wetland. Wetland is positioned at the toe of two slopes, one is artificial. Intense rutting in the area and compaction from logging activities may have influenced wetland conditions at this location, but ultimately, the artificial slope to the north impounds the natural flow for the area.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Wetland is positioned between two roads and appears to not be natural in origin due to location and the presence of course fragments in the soil samples. Berming and grading present in the imediate surrounding area.	Wetland is located in the fringe of Keetac's Reservoir 2. The water in Reservoir 2 discharges via a pump into Resivoir 6. Water in Resivoir 6 discharges into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This wetland was formed by the impoundment of Welcome Creek prior to 1972.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located at the toe of the slope associated with a nearby road; wetland does not appear to be natural in origin and currently functions as the road side ditch.	Wetland is located in the fringe of Keetac's Reservoir 6. The water in Reservoir 6 discharges via a channel to the north into Reservoir 2. Water from Reservoir 2 is routed into the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This wetland was formed by the impoundment of Welcome Creek prior to 1972.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Wetland appears to have formed as a result of historical grading and recent logging activities.	Wetland is located in a topographically open area with a slight slope west. Area is located at the toe of a larger slope and a portion of the wetland was recently logged; slash, stumps and woody debris present within wetland.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located at the toe of the slope associated with a nearby road; wetland does not appear to be natural in origin. Signs of historic excavation present.	Wetland is located in a depression with no defined outlet present. Portions of the wetland were recently logged at the time of the delineation; slash, stumps and woody debris present throughout wetland. Although portions of wetland experienced disturbance, the wetland was likely natural in origin and continues north out of the Study Area.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to a trail with evidence of scraping and grading within the wetland; wetland does not appear to be natural in origin.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to a trail with evidence of scraping and grading within the wetland; wetland does not appear to be natural in origin.

[1]Ratings based on MnRAM; see Appendix C.
[2]See Appendix B: Photo Log.

Table 5b
Wetland Functional Assessent Results
2023 Additional Study Areas

Wetland ID	2023-40	2023-41	2023-42	2023-43	2023-44	2023-45	2023-46	2023-47	2023-48	2023-49	2023-50
Date	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/24/2023	8/25/2023	8/25/2023	8/25/2023	8/25/2023	8/25/2023	8/25/2023
Field Team	CJE / AMJ2	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO	CJE / CLO
Community 1 Eggers and Reed	Deep Marsh	Alder Thicket	Seasonally Flooded Basin	Fresh (wet) Meadow	Fresh (wet) Meadow	Alder Thicket	Hardwood Swamp	Seasonally Flooded Basin	Fresh (wet) Meadow	Deep Marsh	Hardwood Swamp
Community 1 %	70	100	100	100	90	100	100	100	100	40	90
Wetland Plot ID	SP23-68	SP23-70	SP23-72	SP23-74	SP23-76, SP23-80	SP23-81	SP23-83	SP23-85	SP23-86	SP23-88	SP23-89
Upland Plot ID	SP23-69	SP23-73	SP23-73	SP23-75	SP23-77, SP23-79	SP23-82	SP23-84	SP23-84	SP23-87	SP23-87	SP23-91
Community 2 Eggers and Reed	Fresh (wet) Meadow	-	-	-	Shrub-Carr	-	-	-	-	Hardwood Swamp	Shallow Marsh
Community 2 %	30	-	-	-	10	-	-	-	-	40	10
Wetland Plot ID	SP23-71	-	-	-	SP23-78	-	-	-	-	-	SP23-90
Upland Plot ID	SP23-69	-	-	-	SP23-79	-	-	-	-	SP23-91	
Community 3 Eggers and Reed	-	-	-	-	-	-	-	-	-	Shallow Marsh	-
Community 3 %	-	-	-	-	-	-	-	-	-	20	-
Wetland Plot ID	-	-	-	-	-	-	-	-	-	-	-
Upland Plot ID	-	-	-	-	SP23-79	-	-	-	-	-	-
Topographic Setting	Depression - Tributary	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Slope	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets	Depression - no obvious inlets or outlets
Vegetative Diversity[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	H (1.0)	L (0.1)	L (0.1)	L (0.1)	H (1.0)
Outlet Configuration[1]	M (0.5)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	M (0.5)	M (0.5)
Upland Condition[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	L (0.1)	L (0.1)	M (0.5)
Wildlife Habitat[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	M (0.5)	L (0.1)	M (0.5)
Public Value[1]	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)	L (0.1)
Average Value	0.18	0.1	0.1	0.1	0.34	0.1	0.52	0.1	0.18	0.18	0.52
Overall Condition	Low	Low	Low	Low	Medium	Low	Medium	Low	Low	Low	Medium
Human Disturbance[1]	High - road and tailings basin	High - road	Medium - tailings basin, road	Medium - tailings basin	Medium - road, tailings basin	Medium - grading, tailings basin	Medium - grading	High - grading, berming	Medium - grading	Medium - grading, impoundment	Medium - road and grading
Photo[2]	39	40	41	42	43, 44, and 45	46	47	48	49	50,51, 52	51, 50, 52
Comments on history, origin, and connectivity	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland 2023-40 outlets to the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This area was graded as part of the construction of the tailings basin and access roads. Wetland appears to have formed as a result of construction activity.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located adjacent to a road with evidence of scraping and grading within the wetland; wetland does not appear to be natural in origin. A narrow channel connects the main wetland area to a smaller basin.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was historically excavated as part of tailings basin construction activities. Wetland appears to have formed as a result of construction activities.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Wetland is located in an area that was historically excavated as part of tailings basin. Steep slopes and evidence of historic stockpiling indicate significant disturbance. Wetland is not natural in orgin.	Wetland is located in topographically-enclosed depression, with no surficial outlets evident. Southern arms of the wetland area are primarily associated with a roadside ditch and do not appear to be natural in origin. Community type transitions to a shrub-carr community that also does not appear to be natural in origin as evidence of historical disturbance is near. Northern extent of wetland opens to an wetland that was likely forested but has since transitioned to a fresh (wet) meadow based upon the presence of dead trees. This area appears to be natural in origin.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Wetland is positioned between two berms and appears to not be natural in origin due to location and historical grading associated with the tailings basin construction activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland is located in an area that was historically graded. Wetland appears to have formed as a result of grading activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. The wetland is located in a bermed area that was graded as part of historical logging in the areahistorically graded. Wetland appears to have formed as a result of grading activities.	Wetland is located in a topographically enclosed depression with no surficial outlets present. Wetland is positioned between two berms and appears to not be natural in origin due to location and historical grading associated with the berms.	Much of the wetland is associated with the construction of the tailings basin. Historic grading and berming are evident throughout the wetland. A portion of the wetland is the wetland fringe to Resivior 2 North which outlets to the O'Brien Diversion Channel, which flows into Swan Lake via Hay Creek and ultimately reaches the Mississippi River. This wetland was formed by the impoundment of Welcome Creek prior to 1972	A depressional landform which outlets into Wetland 2023-49 via culverts allowing water to flow under the roadway. Portions of wetland appear to be natural in origin, but majority of wetland has been graded and shows signs of historical disturbance associated with the tailings basin construction.

[1]Ratings based on MnRAM; see Appendix C.
[2]See Appendix B: Photo Log.

Figures

Barr Footer: ArcGIS 10.8.1, 2023-09-13 12:37 File: \\barr.com\gis\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 1 Project Location.mxd User: vaw

Plant
Reservoir Number Five
Snowshoe Lake
Kelly Lake
Welcome Lake
KEEWATIN
Itasca
Saint Louis
Tailings Basin
Mesabi Chief Tailings Basin
Reservoir Two North
Reservoir Six
Reservoir Two
Diversion Channel
Reclaim Pond
Welcome Creek
Hay Creek
West Swan River
Project Location
MINNESOTA
WISCONSIN
Minneapolis
Saint Paul
Sioux Falls

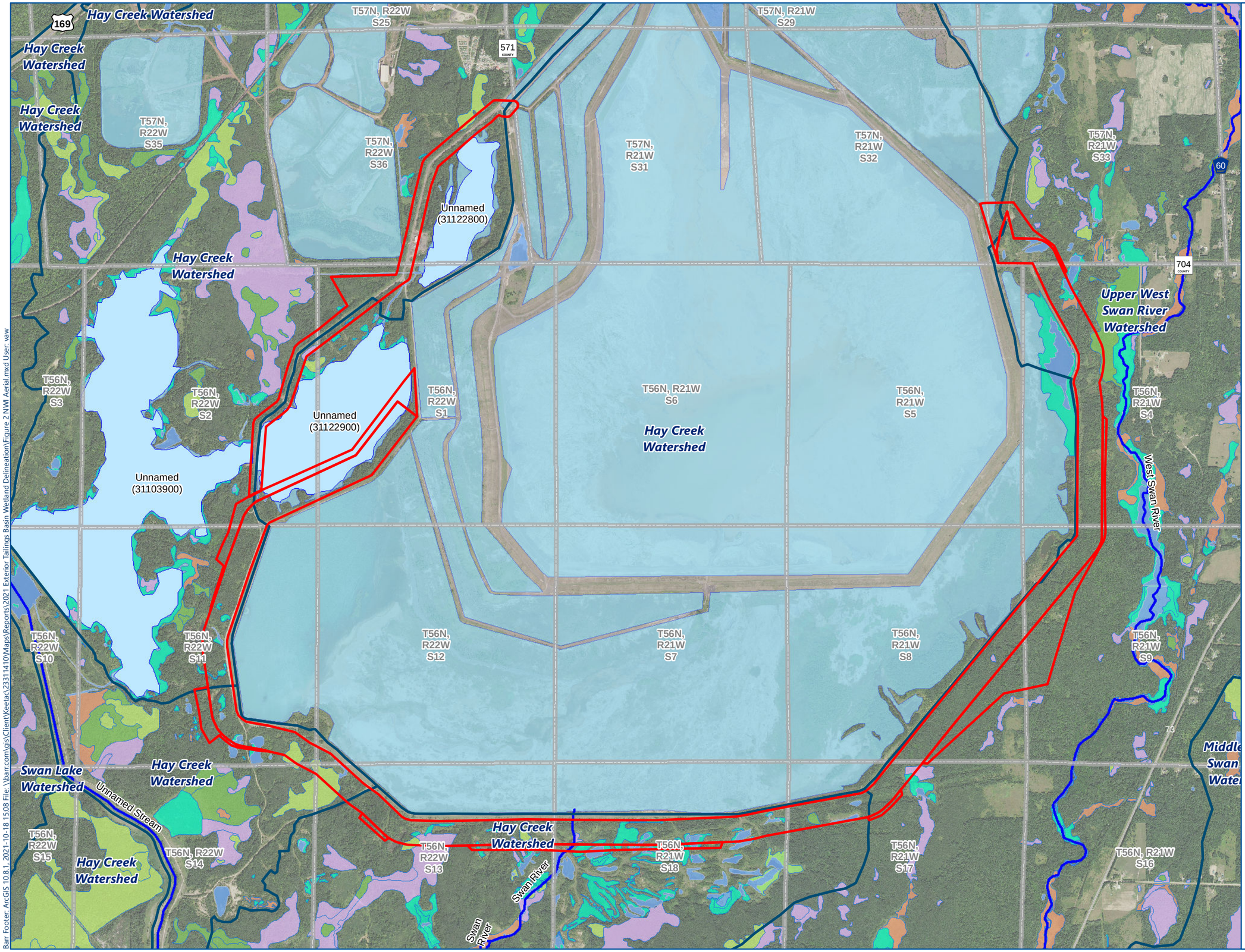
2021 Study Area
2023 Study Area
Existing Northwest Stockpile
Stockpiles Expansion
Plant Area
Existing Tailings Basin
Tailings Basin Expansion
Existing Mine Pit
Mine Pit Expansion
City Boundary
Sections
Public Watercourses
Public Water Basins
Streams

0 1,500 3,000
Feet

Image Source: FSA (2019)

PROJECT LOCATION
Tailings Basin Wetland Review
U. S. Steel - Keetac

FIGURE 1



HYDROGRAPHY
Tailings Basin Wetland Review U. S. Steel - Keetac

FIGURE 2

Barr Footer: ArcGIS 10.8.1, 2021-10-18 15:08 File: \\barr.com\gis\Client\Keetac\23311410\Maps\Reports\2021 Exterior Tailings Basin Wetland Delineation\Figure 2 NWI Aerial.mxd User: vaw

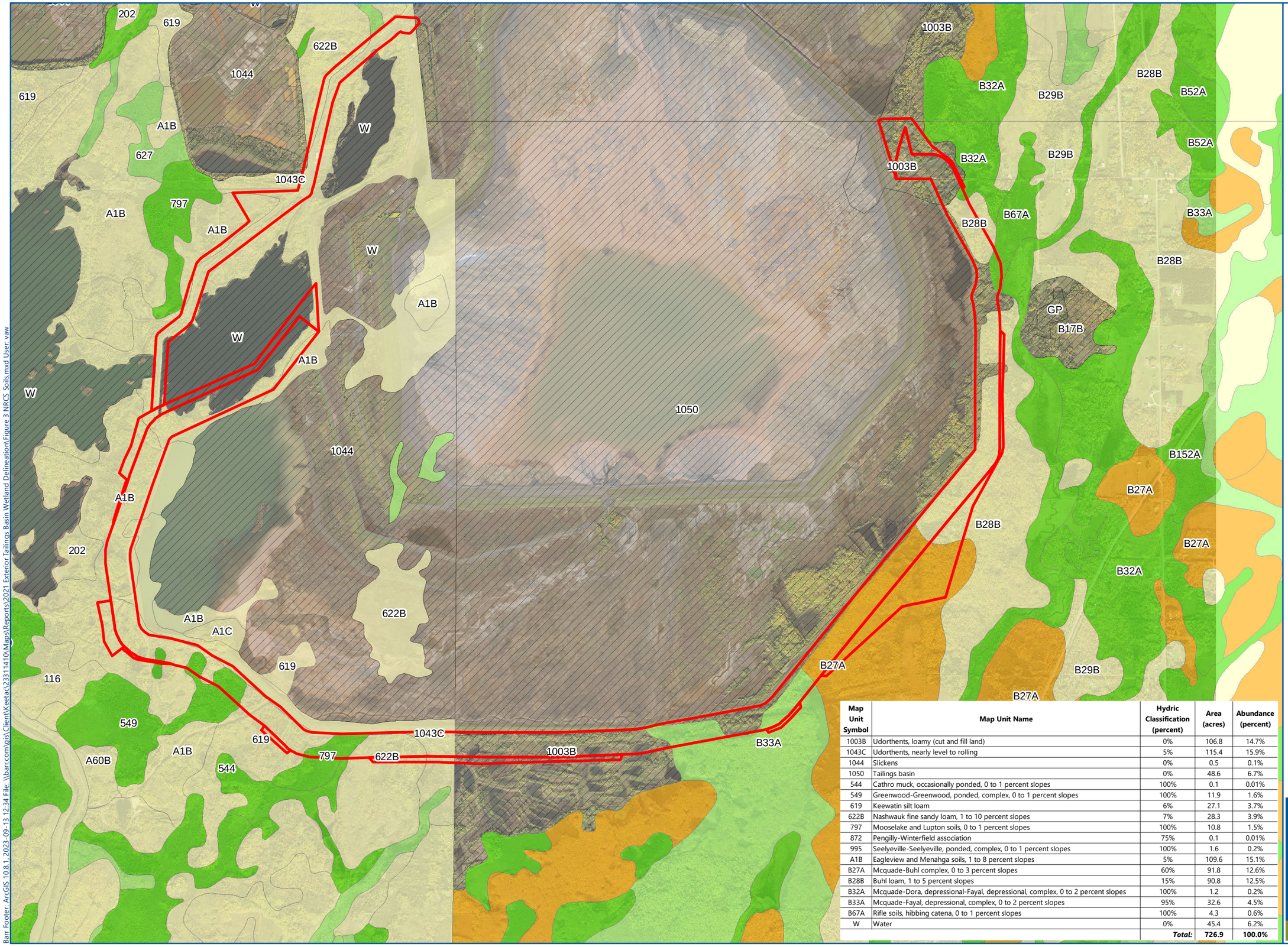


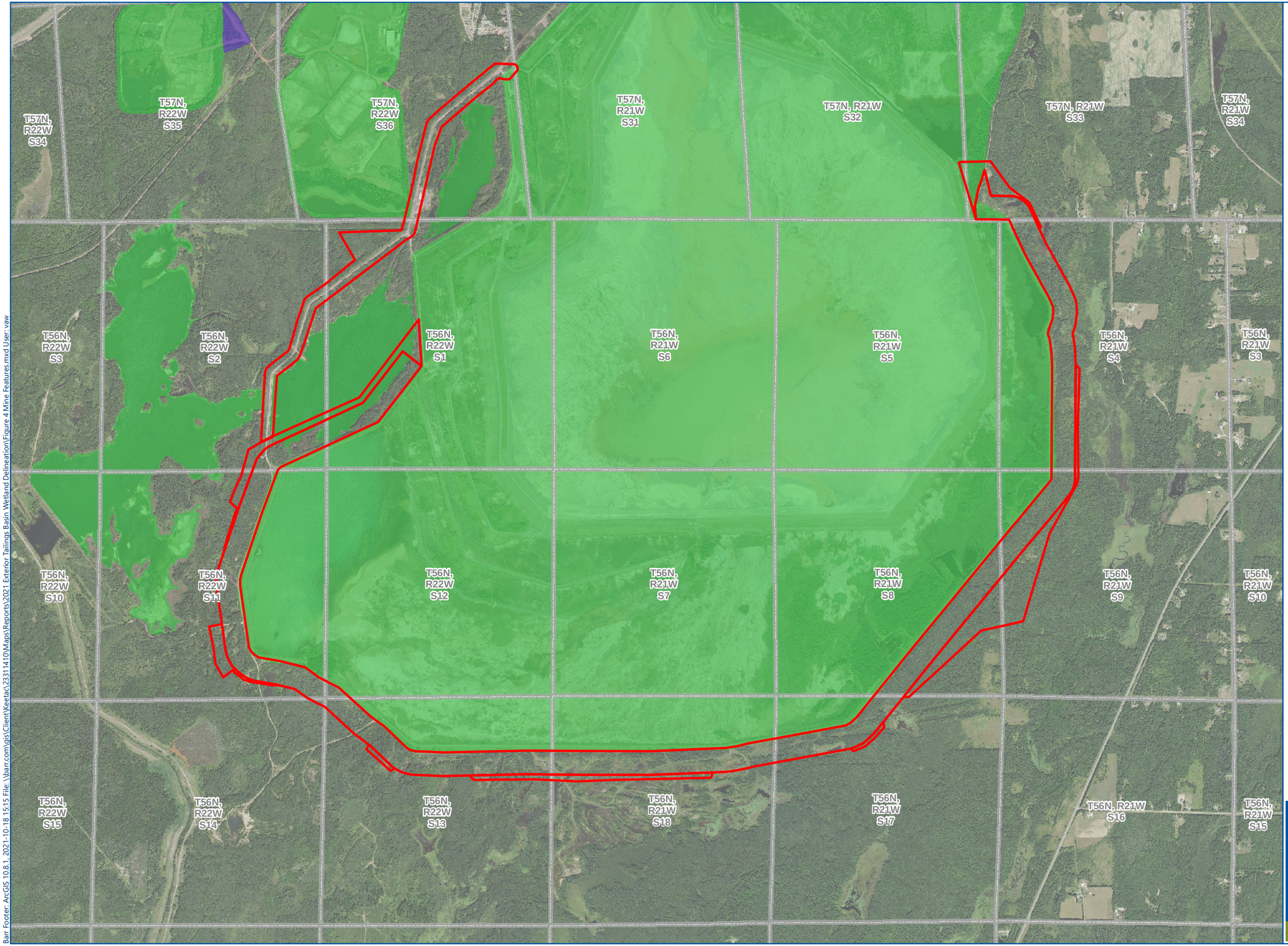
Image Source: FSA/NAIP (2019)

Map Unit Symbol	Map Unit Name	Hydric Classification (percent)	Area (acres)	Abundance (percent)
1003B	Udorthents, loamy (cut and fill land)	0%	106.8	14.7%
1043C	Udorthents, nearly level to rolling	5%	115.4	15.9%
1044	Slickens	0%	0.5	0.1%
1050	Tailings basin	0%	48.6	6.7%
544	Cathro muck, occasionally ponded, 0 to 1 percent slopes	100%	0.1	0.01%
549	Greenwood-Greenwood, ponded, complex, 0 to 1 percent slopes	100%	11.9	1.6%
619	Keewatin silt loam	6%	27.1	3.7%
622B	Nashwauk fine sandy loam, 1 to 10 percent slopes	7%	28.3	3.9%
797	Mooselake and Lupton soils, 0 to 1 percent slopes	100%	10.8	1.5%
872	Pengilly-Winterfield association	75%	0.1	0.01%
995	Seelyeville-Seelyeville, ponded, complex, 0 to 1 percent slopes	100%	1.6	0.2%
A1B	Eagleview and Menahga soils, 1 to 8 percent slopes	5%	109.6	15.1%
B27A	Mcquade-Buhl complex, 0 to 3 percent slopes	60%	91.8	12.6%
B28B	Buhl loam, 1 to 5 percent slopes	15%	90.8	12.5%
B32A	Mcquade-Dora, depressional-Fayal, depressional, complex, 0 to 2 percent slopes	100%	1.2	0.2%
B33A	Mcquade-Fayal, depressional, complex, 0 to 2 percent slopes	95%	32.6	4.5%
B67A	Rifle soils, hibbing catena, 0 to 1 percent slopes	100%	4.3	0.6%
W	Water	0%	45.4	6.2%
		Total:	**726.9**	**100.0%**

USDA NRCS SOILS
Tailings Basin
Wetland Review
U. S. Steel - Keetac
Itasca & St. Louis
Counties, Minnesota

FIGURE 3

Barr Footer: ArcGIS 10.8.1, 2023-09-13 12:34 File: \\barr.com\gis\Client\Keetac\23311410\Maps\Reports\2021 Exterior Tailings Basin Wetland Delineation\Figure 3 NRCS Soils.mxd User: vaw



Wetland Review Area

PLSS Boundary

Mine Features (2018)

Stockpile

Tailings Basin

N

0 1,000 2,000

Feet

Image Source: FSA/NAIP (2019)

MINE FEATURES
Tailings Basin
Wetland Review
U. S. Steel - Keetac
Itasca & St. Louis
Counties, Minnesota

FIGURE 4

Barr Footer: ArcGIS 10.8.1, 2021-10-18 15:15 File: \\barr.com\gis\Client\Keetac\23311410\Maps\Reports\2021 Exterior Tailings Basin Wetland Delineation\Figure 4 Mine Features.mxd User: vaw

Study Area
Incidental Wetlands

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

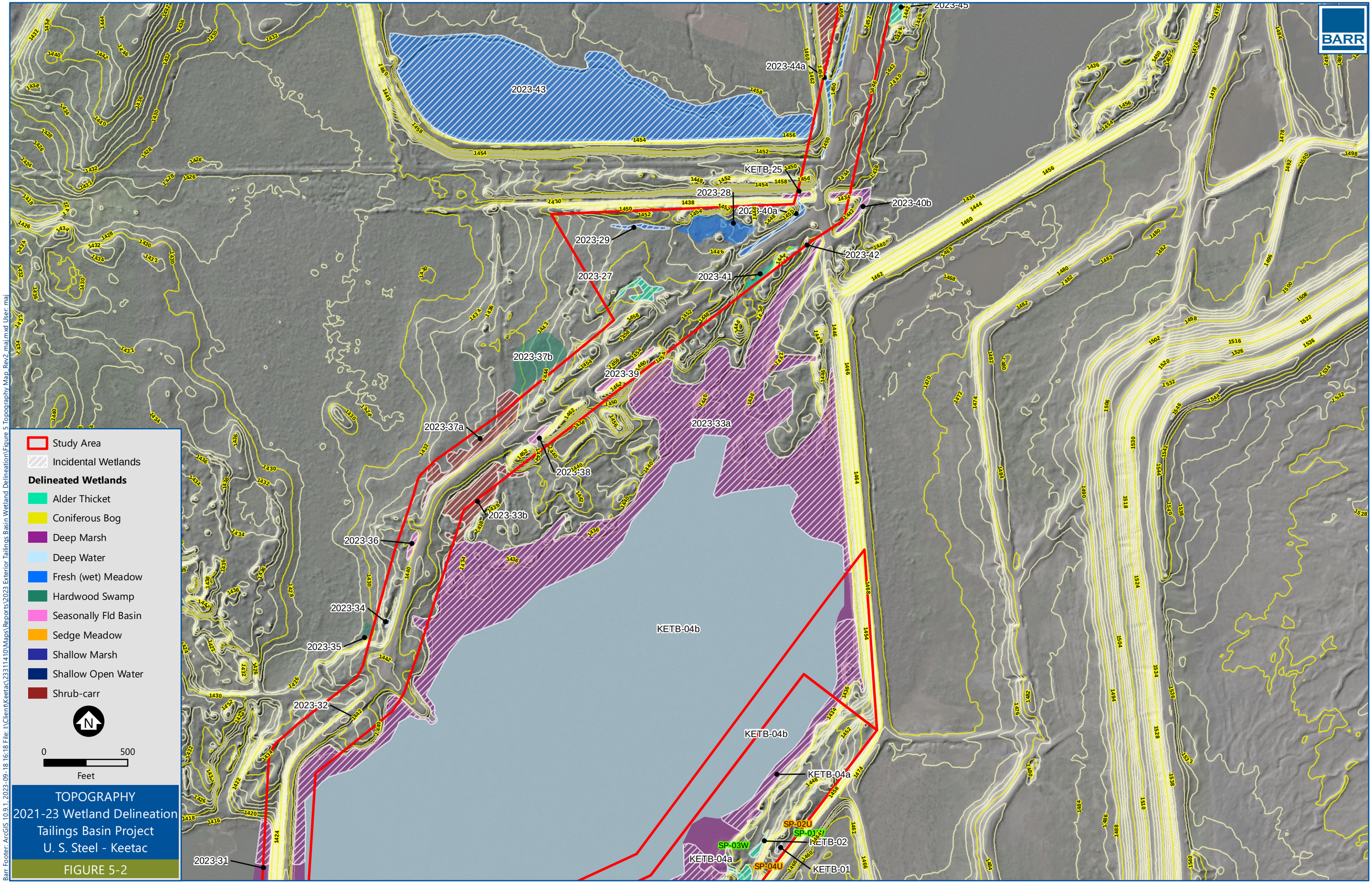
FIGURE 5-1

2023-49a
2023-50b
2023-49b
2023-50a
2023-48
2023-49c
2023-44c
2023-50d
2023-50c
2023-49d
2023-49e
2023-46
2023-47
2023-44b
2023-45
2023-44a
2023-43
KETB-25
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41

571

BARR

Barr Footer: ArcGIS 10.9.1, 2023-09-18 16:18 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 5 Topography Map_Rev2_maj.mxd User: maj


2023-43
2023-44a
2023-45
KETB-25
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41
2023-37b
2023-39
2023-37a
2023-38
2023-33a
2023-33b
2023-36
2023-34
2023-35
2023-32
KETB-04b
KETB-04b
KETB-04a
SP-02U
SP-01U
SP-03W
KETB-02
KETB-04a
SP-04U
KETB-01
2023-31
Study Area
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 5-2
BARR
Barr Footer: ArcGIS 10.9.1, 2023-09-18 16:18 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 5_Topography Map_Rev2_maj.mxd User: maj

Study Area
Incidental Wetlands

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

FIGURE 5-3

2023-32
2023-31
2023-30
2023-24c
2023-26
2023-24b
2023-25
2023-24a
KETB-04b
KETB-04a
KETB-07
KETB-05
KETB-06
KETB-08
KETB-09
KETB-10
KETB-01
KETB-02
KETB-03
SP-01W
SP-02U
SP-03W
SP-04U
SP-05W
SP-06U
SP-07W
SP-08U
SP-09W
SP-10U
SP-11W
SP-12U
SP-13W
SP-14U
SP-15W
SP-16U
SP-17W
SP-18W
SP-19U

BARR

Barr Footer: ArcGIS 10.9.1 2023-09-18 16:18 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 5 Topography Map_Rev2_maj.mxd User: maj

KETB-11
SP-20W
SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP-24W
SP-25U
KETB-13
SP-26W
2023-18
2023-19
KETB-14
2023-20
2023-21
2023-23
KETB-15
SP-27W
2023-22
SP-29W
SP-30W
SP-28U
KETB-16
SP-31U
KETB-17
SP-33U
SP-32W
KETB-18
SP-35U
KETB-19
SP-34W
KETB-21b
SP-36W
KETB-21a
KETB-23a
SP-37W
SP-39W
KETB-20
2023-17
SP-38U
KETB-22
KETB-23c
SP-40W
KETB-23b
SP-41U
SP-43U
KETB-24a
SP-42W
SP-44W
KETB-25a
SP-45U
KETB-24b

Study Area
Incidental Wetlands

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

N

0 500

Feet

TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

FIGURE 5-4

Barr Footer: ArcGIS 10.9.1, 2023-09-18 16:18 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 5 Topography Map_Rev2.mxd User: maj

KETB-25
KETB-23
KETB-24a
KETB-26
KETB-32
KETB-31
KETB-28
KETB-34
KETB-35a
KETB-25a
KETB-25b
KETB-29
KETB-27
KETB-30
KETB-33
SP-43U
SP-42W
SP-44W
SP-45U
SP-46W
SP-49U
SP-48W
SP-50W
SP-51U
SP-52W
SP-55W
SP-54W
SP-53U
SP-57W
SP-58W
SP-59U
SP-60W
SP-61W
SP-62U
SP-63W

Study Area
Incidental Wetlands

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

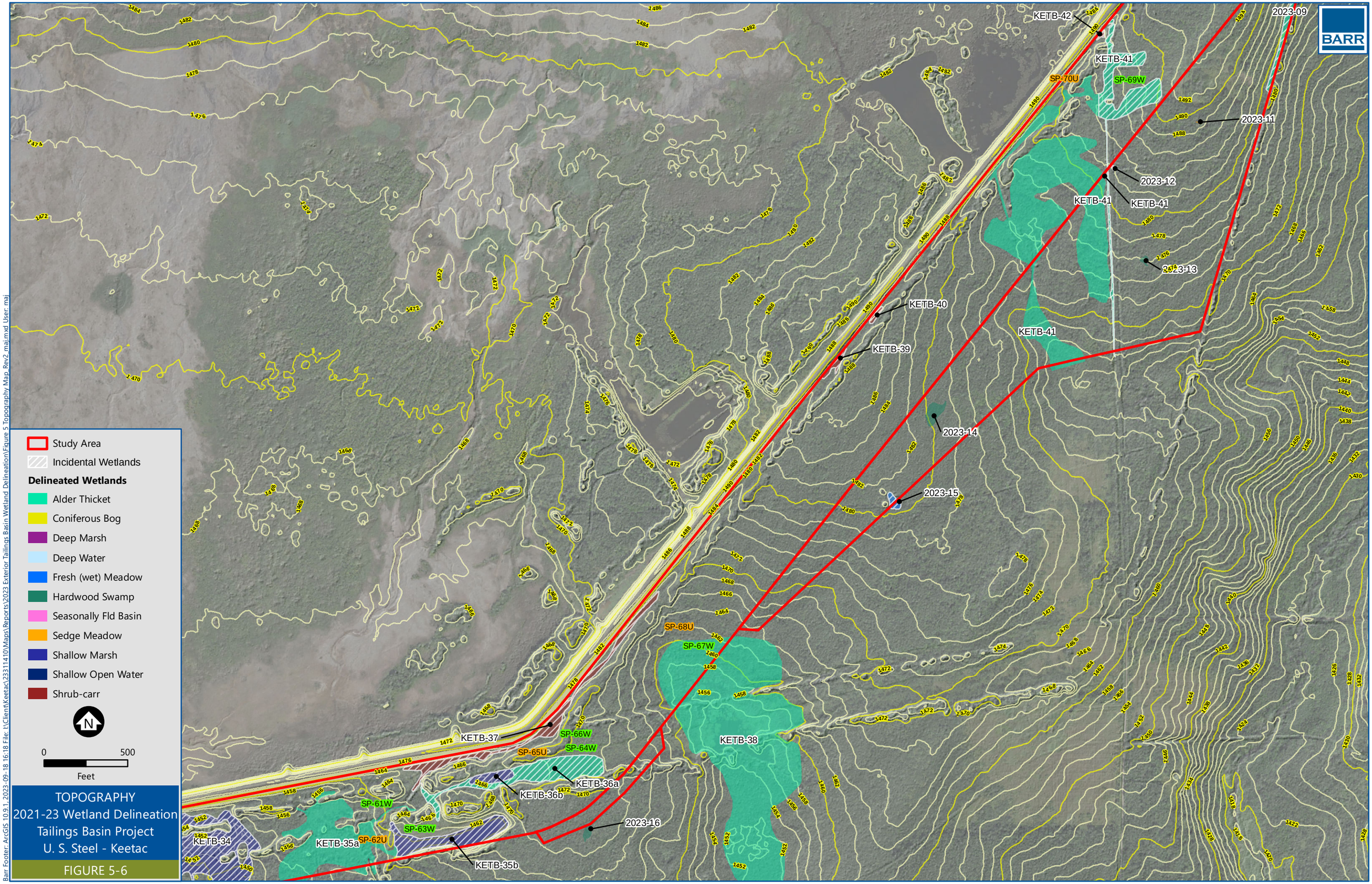
N

0 500
Feet

TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

FIGURE 5-5

Barr Footer: ArcGIS 10.9.1, 2023-09-18 16:18 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 5_Topography Map_Rev2_maj.mxd User: maj



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KETB-48
SP-75W
SP-76U
KETB-47
KETB-46
SP-73W
SP-74U
Wetland 2
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

N

0 500
Feet

TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

FIGURE 5-7

Barr Footer: ArcGIS 10.9.1, 2023-09-18 16:18 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 5 Topography Map_Rev2_maj.mxd User: maj

2023-02
2023-03
2023-01
2023-08
Wetland 1b
2023-06
2023-07
2023-04
KETB-55a
KETB-55b
2023-05
KETB-54
KETB-53
KETB-51
KETB-52
KETB-50
KETB-47
KETB-49
SP-78U
SP-77W
SP-79W
704
COUNTY

Study Area
Incidental Wetlands

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

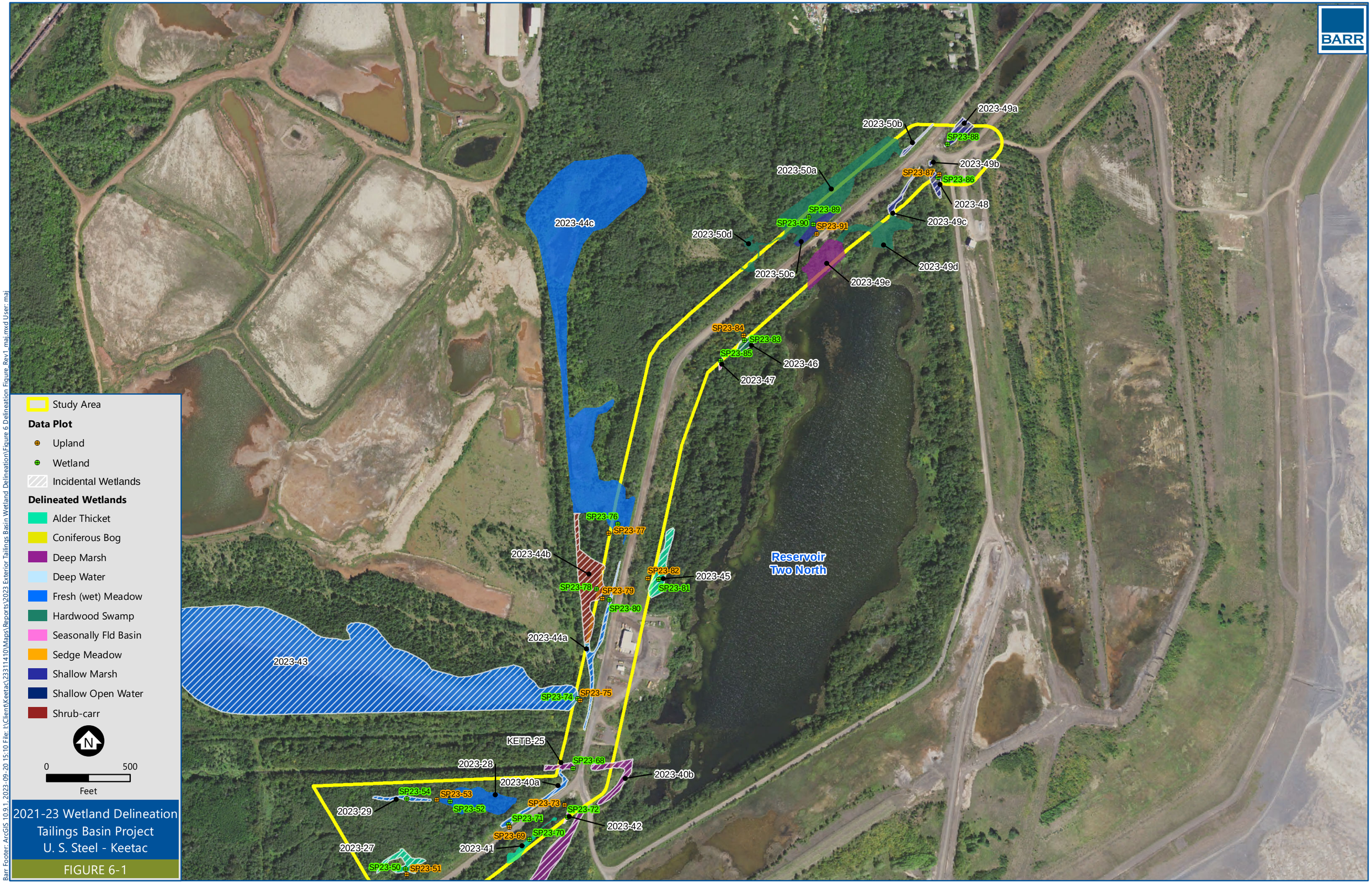
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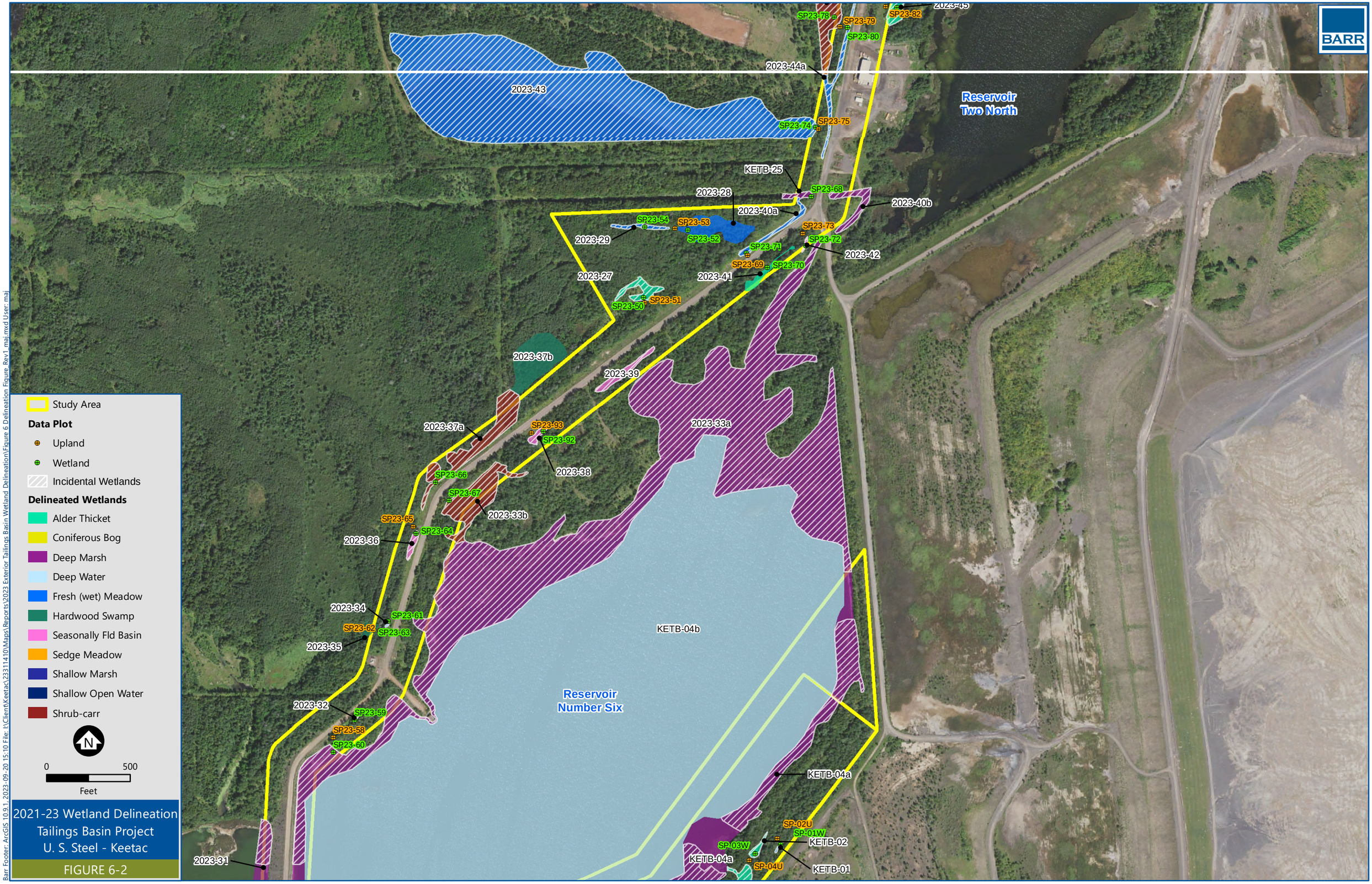
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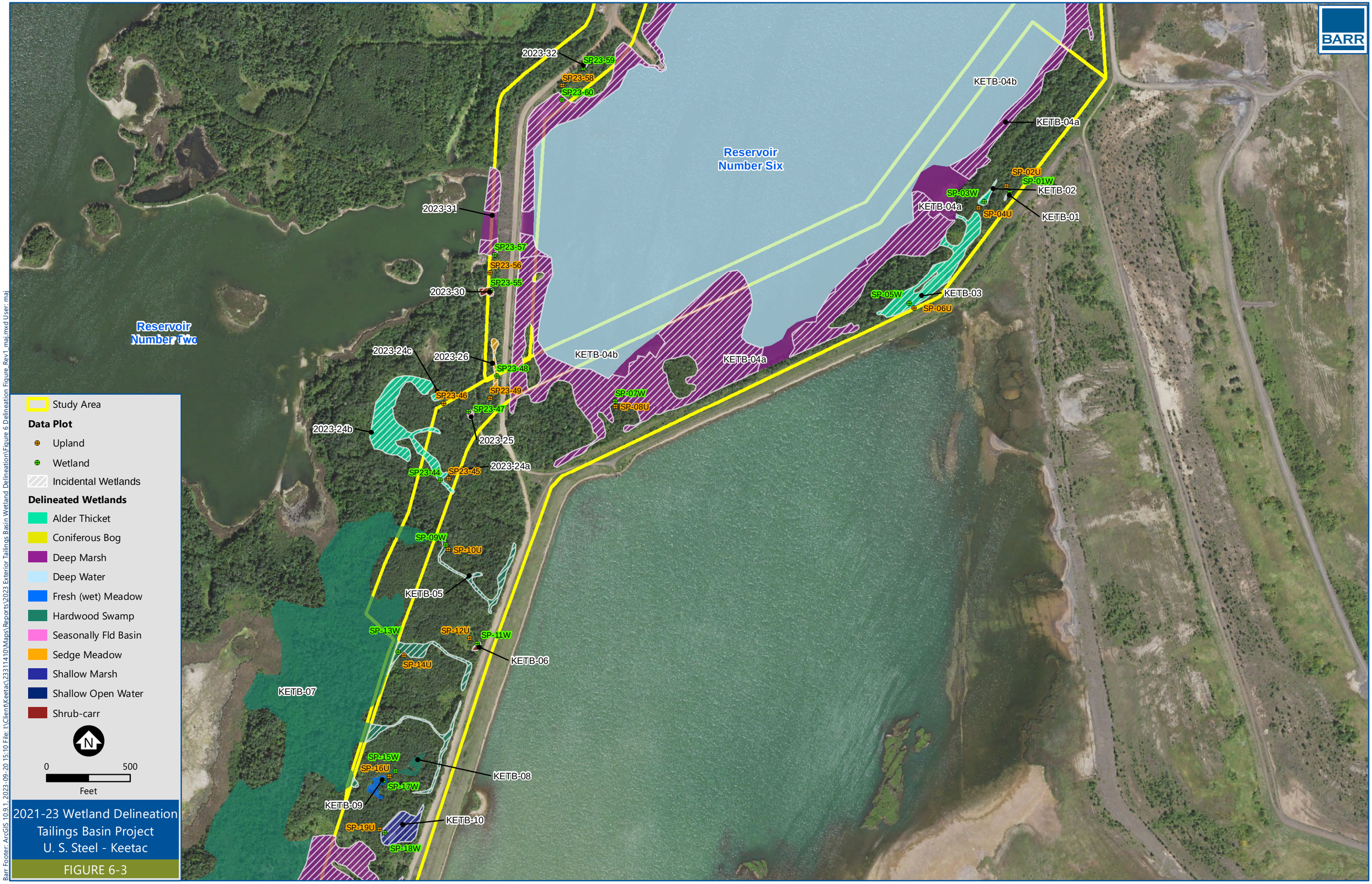
TOPOGRAPHY
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

FIGURE 5-8

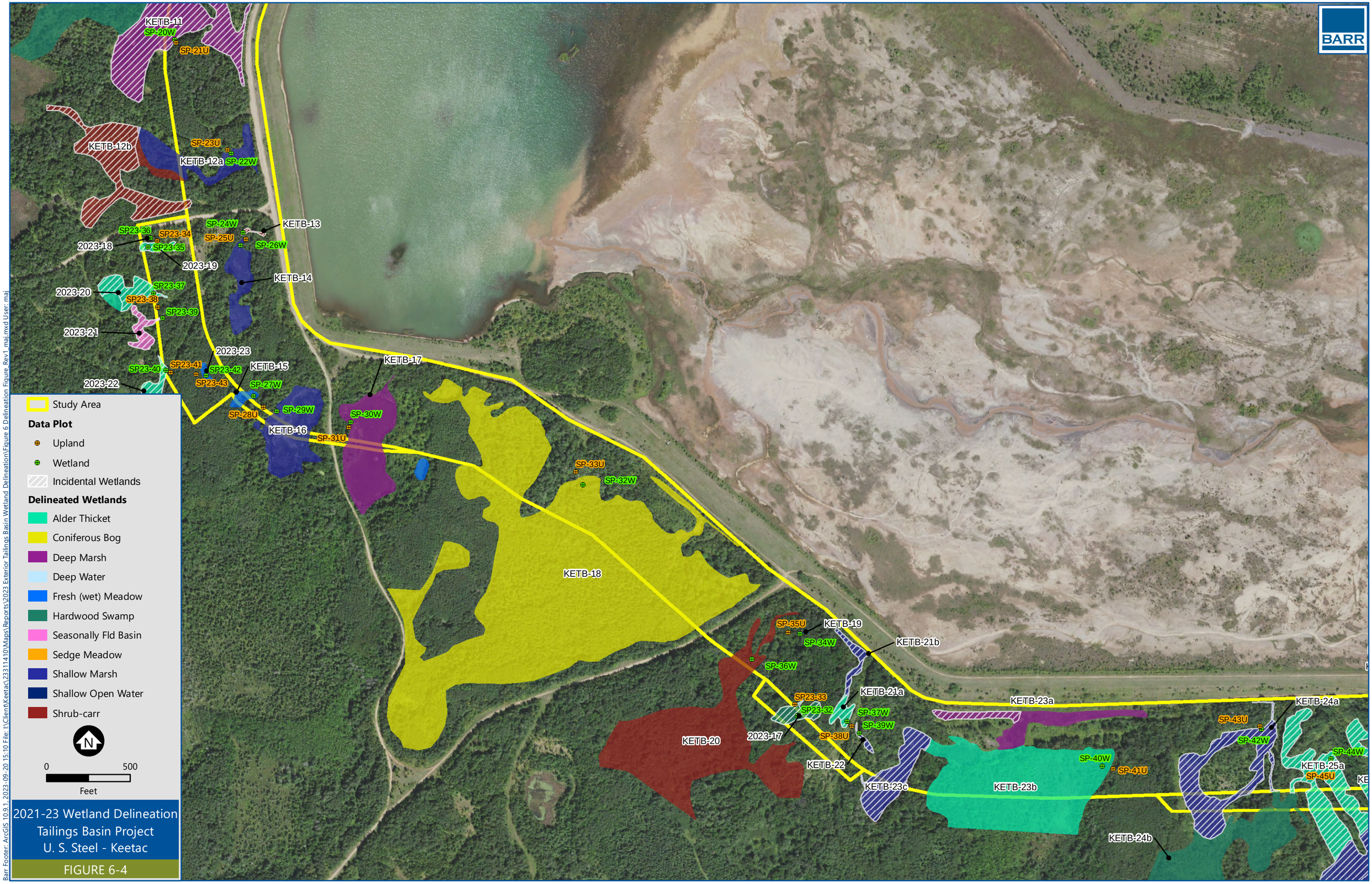
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2023-49a
2023-50b
SP23-88
2023-49b
2023-50a
SP23-87
SP23-86
2023-48
SP23-89
SP23-90
SP23-91
2023-49c
2023-44c
2023-50d
2023-50c
2023-49d
2023-49e
SP23-84
SP23-83
SP23-85
2023-46
2023-47
SP23-76
SP23-77
2023-44b
Reservoir
Two North
SP23-82
2023-45
SP23-78
SP23-79
SP23-81
SP23-80
2023-44a
2023-43
SP23-74
SP23-75
KETB-25
SP23-68
2023-28
2023-40b
2023-40a
SP23-54
SP23-53
SP23-52
SP23-73
SP23-72
2023-29
SP23-71
2023-42
SP23-69
SP23-70
2023-27
2023-41
SP23-50
SP23-51
Study Area
Data Plot
Upland
Wetland
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 6-1
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj


2023-45
SP23-78
SP23-79
SP23-80
SP23-82
2023-44a
2023-43
Reservoir
Two North
SP23-74
SP23-75
KETB-25
SP23-68
2023-28
2023-40a
2023-40b
SP23-54
SP23-53
SP23-52
2023-29
SP23-73
SP23-72
SP23-71
2023-42
SP23-69
SP23-70
2023-27
2023-41
SP23-50
SP23-51
2023-37b
2023-39
2023-37a
SP23-93
SP23-92
2023-38
2023-33a
SP23-66
SP23-67
2023-33b
SP23-65
SP23-64
2023-36
2023-34
SP23-61
SP23-62
SP23-63
KETB-04b
2023-35
2023-32
SP23-59
SP23-58
SP23-60
Reservoir
Number Six
KETB-04a
SP-02U
SP-01W
KETB-02
SP-03W
KETB-04a
SP-04U
KETB-01
2023-31
Study Area
Data Plot
Upland
Wetland
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 6-2
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: k:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj



Barr Footer: ArcGIS 10.9.1 2023-09-20 15:10 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj


KETB-11
SP-20W
SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP23-36
SP23-34
SP-24W
KETB-13
2023-18
SP-25U
SP-26W
SP23-35
2023-19
KETB-14
SP23-37
2023-20
SP23-38
SP23-39
2023-21
2023-23
SP23-40
SP23-41
SP23-42
KETB-15
KETB-17
2023-22
SP23-43
SP-27W
SP-28U
SP-29W
SP-30W
KETB-16
SP-31U
SP-33U
SP-32W
KETB-18
SP-35U
KETB-19
SP-34W
KETB-21b
SP-36W
KETB-21a
SP23-33
SP23-32
SP-37W
SP-39W
KETB-23a
KETB-24a
SP-43U
KETB-20
2023-17
SP-38U
SP-42W
SP-44W
KETB-22
SP-40W
SP-41U
KETB-25a
SP-45U
KETB-23c
KETB-23b
KETB-24b
Study Area
Data Plot
Upland
Wetland
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 6-4
BARR
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj

KETB-25
KETB-23
KETB-26
KETB-24a
KETB-32
KETB-34
KETB-35a
SP-61W
SP-63W
SP-62U
SP-50W
SP-51U
SP-57W
SP-60W
SP-58W
SP-59U
SP-43U
SP-42W
SP-47U
SP-46W
KETB-26
KETB-28
KETB-31
SP-55W
SP-56U
SP-52W
SP-54W
SP-53U
SP-49U
SP-48W
KETB-29
KETB-30
KETB-33
SP-44W
SP23-94
SP23-95
KETB-25a
SP-45U
KETB-25a
SP23-31
SP23-30
KETB-26
KETB-27
KETB-25b

Study Area

Data Plot

- Upland
- Wetland
- Incidental Wetlands

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

N

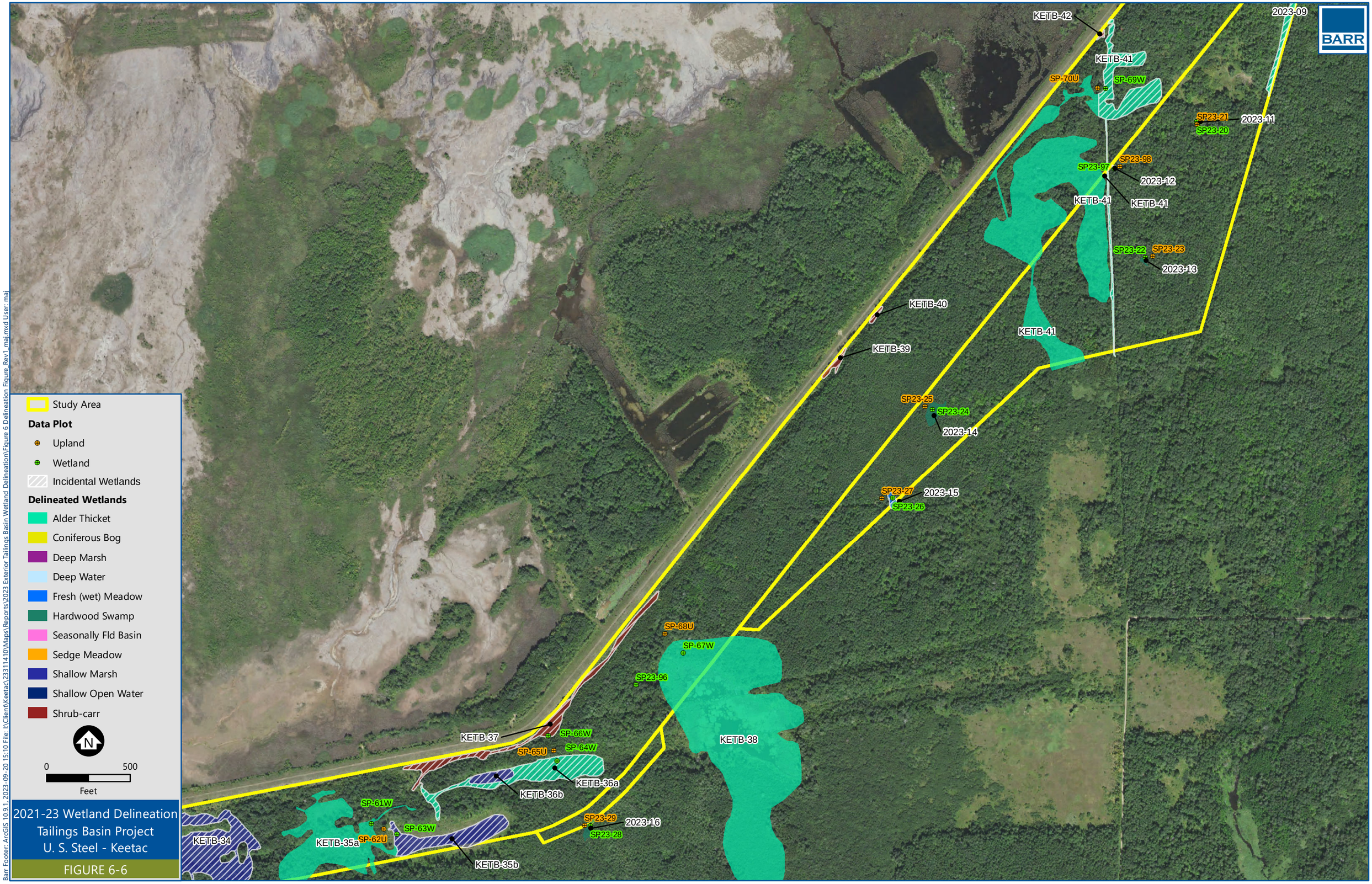
0 500

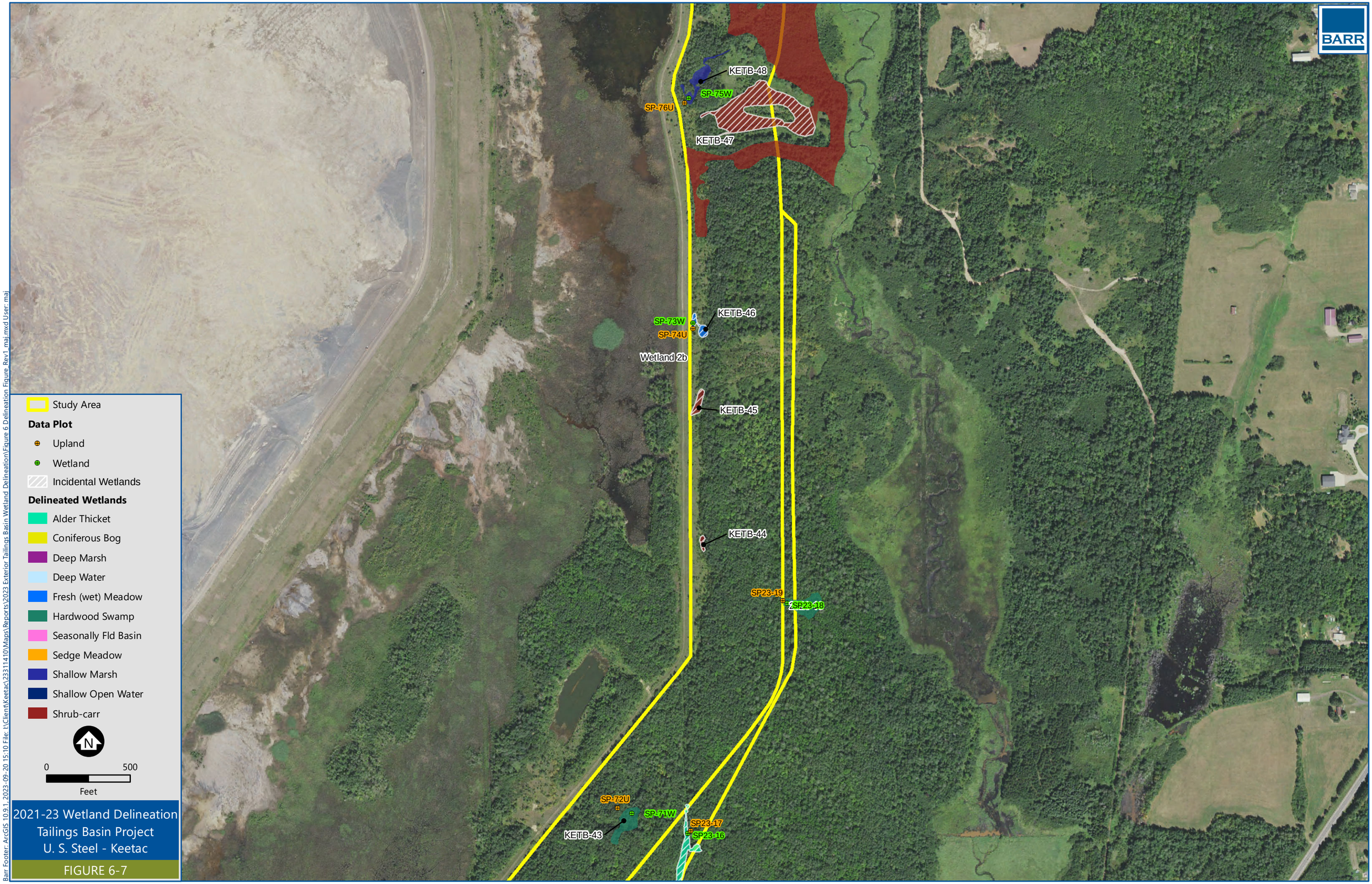
Feet

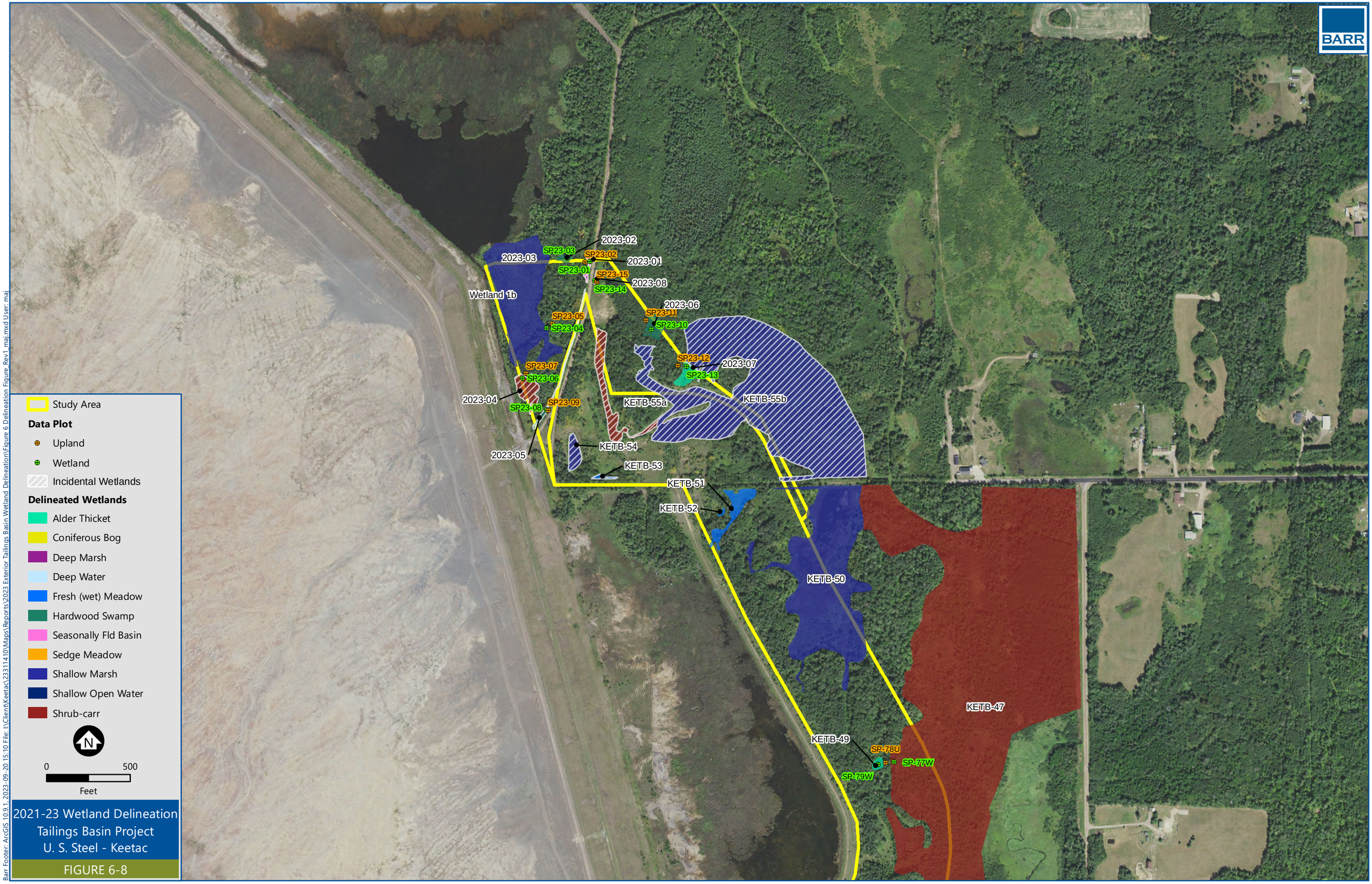
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac

FIGURE 6-5

Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj


KETB-42
2023-09
KETB-41
SP-70U
SP-69W
SP23-21
SP23-20
2023-11
SP23-98
SP23-97
2023-12
KETB-41
KETB-41
SP23-22
SP23-23
2023-13
KETB-40
KETB-41
KETB-39
SP23-25
SP23-24
2023-14
SP23-27
2023-15
SP23-26
SP-68U
SP-67W
SP23-96
KETB-38
KETB-37
SP-66W
SP-65U
SP-64W
KETB-36a
KETB-36b
SP-61W
SP-63W
SP23-29
2023-16
SP23-28
KETB-34
KETB-35a
SP-62U
KETB-35b
Study Area
Data Plot
Upland
Wetland
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 6-6
BARR
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj


KETB-48
SP-75W
SP-76U
KETB-47
KETB-46
SP-73W
SP-74U
Wetland 2b
KETB-45
KETB-44
SP23-19
SP23-18
SP-72U
SP-71W
SP23-17
SP23-16
KETB-43
Study Area
Data Plot
Upland
Wetland
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 6-7
BARR
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: L:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj


Wetland 1b
2023-01
2023-02
2023-03
2023-04
2023-05
2023-06
2023-07
2023-08
SP23-01
SP23-02
SP23-03
SP23-04
SP23-05
SP23-06
SP23-07
SP23-08
SP23-09
SP23-10
SP23-11
SP23-12
SP23-13
SP23-14
SP23-15
KETB-55a
KETB-55b
KETB-54
KETB-53
KETB-51
KETB-52
KETB-50
KETB-47
KETB-49
SP-78U
SP-77W
SP-79W
Study Area
Data Plot
Upland
Wetland
Incidental Wetlands
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
2021-23 Wetland Delineation
Tailings Basin Project
U. S. Steel - Keetac
FIGURE 6-8
BARR
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:10 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\Figure 6 Delineation Figure_Rev1_maj.mxd User: maj

Appendix A

2021 Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-01W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S1, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.360239 Long: -93.079186 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: KETB-01
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-02U. Wetland community is a fresh (wet) meadow, Type 2, PEM1A.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-01W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	10	✓	FACW
2. Salix discolor	10	✓	FACW
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Scirpus cyperinus	30	✓	OBL
2. Equisetum pratense	10	✓	FACW
3. Poa palustris	10	✓	FACW
4. Carex scoparia	5		FACW
5. Pyrola elliptica	5		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	80 (A)		140 (B)

Prevalence Index = B/A = 1.75

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-01W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 5/1	60	10YR 5/6	40	C	M	Clay Loam	
6 - 24	10YR 5/1	80	10YR 5/6	20	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 0

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-02U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S1, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.360343 Long: -93.07927 Datum: NAD 83

Soil Map Unit Name: A1B, Eagleview-Menahga complex, 1 to 8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-01W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-02U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	80		FAC
2. Betula papyrifera	10		FACU
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Amelanchier alnifolia	50		FACU
2. Sambucus racemosa	10		FACU
3. Corylus americana	5		FACU
4. Rhamnus cathartica	5		FAC
5.			
6.			
7.			
	70%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Rubus idaeus	70		FAC
2. Actaea racemosa	5		
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	155	x 3 =	465
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	230 (A)		765 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-02U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 4	10YR 3/2	100					Sandy Loam	
4 - 10	7.5YR 4/4	100					Sandy Loam	
10 - 24	10YR 4/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Historic fill

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-03W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S1, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.360095 Long: -93.079806 Datum: NAD 83

Soil Map Unit Name: 1043C, Udorthents, nearly level to rolling NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-02
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-04U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-03W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	80	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	80% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Bidens cernua	1		OBL
2. Carex hystericina	1		OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	2% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	82 (A)		162 (B)

Prevalence Index = B/A = 1.98

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-03W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/1	90	10YR 4/6	10	C	M	Silt Loam	Historic fill
2 - 6	7.5YR 4/3	80	7.5YR 4/6	20	C	M	Silt Loam	Historic fill
6 - 24	10YR 5/3	5	10YR 5/6	90	C	M	Loamy Sand	Historic fill
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ✔ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil

Depth (inches): 2

Hydric Soil Present? Yes ✔ No ___

Remarks:

Soils are naturally problematic due to the presence of red parent materials in the region.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-04U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S1, T56N, R22W

Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.359996 Long: -93.079948 Datum: NAD 83

Soil Map Unit Name: 1043C, Udorthents, nearly level to rolling NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-03W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-04U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	30	✔	FAC
2. Abies balsamea	20	✔	FAC
3. Betula papyrifera	20	✔	FACU
4. Populus balsamifera	20	✔	FAC
5.			
6.			
7.			
	90%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Acer saccharum	10	✔	FACU
2. Alnus incana	5	✔	FACW
3. Amelanchier alnifolia	5	✔	FACU
4. Salix discolor	5	✔	FACW
5.			
6.			
7.			
	25%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	60	✔	UPL
2. Carex pensylvanica	30	✔	UPL
3. Rubus idaeus	25		FAC
4. Pteridium aquilinum	10		FACU
5. Rubus pubescens	10		FACW
6. Fragaria virginiana	5		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	140%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	95	x 3 =	285
FACU species	50	x 4 =	200
UPL species	90	x 5 =	450
Column Totals:	255 (A)		975 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-04U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/2	100					Loam	
6 - 18	10YR 4/3	80	10YR 4/6	20	C	M	Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Augur refusal at 18 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-05W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S1, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.358443 Long: -93.081635 Datum: NAD 83

Soil Map Unit Name: 1043C, Udorthents, nearly level to rolling NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-03

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-06U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): 1

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-05W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	20		FACU
2. Salix nigra	10		OBL
3. Populus balsamifera	5		FACW
4.			
5.			
6.			
7.			
	35%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	80		FACW
2. Betula papyrifera	5		FACU
3.			
4.			
5.			
6.			
7.			
	85%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Equisetum laevigatum	50		FACW
2. Impatiens capensis	40		FACW
3. Equisetum pratense	20		FACW
4. Carex stipata	2		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	112%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	12	x 1 =	12
FACW species	195	x 2 =	390
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	232 (A)		502 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-05W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Mucky Loam/Clay	
4 - 24	10YR 5/1	100					Sandy Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 4

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-06U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S1, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 10

Subregion (LRR or MLRA): K Lat: 47.35836 Long: -93.081515 Datum: NAD 83

Soil Map Unit Name: 1043C, Udorthents, nearly level to rolling NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-05W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-06U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus balsamifera	20	✔	FACW
2. Abies balsamea	15	✔	FAC
3. Betula papyrifera	10	✔	FACU
4.			
5.			
6.			
7.			
	45%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Populus balsamifera	10	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Lotus corniculatus	35	✔	FACU
2. Equisetum arvense	30	✔	FAC
3. Rubus idaeus	30	✔	FAC
4. Solidago canadensis	20		FACU
5. Tanacetum vulgare	20		FACU
6. Phleum pratense	10		FACU
7. Symphyotrichum laeve	5		FACU
8.			
9.			
10.			
11.			
12.			
	150%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4 (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	75	x 3 =	225	
FACU species	100	x 4 =	400	
UPL species	0	x 5 =	0	
Column Totals:	205	(A)	685	(B)

Prevalence Index = B/A = 3.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-06U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 4/3	100					Loamy Sand	
3 - 15	10YR 4/4	100					Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal at 15 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-07W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S2, T56N, R22W

Landform (hillslope, terrace, etc.): Fringe Local relief (concave, convex, none): Linear Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.356877 Long: -93.08875 Datum: NAD 83

Soil Map Unit Name: 1043C, Udorthents, nearly level to rolling NWI classification: L2UBKx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-04

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-08U. Wetland community is a deep marsh, Type 4, PEM1F.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): 10

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

Fringe of open water during abnormally dry conditions.

VEGETATION – Use scientific names of plants. Sampling Point: SP-07W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha X glauca	60		OBL
2. Phalaris arundinacea	30		FACW
3. Persicaria amphibia	10		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		130 (B)

Prevalence Index = B/A = 1.30

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-07W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/2	10	10YR 4/6	10	C	M	Mucky Loam/Clay	
2 - 14	10YR 3/1	80	10YR 6/8	20	C	M	Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 14 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-08U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S2, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): K Lat: 47.356787 Long: -93.088735 Datum: NAD 83

Soil Map Unit Name: 1043C, Udorthents, nearly level to rolling NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-07W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-08U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	20	✔	FACU
2. Populus tremuloides	20	✔	FAC
3. Acer saccharum	10	✔	FACU
4.			
5.			
6.			
7.			
	50%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus americana	15	✔	FACU
2. Amelanchier alnifolia	10	✔	FACU
3. Sambucus racemosa	5		FACU
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Carex pensylvanica	30	✔	UPL
2. Rubus idaeus	30	✔	FAC
3. Eurybia macrophylla	10		UPL
4. Maianthemum canadense	5		FACU
5. Polygonatum pubescens	3		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	78%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	68	x 4 =	272
UPL species	40	x 5 =	200
Column Totals:	158 (A)		622 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-08U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 2/2	100					Loam	
2 - 14	10YR 3/4	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal at 14 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-09W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.354541 Long: -93.092856 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-05
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-010U. Wetland community is a hardwood swamp, Type 7, PFO1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-09W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus nigra	60	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	60%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Fraxinus nigra	15	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Glyceria striata	60	✔	OBL
2. Solidago gigantea	40	✔	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	115	x 2 =	230
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	175 (A)		290 (B)

Prevalence Index = B/A = 1.66

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-09W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	7.5YR 3/2	100					Loam	
2 - 12	7.5YR 4/3	80	7.5YR 5/6	20	C	M	Clay Loam	
12 - 24	7.5YR 4/2	80	7.5YR 5/6	20	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ✔ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 2

Hydric Soil Present? Yes ✔ No ___

Remarks:

Soils are naturally problematic due to the presence of red parent materials in the region.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-10U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.354464 Long: -93.092799 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-09W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-10U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	80	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	80%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Acer spicatum	30	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Polygonatum pubescens	15	✓	FACU
2. Asarum canadense	10	✓	UPL
3. Carex gracillima	10	✓	FACU
4. Eurybia macrophylla	10	✓	UPL
5. Osmorhiza claytonii	5		FACU
6. Rubus pubescens	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	55%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	80	x 3 =	240
FACU species	60	x 4 =	240
UPL species	20	x 5 =	100
Column Totals:	165 (A)		590 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-10U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 2/2	100					Loam	
12 - 24	10YR 4/4	90	10YR 4/6	10	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-11W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.352917 Long: -93.092124 Datum: NAD 83

Soil Map Unit Name A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: KETB-06
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-12U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-11W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus balsamifera	20	✓	FACW
2. Betula papyrifera	10	✓	FACU
3. Populus tremuloides	10	✓	FAC
4.			
5.			
6.			
7.			
	40%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	40	✓	FACW
2. Acer rubrum	10		FAC
3. Salix discolor	10		FACW
4.			
5.			
6.			
7.			
	60%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Rubus pubescens	20	✓	FACW
2. Rubus idaeus	10	✓	FAC
3. Athyrium angustum	5		FAC
4. Calamagrostis canadensis	5		OBL
5. Onoclea sensibilis	5		FACW
6. Carex scoparia	1		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	46%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	96	x 2 =	192
FAC species	35	x 3 =	105
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	146 (A)		342 (B)

Prevalence Index = B/A = 2.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-11W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 4/2	90	10YR 4/6	10	C	M	Loamy very fine sand	
6 - 24	10YR 5/3	60	10YR 6/8	20	C	M	Loamy very fine sand	
6 - 24			10YR 6/1	20	D	M	Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-12U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Flat Local relief (concave, convex, none): Convex Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.353012 Long: -93.092309 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-11W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-12U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	30	✓	FAC
2. Betula papyrifera	5		FACU
3. Populus balsamifera	5		FACW
4.			
5.			
6.			
7.			
	40%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	10	✓	FACW
2. Betula papyrifera	5	✓	FACU
3. Abies balsamea	2		FAC
4.			
5.			
6.			
7.			
	17%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	60	✓	UPL
2. Tanacetum vulgare	50	✓	FACU
3. Carex pensylvanica	30		
4. Anaphalis margaritacea	10		FACU
5. Achillea millefolium	5		FACU
6. Rubus idaeus	5		FAC
7. Solidago gigantea	5		FACW
8.			
9.			
10.			
11.			
12.			
	165%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	37	x 3 =	111
FACU species	75	x 4 =	300
UPL species	60	x 5 =	300
Column Totals:	192 (A)		751 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-12U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 5/3	100					Loamy very fine sand	
6 - 24	10YR 4/3	90	10YR 4/6	10	C	M	Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-13W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Linear Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.352789 Long: -93.094035 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-07
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-14U. Wetland community is a hardwood swamp, Type , PFO1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____	
Water Table Present?	Yes ✓	No ____	Depth (inches): 20	
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 12	**Wetland Hydrology Present?** Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-13W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus nigra	30	✓	FACW
2. Betula papyrifera	20	✓	FACU
3. Populus tremuloides	20	✓	FAC
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	60	✓	FACW
2. Fraxinus nigra	10		FACW
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Equisetum pratense	30	✓	FACW
2. Glyceria striata	30	✓	OBL
3. Equisetum sylvaticum	20	✓	FACW
4. Doellingeria umbellata	15		FACW
5. Rubus idaeus	10		FAC
6. Rubus pubescens	10		FACW
7. Viola cucullata	10		OBL
8. Juncus effusus	5		OBL
9. Phalaris arundinacea	5		FACW
10. Eutrochium purpureum	2		FAC
11.			
12.			
	137%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	180	x 2 =	360
FAC species	32	x 3 =	96
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	277 (A)		581 (B)

Prevalence Index = B/A = 2.10

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-13W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/1	70	10YR 6/8	30	C	M	Silt Loam	
6 - 9	10YR 4/1	95	10YR 5/6	5	C	M	Sandy Loam	
9 - 20	10YR 5/3	95	10YR 5/6	5	C		Sandy Loam	
20 - 24	10YR 3/1	100					Sandy Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 20

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-14U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.352737 Long: -93.093892 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-13W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-14U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	70	✓	FAC
2. Abies balsamea	5		FAC
3.			
4.			
5.			
6.			
7.			
	75%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	40	✓	FACU
2. Acer spicatum	20	✓	FACU
3. Sambucus racemosa	5		FACU
4. Fraxinus pennsylvanica	2		FACW
5.			
6.			
7.			
	67%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	40	✓	UPL
2. Osmorhiza claytonii	25	✓	FACU
3. Aralia nudicaulis	10		FACU
4. Rubus pubescens	10		FACW
5. Equisetum sylvaticum	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	17	x 2 =	34
FAC species	75	x 3 =	225
FACU species	100	x 4 =	400
UPL species	40	x 5 =	200
Column Totals:	232 (A)		859 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-14U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 2/2	100					Loam	
10 - 24	10YR 4/4	90	10YR 4/6	10	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-15W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.350839 Long: -93.094115 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: KETB-08
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-16U. Wetland community is a hardwood swamp, Type 7, PFO1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-15W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	70	✓	FAC
2. Fraxinus nigra	5		FACW
3.			
4.			
5.			
6.			
7.			
	75%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Fraxinus nigra	5	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Onoclea sensibilis	60	✓	FACW
2. Athyrium angustum	10		FAC
3. Rubus pubescens	10		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		400 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-15W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/2	90	10YR 4/6	10	C	M	Sandy Loam	
6 - 18	10YR 5/3	70	10YR 5/6	20	C	M	Loamy very fine sand	
6 - 18			10YR 6/2	10	D	M	Loamy very fine sand	
18 - 24	10YR 6/2	70	10YR 5/8	30	C	M	Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-16U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R2W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.350758 Long: -93.094269 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-15W and SP-17W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-16U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus grandidentata	60	✓	FACU
2. Abies balsamea	5		FAC
3.			
4.			
5.			
6.			
7.			
	65%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	30	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	30	✓	UPL
2. Pteridium aquilinum	20	✓	FACU
3. Aralia nudicaulis	15		FACU
4. Carex pensylvanica	5		UPL
5. Dendrolycopodium dendroideum	5		FACU
6. Diervilla lonicera	5		UPL
7. Cornus canadensis	2		FAC
8. Trientalis borealis	2		FAC
9.			
10.			
11.			
12.			
	84%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	9	x 3 =	27
FACU species	130	x 4 =	520
UPL species	40	x 5 =	200
Column Totals:	179 (A)		747 (B)

Prevalence Index = B/A = 4.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-16U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Sandy Loam	
4 - 8	10YR 5/3	90	10YR 5/6	10	C	M	Sandy Loam	
8 - 24	10YR 4/3	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-17W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.350683 Long: -93.094407 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: PEM1D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-09
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-16U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-17W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus nigra	30	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Fraxinus nigra	10	✔	FACW
2. Salix discolor	5	✔	FACW
3.			
4.			
5.			
6.			
7.			
	15%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Glyceria canadensis	50	✔	OBL
2. Calamagrostis canadensis	25	✔	OBL
3. Fraxinus nigra	10		FACW
4. Scirpus cyperinus	10		OBL
5. Impatiens capensis	5		FACW
6. Phalaris arundinacea	5		FACW
7. Symphyotrichum novae-angliae	5		FACW
8.			
9.			
10.			
11.			
12.			
	110%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	155 (A)		225 (B)

Prevalence Index = B/A = 1.45

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-17W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/2	100					Silt Loam	
6 - 12	10YR 4/2	80	7.5YR 4/6	20	C	M	Sandy Loam	
12 - 24	10YR 4/2	95	10YR 5/6	5	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✔ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None observed

Depth (inches): ___

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-18W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.349829 Long: -93.094392 Datum: NAD 83

Soil Map Unit Name: 1043C - Udorthents, nearly level to rolling NWI classification: 1043C, Udorthents, nearly level to rolling

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ☒	No _____	If yes, optional Wetland Site ID: KETB-10
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-19U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ☒	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 20

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-18W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix bebbiana	20	☒	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		

Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	80	☒	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80% = Total Cover		

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		120 (B)

Prevalence Index = B/A = 1.20

Hydrophytic Vegetation Indicators:

- ☒ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-18W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Mucky Peat	
4 - 6	10YR 4/2	80	10YR 4/6	20	C	M	Sandy Loam	
6 - 24	2.5Y 4/1	98	10YR 5/8	2	C	M	Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-19U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 20

Subregion (LRR or MLRA): K Lat: 47.349888 Long: -93.094512 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-18W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-19U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	60	✔	FAC
2. Betula papyrifera	30	✔	FACU
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	25	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	25%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Carex pensylvanica	60	✔	FACU
2. Eurybia macrophylla	30	✔	UPL
3. Diervilla lonicera	10		UPL
4. Pteridium aquilinum	10		FACU
5. Rubus idaeus	10		FAC
6. Osmorhiza claytonii	5		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	125%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	130	x 4 =	520
UPL species	40	x 5 =	160
Column Totals:	240 (A)		930 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-19U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/2	100					Sandy Loam	
2 - 8	10YR 3/3	100					Sandy Loam	
8 - 24	10YR 4/4	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-20W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): A K Lat: 47.348517 Long: -93.095819 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-11
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-21U. Wetland community is a deep marsh, Type 4, PEM1F.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ✔ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 3	
Water Table Present?	Yes ✔	No ____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0	**Wetland Hydrology Present?** Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-20W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	40	✔	OBL
2. Ceratophyllum demersum	20	✔	OBL
3. Sparganium emersum	10		OBL
4. Equisetum fluviatile	5		OBL
5. Potamogeton natans	5		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		80 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-20W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	N 2.5/1	100					Mucky Peat	
2 - 12	10YR 4/2	100					Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ✔ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by rock.

Soils are naturally problematic due to historical ground disturbance, but the area resembles the new normal conditions.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-21U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 25

Subregion (LRR or MLRA): K Lat: 47.348471 Long: -93.095784 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-20W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-21U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	60	✓	FACU
2. Prunus serotina	5		FACU
3.			
4.			
5.			
6.			
7.			
	65%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	40	✓	FACU
2. Amelanchier alnifolia	10		FACU
3. Picea glauca	5		FACU
4.			
5.			
6.			
7.			
	55%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	30	✓	UPL
2. Rubus idaeus	30	✓	FAC
3. Fragaria virginiana	15		FACU
4. Galium boreale	10		FAC
5. Solidago canadensis	10		FACU
6. Cirsium arvense	5		FACU
7. Maianthemum canadense	5		FACU
8.			
9.			
10.			
11.			
12.			
	105%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	155	x 4 =	620
UPL species	30	x 5 =	150
Column Totals:	225 (A)		890 (B)

Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-21U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Loamy very fine sand	
4 - 24	10YR 3/4	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-22W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.346646 Long: -93.094478 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: PEM1Fx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-12

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-23U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-22W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Bidens cernua	25	✓	OBL
2. Typha latifolia	25	✓	OBL
3. Carex comosa	20	✓	OBL
4. Calamagrostis canadensis	15		OBL
5. Lythrum salicaria	15		OBL
6. Sparganium emersum	5		OBL
7.			
8.			
9.			
10.			
11.			
12.			
	105% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	105	x 1 =	105
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		105 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-22W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 4	10YR 2/1	100					Mucky Peat	
4 - 24	10YR 2/2	100					Mucky Loam/Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-23U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.3466196 Long: -93.0944920 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-22W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-23U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	60	✓	FACU
2. Acer rubrum	20	✓	FAC
3. Populus tremuloides	10		FAC
4.			
5.			
6.			
7.			
	90%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	30	✓	FACU
2. Abies balsamea	10	✓	FAC
3.			
4.			
5.			
6.			
7.			
	40%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	70	✓	UPL
2. Pteridium aquilinum	60	✓	FACU
3. Maianthemum canadense	10		FACU
4. Aralia nudicaulis	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	145%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	165	x 4 =	660
UPL species	70	x 5 =	350
Column Totals:	275 (A)		1130 (B)

Prevalence Index = B/A = 4.11

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-23U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 4/1	100					Loam	
2 - 6	10YR 4/3	100					Sandy Loam	
6 - 14	10YR 4/4	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Auger refusal at 14 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-24W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.345346 Long: -93.094217 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-13
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-25U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-24W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	20	✔	FACW
2. Populus balsamifera	15	✔	FACW
3. Populus tremuloides	10		FAC
4. Salix discolor	10		FACW
5.			
6.			
7.			
	55% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	40	✔	OBL
2. Equisetum arvense	10		FAC
3. Cicuta maculata	5		OBL
4. Fragaria virginiana	3		FACU
5. Cirsium muticum	2		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	47	x 1 =	47
FACW species	45	x 2 =	90
FAC species	20	x 3 =	60
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	115 (A)		209 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-24W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	7.5YR 3/1	100					Loam	
2 - 12	7.5YR 4/3	95	7.5YR 4/6	5	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 2

Hydric Soil Present? Yes ✔ No ___

Remarks:

Auger refusal at 12 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-25U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.345237 Long: -93.094139 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-24W and SP-26W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-25U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	60	✓	FAC
2. Populus balsamifera	10		FACW
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	60	✓	FACU
2. Viburnum rafinesqueanum	10		
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Aralia nudicaulis	60	✓	FACU
2. Eurybia macrophylla	30	✓	UPL
3. Pteridium aquilinum	30	✓	FACU
4. Osmorhiza claytonii	10		FACU
5. Rubus pubescens	10		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	140%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	60	x 3 =	180
FACU species	160	x 4 =	640
UPL species	30	x 5 =	150
Column Totals:	270 (A)		1010 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-25U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/2	100					Loamy very fine sand	
6 - 24	10YR 4/6	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-26W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.345134 Long: -93.094279 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: PEM1Dx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-14
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-25U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 18

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-26W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	50	✓	OBL
2. Persicaria sagittata	30	✓	OBL
3. Impatiens capensis	20		FACW
4. Calamagrostis canadensis	10		OBL
5. Mentha arvensis	10		FACW
6. Scirpus cyperinus	10		OBL
7.			
8.			
9.			
10.			
11.			
12.			
	130% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		160 (B)

Prevalence Index = B/A = 1.23

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-26W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loamy very fine sand	
2 - 6	10YR 5/2	80	10YR 4/6	20	C	M	Clay Loam	
6 - 24	10YR 5/1	80	10YR 4/6	20	C	M	Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 2

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-27W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.342674 Long: -93.093971 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: PEM1Fx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-15
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-28U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-27W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	10	✓	FACW
2. Salix petiolaris	10	✓	FACW
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	60	✓	OBL
2. Carex tuckermanii	30	✓	OBL
3. Lycopus uniflorus	10		OBL
4. Impatiens capensis	5		FACW
5. Mentha arvensis	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		160 (B)

Prevalence Index = B/A = 1.23

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-27W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 3/1	100					Sandy Loam	
3 - 12	10YR 5/1	100					Sandy Loam	
12 - 24	10YR 6/3	95	10YR 6/6	5	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-28U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): K Lat: 47.342484 Long: -93.093758 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-27W and SP-29W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-28U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Abies balsamea	70	✓	FAC
2. Betula papyrifera	20	✓	FACU
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus americana	5	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	5%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Pteridium aquilinum	4	✓	FACU
2. Maianthemum canadense	3	✓	FACU
3. Aralia nudicaulis	2		FACU
4. Carex pensylvanica	2		UPL
5. Clintonia borealis	1		FAC
6. Eurybia macrophylla	1		UPL
7.			
8.			
9.			
10.			
11.			
12.			
	13%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	71	x 3 =	213
FACU species	34	x 4 =	136
UPL species	3	x 5 =	15
Column Totals:	108 (A)		364 (B)

Prevalence Index = B/A = 3.37

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-28U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 3/1	100					Sandy Loam	
1 - 3	10YR 5/1	100					Sandy Loam	
3 - 18	10YR 5/4	95	10YR 6/6	5	C	M	Sandy Loam	
18 - 24	10YR 6/3	95	10YR 6/6	5	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-29W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.342417 Long: -93.093426 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-16

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-28U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 6

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-29W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha latifolia	50	✓	OBL
2. Impatiens capensis	30	✓	FACW
3. Carex comosa	20		OBL
4. Calamagrostis canadensis	10		OBL
5. Comarum palustre	5		OBL
6. Leersia oryzoides	5		OBL
7.			
8.			
9.			
10.			
11.			
12.			
	120% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		150 (B)

Prevalence Index = B/A = 1.25

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-29W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 6	10YR 2/1	100					Mucky Loam/Clay	
6 - 10	10YR 4/1	100					Sand	
10 - 24	10YR 3/1	100					Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-30W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.342229 Long: -93.09165 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: PUBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-17
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-31U. Wetland community is a deep marsh, Type 4, PEM1F.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-30W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	20	✓	FACW
2. Schoenoplectus tabernaemontani	15	✓	OBL
3. Calamagrostis canadensis	10		OBL
4. Carex comosa	10		OBL
5. Juncus effusus	5		OBL
6. Typha latifolia	5		OBL
7. Ceratophyllum demersum	3		OBL
8. Persicaria amphibia	1		OBL
9.			
10.			
11.			
12.			
	69% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	49	x 1 =	49
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	69 (A)		89 (B)

Prevalence Index = B/A = 1.29

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-30W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/2	100					Mucky Loam/Clay	
6 - 24	10YR 4/1	100					Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-31U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.342138 Long: -93.091696 Datum: NAD 83

Soil Map Unit Name: 867B, Menahga and Graycalm soils, 0 to 8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-30W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-31U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Abies balsamea	40		FAC
2. Betula papyrifera	10		FACU
3. Pinus resinosa	5		FACU
4.			
5.			
6.			
7.			
	55%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	15		FACW
2. Abies balsamea	5		FAC
3.			
4.			
5.			
6.			
7.			
	20%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Carex pensylvanica	5		
2. Aralia nudicaulis	2		FACU
3. Maianthemum canadense	2		FACU
4. Pteridium aquilinum	2		FACU
5. Clintonia borealis	1		FAC
6. Trientalis borealis	1		FAC
7.			
8.			
9.			
10.			
11.			
12.			
	13%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	47	x 3 =	141
FACU species	21	x 4 =	84
UPL species	0	x 5 =	0
Column Totals:	83 (A)		255 (B)

Prevalence Index = B/A = 3.07

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-31U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 5/4	98	10YR 6/6	2	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-32W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N-R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.341168 Long: -93.086063 Datum: NAD 83

Soil Map Unit Name: 549 – Greenwood ponded complex, 0 to 1% slopes NWI classification: PFO4Dq

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-18
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-33U. Wetland community is a coniferous bog, Type 8, PFO4B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-32W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Larix laricina	60	✓	FACW
2. Picea mariana	10		FACW
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	70	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Clintonia borealis	20	✓	FAC
2. Vaccinium myrtilloides	20	✓	FACW
3. Bidens cernua	10		OBL
4. Equisetum sylvaticum	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	165	x 2 =	330
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	195 (A)		400 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Sphagnum cover = 60%

SOIL

Sampling Point: SP-32W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 12	10YR 2/1	100					Mucky Peat	
12 - 24	10YR 2/1	100					Mucky Loam/Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ✓ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-33U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S11, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.341382 Long: -93.086232 Datum: NAD 83

Soil Map Unit Name: A1B – Eagleview Menahga complex, 1-8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-32W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-33U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	30	✔	FAC
2. Acer saccharum	15	✔	FACU
3. Abies balsamea	5		FAC
4.			
5.			
6.			
7.			
	50%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Cornus alternifolia	10	✔	FACU
2. Corylus cornuta	10	✓	FACU
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Aralia nudicaulis	40	✔	FACU
2. Pteridium aquilinum	40	✔	FACU
3. Eurybia macrophylla	30	✔	UPL
4. Apocynum androsaemifolium	15		UPL
5. Diervilla lonicera	15		UPL
6. Athyrium Filix-femina	10		FAC
7. Clintonia borealis	10		FAC
8. Cornus canadensis	5		FAC
9. Rubus pubescens	5		FACW
10.			
11.			
12.			
	170%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	60	x 3 =	180
FACU species	115	x 4 =	460
UPL species	60	x 5 =	300
Column Totals:	240 (A)		950 (B)

Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-33U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/2	100					Sandy Loam	
6 - 12	10YR 4/3	90	10YR 5/6	10	C	M	Sandy Loam	
12 - 24	10YR 5/4	90	10YR 6/6	10	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-34W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.338697 Long: -93.080864 Datum: NAD 83

Soil Map Unit Name: 619, Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-19
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-35U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-34W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	10	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Fraxinus pennsylvanica	15	✔	FACW
2. Populus balsamifera	15	✔	FACW
3.			
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Carex hystericina	15	✔	OBL
2. Glyceria canadensis	10	✔	OBL
3. Lycopus uniflorus	5		OBL
4. Persicaria pensylvanica	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		120 (B)

Prevalence Index = B/A = 1.60

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-34W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 5/2	90	10YR 5/6	10	C	M	Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-35U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.338716 Long: -93.081147 Datum: NAD 83

Soil Map Unit Name: 619, Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-34W and SP-36W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-35U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	20	✔	FACU
2. Acer rubrum	10	✔	FAC
3. Fraxinus pennsylvanica	10	✔	FACW
4.			
5.			
6.			
7.			
	40%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus americana	60	✔	FACU
2. Acer spicatum	30	✔	FACU
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Osmorhiza claytonii	20	✔	FACU
2. Actaea rubra	15	✔	FACU
3. Athyrium filix-femina	10	✔	FAC
4. Eurybia macrophylla	10	✔	UPL
5. Asarum canadense	5		UPL
6. Streptopus lanceolatus	4		FACU
7. Trillium cernuum	4		FAC
8. Carex gracillima	3		FACU
9. Trientalis borealis	3		FAC
10.			
11.			
12.			
	74%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	27	x 3 =	81
FACU species	152	x 4 =	608
UPL species	15	x 5 =	75
Column Totals:	204 (A)		784 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-35U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					Sandy Loam	
2 - 4	10YR 4/1	100					Sandy Loam	
4 - 8	10YR 6/6	100					Sandy Loam	
8 - 24	10YR 6/4	95	10YR 5/8	5	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-36W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.338292 Long: -93.08203 Datum: NAD 83

Soil Map Unit Name: 619, Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-20
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-35U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-36W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus nigra	15	✔	FACW
2. Ulmus americana	10	✔	FACW
3.			
4.			
5.			
6.			
7.			
	25%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	40	✔	FACW
2. Corylus americana	15	✔	FACU
3.			
4.			
5.			
6.			
7.			
	55%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Impatiens capensis	30	✔	FACW
2. Athyrium angustum	10		FAC
3. Rubus pubescens	5		FACW
4. Symphyotrichum novae-angliae	5		FACW
5. Glyceria striata	4		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	54%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	4	x 1 =	4
FACW species	105	x 2 =	210
FAC species	10	x 3 =	30
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	134 (A)		304 (B)

Prevalence Index = B/A = 2.27

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-36W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 3/1	90	10YR 4/6	10	C	M	Loam	
8 - 16	10YR 5/2	90	10YR 5/6	10	C	M	Sandy Loam	
16 - 24	10YR 6/2	90	10YR 5/	10	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-37W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.337252 Long: -93.079741 Datum: NAD 83

Soil Map Unit Name: 619, Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-21

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-38U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-37W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	70		FACW
2. Salix discolor	10		FACW
3.			
4.			
5.			
6.			
7.			
	80% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Scirpus cyperinus	60		OBL
2. Carex scoparia	30		FACW
3. Symphyotrichum novae-angliae	10		FACW
4. Equisetum pratense	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	125	x 2 =	250
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	185 (A)		310 (B)

Prevalence Index = B/A = 1.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-37W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 5/2	80	10YR 5/6	20	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil

Depth (inches): 0

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-38U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Flat Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.337173 Long: -93.079634 Datum: NAD 83

Soil Map Unit Name: 619, Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: Upland

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-37W and SP-39W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-38U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Populus balsamifera	20		FACW
2. Salix discolor	20		FACW
3. Populus tremuloides	10		FAC
4. Alnus incana	5		FACW
5. Larix laricina	5		FACW
6. Picea glauca	2		FACU
7.			
	62% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Hieracium aurantiacum	50		UPL
2. Fragaria virginiana	10		FACU
3. Poa pratensis	10		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	70% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	22	x 4 =	88
UPL species	50	x 5 =	250
Column Totals:	132 (A)		468 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-38U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 4/4	80	10YR 4/6	20	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Auger refusal at 12 inches below ground surface by rock. Soils compacted from old road.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-39W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N< R22W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.337059 Long: -93.07945 Datum: NAD 83

Soil Map Unit Name: 619, Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-22

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-38U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____	
Water Table Present?	Yes _____	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-39W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	50		OBL
2. Bidens cernua	30		OBL
3. Scirpus cyperinus	10		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		90 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-39W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 8	10YR 2/2	100					Mucky Peat	
8 - 24	2.5Y 5/1	100					Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-40W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336485 Long: -93.073599 Datum: NAD 83

Soil Map Unit Name: 622B, Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: PSS1D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-23

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-41U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____	
Water Table Present?	Yes _____	No _____	Depth (inches): 6	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-40W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	100		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	100% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Rubus pubescens	40		FACW
2. Carex lacustris	20		OBL
3. Equisetum sylvaticum	10		FACW
4. Caltha palustris	5		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	150	x 2 =	300
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	175 (A)		325 (B)

Prevalence Index = B/A = 1.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-40W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 12	10YR 2/1	100					Mucky Peat	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-41U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.336436 Long: -93.073335 Datum: NAD 83

Soil Map Unit Name: 622B, Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-40W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-41U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	40		FAC
2. Abies balsamea	20		FAC
3. Betula papyrifera	20		FACU
4.			
5.			
6.			
7.			
	80%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Acer spicatum	30		FACU
2. Fraxinus nigra	20		FACW
3. Corylus cornuta	10		FACU
4.			
5.			
6.			
7.			
	60%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Cornus canadensis	30		FAC
2. Pteridium aquilinum	25		FACU
3. Eurybia macrophylla	20		UPL
4. Aralia nudicaulis	10		FACU
5. Clintonia borealis	5		FAC
6. Maianthemum canadense	5		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	95%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	95	x 3 =	285
FACU species	100	x 4 =	400
UPL species	20	x 5 =	100
Column Totals:	235 (A)		825 (B)

Prevalence Index = B/A = 3.51

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-41U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 4	10YR 2/1	100					Sandy Loam	
4 - 8	10YR 3/2	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 8 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-42W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.337066 Long: -93.069754 Datum: NAD 83

Soil Map Unit Name: 622B, Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: KETB-24

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-43U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-42W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	40	✔	OBL
2. Carex comosa	20	✔	OBL
3. Juncus dudleyi	10		FACW
4. Eleocharis palustris	5		OBL
5. Scirpus cyperinus	5		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		90 (B)

Prevalence Index = B/A = 1.13

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-42W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	N 2.5/1	100					Mucky Loam/Clay	
2 - 24	10YR 5/1	100					Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-43U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S13, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 30

Subregion (LRR or MLRA): K Lat: 47.3371333 Long: -93.0697813 Datum: NAD 83

Soil Map Unit Name: 622B, Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-42W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-43U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	60	✔	FAC
2. Acer rubrum	10		FAC
3. Betula papyrifera	10		FACU
4.			
5.			
6.			
7.			
	80%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	50	✔	FACU
2. Populus tremuloides	10		FAC
3.			
4.			
5.			
6.			
7.			
	60%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Carex pensylvanica	50	✔	UPL
2. Lotus corniculatus	40	✔	FACU
3. Eurybia macrophylla	20		UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	100	x 4 =	400
UPL species	70	x 5 =	350
Column Totals:	250 (A)		990 (B)

Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-43U

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/2	100					Sandy Loam	
2 - 14	10YR 4/3	100					Silty Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Auger refusal at 14 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-44W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336573 Long: -93.068082 Datum: NAD 83

Soil Map Unit Name: 622B, Nashwauk fine sandy loam, 1 to 10 percent loams NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-25

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-45U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✔ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-44W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	10		FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	60		FACW
2. Salix discolor	20		FACW
3.			
4.			
5.			
6.			
7.			
	80%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Impatiens capensis	40		FACW
2. Equisetum sylvaticum	30		FACW
3. Carex lacustris	20		OBL
4. Fragaria virginiana	10		FACU
5. Doellingeria umbellata	10		FACW
6. Ribes hirtellum	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	115%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	165	x 2 =	330
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	205 (A)		420 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-44W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/2	100					Silt Loam	
4 - 15	2.5Y 5/1	100					Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 15 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-45U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 10

Subregion (LRR or MLRA): K Lat: 47.336666 Long: -93.06788 Datum: NAD 83

Soil Map Unit Name: 622B, Nashwauk fine sandy loam, 1 to 10 percent loams NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-44W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-45U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	70	✔	FAC
2. Abies balsamea	10		FAC
3. Betula papyrifera	10		FACU
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus americana	50	✔	FACU
2. Populus tremuloides	15	✔	FAC
3.			
4.			
5.			
6.			
7.			
	65%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Aralia nudicaulis	70	✔	FACU
2. Eurybia macrophylla	30	✔	UPL
3. Pteridium aquilinum	30	✔	FACU
4. Fragaria virginiana	10		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	140%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	95	x 3 =	285
FACU species	170	x 4 =	680
UPL species	30	x 5 =	150
Column Totals:	295 (A)		1115 (B)

Prevalence Index = B/A = 3.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-45U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loam	
2 - 8	10YR 4/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 8 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-46W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.337048 Long: -93.057978 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: PEM1D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-26

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-47U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____	
Water Table Present?	Yes _____	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-46W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	10		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Carex striata	50		OBL
2. Typha latifolia	40		OBL
3. Calamagrostis canadensis	5		OBL
4. Carex comosa	5		OBL
5. Eutrochium maculatum	5		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	105	x 1 =	105
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	115 (A)		125 (B)

Prevalence Index = B/A = 1.09

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-46W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 14	10YR 3/2	100					Mucky Loam/Clay	
14 - 24	2.5Y 5/1	100					Silt Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-47U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R22W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 10

Subregion (LRR or MLRA): K Lat: 47.337163 Long: -93.057975 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-46W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-47U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	60	✔	FAC
2. Populus balsamifera	10		FACW
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix petiolaris	10	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Poa pratensis	40	✔	FACU
2. Eurybia macrophylla	30	✔	UPL
3. Fragaria virginiana	30	✔	FACU
4. Equisetum arvense	10		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	70	x 3 =	210
FACU species	70	x 4 =	280
UPL species	30	x 5 =	150
Column Totals:	190 (A)		680 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-47U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 3	10YR 3/2	100					Loam	
3 - 10	10YR 4/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal at 10 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-48W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R22W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336308 Long: -93.054848 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-27

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-49U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-48W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	80		OBL
2. Lysimachia thyrsiflora	5		OBL
3. Scirpus cyperinus	5		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		90 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-48W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 3/2	100					Mucky Loam/Clay	
12 - 24	10YR 5/1	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-49U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R22W

Landform (hillslope, terrace, etc.): Upland, Flat Local relief (concave, convex, none): Linear Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336384 Long: -93.05495 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-48W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-49U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Lotus corniculatus	60		FACU
2. Tanacetum vulgare	40		FACU
3. Phleum pratense	20		FACU
4. Poa pratensis	10		FACU
5. Solidago canadensis	10		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	140% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	140	x 4 =	560
UPL species	0	x 5 =	0
Column Totals:	140 (A)		560 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-49U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 6	7.5YR 4/3	100					Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 6 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-50W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.3375412 Long: -93.0522567 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil ✓, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-28
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-51U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-50W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	90	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	90% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Glyceria striata	80	✔	OBL
2. Doellingeria umbellata	10		FACW
3. Equisetum pratense	10		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	110	x 2 =	220
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	190 (A)		300 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-50W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/2	90	10YR 4/6	10	C	M	Silt Loam	
4 - 24	7.5YR 4/3	80	7.5YR 4/6	20	C	M	Silt Loam	Slough.
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ✔ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Soils are naturally problematic due to the presence of red parent materials in the region.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-51U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 10

Subregion (LRR or MLRA): K Lat: 47.337476 Long: -93.052292 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-50W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-51U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	90	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus americana	70	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	70%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	50	✔	UPL
2. Osmorhiza claytonii	10		FACU
3. Rubus idaeus	10		FAC
4. Fragaria virginiana	5		FACU
5. Trientalis borealis	5		FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	105	x 3 =	315
FACU species	85	x 4 =	340
UPL species	50	x 5 =	250
Column Totals:	240 (A)		905 (B)

Prevalence Index = B/A = 3.77

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-51U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loam	
2 - 8	10YR 4/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 8 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-52W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336682 Long: -93.050916 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-29
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-53U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-52W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	90	✔	OBL
2. Schoenoplectus tabernaemontani	10		OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-52W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 6	10YR 2/1	100					Mucky Loam/Clay	
6 - 18	10YR 5/1	100					Loamy Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✔ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Auger refusal at 18 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-53U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.3364716 Long: -93.0499573 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-52W and SP-54W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-53U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	50	✔	FAC
2. Abies balsamea	10		FAC
3.			
4.			
5.			
6.			
7.			
	60%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Populus tremuloides	10	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Fragaria virginiana	50	✔	FACU
2. Lotus corniculatus	20	✔	FACU
3. Eurybia macrophylla	10		UPL
4. Hieracium caespitosum	10		UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	70	x 4 =	280
UPL species	20	x 5 =	100
Column Totals:	160 (A)		590 (B)

Prevalence Index = B/A = 3.69

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-53U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 12	7.5YR 4/3	100					Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal at 12 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-54W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336558 Long: -93.049921 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: KETB-30
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-14U. Wetland community is a shrub-carr, Type 6, PSS1A.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): 20

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-54W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	50	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Scirpus cyperinus	20	✔	OBL
2. Typha angustifolia	10	✔	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		130 (B)

Prevalence Index = B/A = 1.63

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-54W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	7.5YR 3/2	100					Clay Loam	
2 - 20	7.5YR 4/2	80	7.5YR 4/6	20	C	M	Clay Loam	
20 - 24	7.5YR 4/2	90	7.5YR 4/6	10	C	M	Sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 0

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-55W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.336953 Long: -93.049191 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-31

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-56U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-55W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	50		FACW
2. Populus tremuloides	10		FAC
3.			
4.			
5.			
6.			
7.			
	60% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	30		OBL
2. Scirpus cyperinus	30		OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		190 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-55W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	7.5YR 4/4	70	7.5YR 4/6	20	C	M	Clay Loam	
0 - 12			7.5YR 5/1	10	D	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 0

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-56U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.3368663 Long: -93.0493227 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-55W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-56U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	90		FAC
2.			
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	10		FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Diervilla lonicera	50		UPL
2. Rubus idaeus	50		FAC
3. Rosa acicularis	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	140	x 3 =	420
FACU species	15	x 4 =	60
UPL species	50	x 5 =	250
Column Totals:	205 (A)		730 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-56U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 4/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 6 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-57W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.337352 Long: -93.04762 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	If yes, optional Wetland Site ID: KETB-32

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-56U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-57W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	80		FACW
2. Salix petiolaris	10		FACW
3.			
4.			
5.			
6.			
7.			
	90% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	40		OBL
2. Scirpus cyperinus	30		OBL
3. Doellingeria umbellata	5		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	165 (A)		260 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-57W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 4/2	60	10YR 5/1	20	D	M	Sandy Loam	
0 - 8			10YR 4/6	20	C	M	Sandy Loam	
8 - 16	7.5YR 4/4	60	7.5YR 5/1	20	D	M	Clay Loam	
8 - 16			7.5YR 5/6	20	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 16 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-58W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.337009 Long: -93.046958 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: PUBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-33

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-59U. Wetland community is a deep marsh, Type 4, PEM1F.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-58W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Potamogeton natans	50		OBL
2. Sagittaria graminea	50		OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-58W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 24	10YR 5/1	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-59U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.337037 Long: -93.046732 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-58W and SP-60W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-59U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	30		FACU
2. Picea glauca	10		FACU
3.			
4.			
5.			
6.			
7.			
	40% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	20		FACU
2. Betula papyrifera	10		FACU
3. Populus balsamifera	10		FACW
4. Salix discolor	10		FACW
5.			
6.			
7.			
	50% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	60		UPL
2. Fragaria virginiana	30		FACU
3. Hieracium aurantiacum	20		UPL
4. Carex gracillima	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	105	x 4 =	420
UPL species	80	x 5 =	400
Column Totals:	205 (A)		860 (B)

Prevalence Index = B/A = 4.20

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-59U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 12	7.5YR 4/4	100					Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-60W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S18, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.33733 Long: -93.046008 Datum: NAD 83

Soil Map Unit Name: B33A, McQuade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-34

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-59U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-60W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	5		FACW
2. Salix petiolaris	5		FACW
3.			
4.			
5.			
6.			
7.			
	10% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	70		OBL
2. Bidens cernua	10		OBL
3. Calamagrostis canadensis	10		OBL
4. Carex comosa	10		OBL
5. Glyceria canadensis	10		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	x 1 =	110
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		130 (B)

Prevalence Index = B/A = 1.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-60W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Mucky Loam/Clay	
4 - 14	10YR 5/2	80	10YR 5/6	20	C	M	Sandy Loam	
14 - 24	7.5YR 4/4	60	7.5YR 4/6	30	C	M	Clay Loam	
14 - 24			7.5YR 5/1	10	D	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 14

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-61W

Investigator(s): CJE, PLL Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.3379015 Long: -93.0405043 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-35
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-62U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ✔ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-61W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	15	✔	FAC
2. Salix discolor	5	✔	FACW
3.			
4.			
5.			
6.			
7.			
	20%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	85	✔	FACW
2. Salix discolor	5		FACW
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Carex trisperma	30	✔	OBL
2. Impatiens capensis	15	✔	FACW
3. Scirpus atrovirens	10		OBL
4. Equisetum palustre	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	115	x 2 =	230
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	170 (A)		315 (B)

Prevalence Index = B/A = 1.85

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Moss cover 15%

SOIL

Sampling Point: SP-61W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 2/1	100					Silt Loam	
1 - 8	10YR 4/2	90	10YR 4/6	10	C	M	Sandy Clay	
8 - 18	10YR 5/3	50					Sandy Clay	
8 - 18	10YR 4/3	50					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 1

Hydric Soil Present? Yes ✔ No ___

Remarks:

Auger refusal at 18 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-62U

Investigator(s): CJE PLL Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.3378410 Long: -93.0402080 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-61W and SP-63W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ☒	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-62U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	35	✓	FAC
2. Betula papyrifera	20	✓	FACU
3. Ulmus americana	7		FACW
4. Abies balsamea	3		FAC
5.			
6.			
7.			
	65%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Populus tremuloides	15	✓	FAC
2. Betula papyrifera	5	✓	FACU
3.			
4.			
5.			
6.			
7.			
	20%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Rubus idaeus	60	✓	FAC
2. Pteridium aquilinum	25	✓	FACU
3. Rosa blanda	15		FACU
4. Aralia nudicaulis	5		FACU
5. Galium aparine	5		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	7	x 2 =	14
FAC species	113	x 3 =	339
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	195 (A)		653 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ☒

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-62U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					Loam	
2 - 12	10YR 3/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Auger refusal at 12 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-63W

Investigator(s): CJE PLL Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.33773 Long: -93.039869 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-35

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-14U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✔ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ✔ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✔ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ✔ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-63W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	20	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Scirpus cyperinus	60	✔	OBL
2. Glyceria grandis	25	✔	OBL
3. Persicaria amphibia	15		OBL
4. Carex bebbii	10		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	x 1 =	110
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		150 (B)

Prevalence Index = B/A = 1.15

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-63W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 2/2	100					Sandy Loam	
1 - 10	7.5YR 5/2	70	10YR 4/6	30	C	M	Sandy Clay	
10 - 18	10YR 4/3	90	10YR 5/6	10	C	PL	Sandy Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 1

Hydric Soil Present? Yes ✔ No ___

Remarks:

Auger refusal at 18 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-64W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.338904 Long: -93.035989 Datum: NAD 83

Soil Map Unit Name: B33A, McQuade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	If yes, optional Wetland Site ID: KETB-36

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-65U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-64W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	80		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	80% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	50		OBL
2. Scirpus cyperinus	20		OBL
3. Equisetum sylvaticum	10		FACW
4. Rubus pubescens	10		FACW
5. Cicuta maculata	5		OBL
6. Poa palustris	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75	x 1 =	75
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	180 (A)		285 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-64W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loam	
2 - 12	10YR 6/2	70	10YR 5/6	20	C	M	Sandy Loam	
2 - 12			10YR 5/1	10	D	M	Sandy Loam	
12 - 18	7.5YR 4/4	80	7.5YR 5/8	20	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 18 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-65U

Investigator(s): MJS2, AMJ2 Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.339073 Long: -93.036071 Datum: NAD 83

Soil Map Unit Name: B33A, McQuade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____ If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-64W and SP-66W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-65U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	70		FACU
2. Populus tremuloides	30		FAC
3.			
4.			
5.			
6.			
7.			
	100%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	30		FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	40		UPL
2. Rubus idaeus	40		FAC
3. Pteridium aquilinum	30		FACU
4. Carex pensylvanica	15		UPL
5. Osmorhiza claytonii	10		FACU
6. Fragaria virginiana	5		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	140%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	145	x 4 =	580
UPL species	55	x 5 =	275
Column Totals:	270 (A)		1065 (B)

Prevalence Index = B/A = 3.94

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-65U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loamy very fine sand	
2 - 12	10YR 4/3	100					Loamy very fine sand	
12 - 24	10YR 6/4	100					Loamy very fine sand	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-13

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-66W

Investigator(s): MJS2, AMJ2 Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.3393179 Long: -93.0362484 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: KETB-37
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-65U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-66W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	50		FACW
2. Alnus incana	20		FACW
3. Salix petiolaris	10		FACW
4.			
5.			
6.			
7.			
	80% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	40		OBL
2. Scirpus cyperinus	30		OBL
3. Doellingeria umbellata	5		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	85	x 2 =	170
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	155 (A)		240 (B)

Prevalence Index = B/A = 1.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-66W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 4/2	60	10YR 5/1	20	D	M	Sandy Loam	
0 - 8			10YR 4/6	20	C	M	Sandy Loam	
8 - 16	7.5YR 4/4	60	7.5YR 5/1	20	D	M	Clay Loam	
8 - 16			7.5YR 5/6	20	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 16 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-67W

Investigator(s): CJE PLL Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.340653 Long: -93.032929 Datum: NAD 83

Soil Map Unit Name: B33A, McQuade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: PSS1D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-38

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-68U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-67W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	5		FAC
2. Salix discolor	5		FACW
3.			
4.			
5.			
6.			
7.			
	10% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	70		FACW
2. Salix discolor	5		FACW
3.			
4.			
5.			
6.			
7.			
	75% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Carex lacustris	20		OBL
2. Ribes triste	10		OBL
3. Equisetum palustre	5		FACW
4. Populus tremuloides	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	85	x 2 =	170
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	125 (A)		230 (B)

Prevalence Index = B/A = 1.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

Sparsely vegetated herb layer. Plants stressed due to dry conditions.

SOIL

Sampling Point: SP-67W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/1	95	10YR 4/6	5	C	PL / M	Loam	
6 - 12	10YR 5/2	90	10YR 4/6	10	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-68U

Investigator(s): CJE PLL Section, Township, Range: S17, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Flat Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.340974 Long: -93.033368 Datum: NAD 83

Soil Map Unit Name: B33A, McQuade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-67W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-68U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	80		FAC
2. Ostrya virginiana	10		FACU
3.			
4.			
5.			
6.			
7.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	20		FACU
2. Rhamnus cathartica	10		FAC
3. Populus tremuloides	5		FAC
4.			
5.			
6.			
7.			
	35%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Rubus pubescens	30		FACW
2. Agrimonia striata	10		FACU
3. Carex pensylvanica	10		UPL
4. Corylus cornuta	5		FACU
5. Petasites hybridus	5		FAC
6. Ribes cynosbati	5		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	65%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	100	x 3 =	300
FACU species	50	x 4 =	200
UPL species	10	x 5 =	50
Column Totals:	190 (A)		610 (B)

Prevalence Index = B/A = 3.21

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-68U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 3	10YR 2/1	100					Loam	
3 - 7	10YR 3/2	100					Sandy Loam	
7 - 8	10YR 3/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 8 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-69W

Investigator(s): CJE PLL Section, Township, Range: S8, T56N, R21W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.349851 Long: -93.022613 Datum: NAD 83

Soil Map Unit Name: B28B, Buhl loam, 1 to 5 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-41
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-70U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-69W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	50	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Impatiens capensis	30	✔	FACW
2. Equisetum palustre	20	✔	FACW
3. Rubus idaeus	15	✔	FAC
4. Athyrium angustum	10		FAC
5. Calamagrostis canadensis	10		OBL
6. Scirpus atrovirens	10		OBL
7. Salix discolor	5		FACW
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	105	x 2 =	210
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		305 (B)

Prevalence Index = B/A = 2.03

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-69W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 4/2	90	10YR 4/6	10	C	PL / M	Silt Loam	
6 - 10	10YR 5/2	90	10YR 5/6	10	C	M	Clay Loam	
10 - 24	7.5YR 4/3	95	7.5YR 4/6	5	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 6

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-04

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-70U

Investigator(s): CJE PLL Section, Township, Range: S8, T56N, R21W

Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): Convex Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.34986 Long: -93.022804 Datum: NAD 83

Soil Map Unit Name: B27A, McQuade-Buhl complex, 0 to 3 complex slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-69W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-70U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	60	✔	FAC
2. Abies balsamea	5		FAC
3. Betula papyrifera	5		FACU
4.			
5.			
6.			
7.			
	70%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	45	✔	FACU
2. Abies balsamea	5		FAC
3. Fraxinus nigra	5		FACW
4.			
5.			
6.			
7.			
	55%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Pteridium aquilinum	30	✔	FACU
2. Eurybia macrophylla	20	✔	UPL
3. Fragaria virginiana	15	✔	FACU
4. Rubus pubescens	15	✔	FACW
5. Corylus cornuta	10		FACU
6. Diervilla lonicera	10		UPL
7. Streptopus lanceolatus	5		FACU
8. Trifolium pratense	3		FACU
9.			
10.			
11.			
12.			
	108%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	40
FAC species	70	x 3 =	210
FACU species	113	x 4 =	452
UPL species	30	x 5 =	150
Column Totals:	233 (A)		852 (B)

Prevalence Index = B/A = 3.66

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-70U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 4	10YR 3/2	100					Loam	
4 - 8	10YR 4/3	100					Loam	
8 - 12	10YR 5/3	100					Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal at 12 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-71W

Investigator(s): CJE PLL Section, Township, Range: S9, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.352327 Long: -93.019187 Datum: NAD 83

Soil Map Unit Name: B28B, Buhl loam, 1 to 5 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-43

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-72U. Wetland community is a hardwood swamp, Type 7, PFO1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-71W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	35		FAC
2. Fraxinus nigra	20		FACW
3. Acer rubrum	5		FAC
4.			
5.			
6.			
7.			
	60%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Fraxinus nigra	15		FACW
2. Acer rubrum	10		FAC
3. Corylus americana	5		FACU
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Rubus pubescens	35		FACW
2. Fraxinus nigra	20		FACW
3. Poa palustris	15		FACW
4. Gymnocarpium dryopteris	10		FACU
5. Acer rubrum	5		FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	55	x 3 =	165
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	175 (A)		435 (B)

Prevalence Index = B/A = 2.49

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation perching on tree roots. Concave surfaces are mostly un vegetated.

SOIL

Sampling Point: SP-71W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 2/1	95	10YR 4/4	5	C	PL	Loam	
3 - 6	10YR 5/1	100					Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 6 inches below ground surface by rock.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-72U

Investigator(s): CJE PLL Section, Township, Range: S9, T56N, R21W

Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.352418 Long: -93.019531 Datum: NAD 83

Soil Map Unit Name: B28B, Buhl loam, 1 to 5 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-71W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-72U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	55		FAC
2. Acer rubrum	15		FAC
3. Betula papyrifera	5		FACU
4.			
5.			
6.			
7.			
	75%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	40		FACU
2.			
3.			
4.			
5.			
6.			
7.			
	40%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	40		UPL
2. Streptopus lanceolatus	30		FACU
3. Aralia nudicaulis	20		FACU
4. Carex pensylvanica	5		UPL
5. Rubus pubescens	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	70	x 3 =	210
FACU species	95	x 4 =	380
UPL species	45	x 5 =	225
Column Totals:	215 (A)		825 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-72U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/1	100					Sandy Loam	
4 - 12	10YR 4/3	80	10YR 4/6	20	C	M	Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Auger refusal at 12 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-73W

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.360351 Long: -93.01605 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-46

Remarks: (Explain alternative procedures here or in a separate report.)

Dryer than normalPlot is located in a wetland, corresponding upland plot is SP-74U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-73W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	25		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Carex lacustris	20		OBL
2. Salix discolor	15		FACW
3. Scirpus cyperinus	15		OBL
4. Equisetum sylvaticum	10		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	85 (A)		135 (B)

Prevalence Index = B/A = 1.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

Moss covers approximately 30 percent of the bare ground.

SOIL

Sampling Point: SP-73W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 2/1	100					Mucky Loam/Clay	
1 - 12	10YR 4/2	75	7.5YR 4/6	25	C	M	Clay Loam	
12 - 18	7.5YR 3/3	90	7.5YR 4/6	10	C	M	Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 1

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-74U

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Linear Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.3602709 Long: -93.0176824 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-73W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-74U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	10		FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Populus tremuloides	20		FAC
2. Salix discolor	15		FACW
3. Alnus incana	5		FACW
4. Populus balsamifera	3		FACW
5.			
6.			
7.			
	43% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Hieracium aurantiacum	20		UPL
2. Viola pubescens	20		FACU
3. Lotus corniculatus	15		FACU
4. Achillea millefolium	10		FACU
5. Fragaria virginiana	10		FACU
6. Poa pratensis	10		FACU
7. Trifolium hybridum	5		FACU
8.			
9.			
10.			
11.			
12.			
	90% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	23	x 2 =	46
FAC species	30	x 3 =	90
FACU species	70	x 4 =	280
UPL species	20	x 5 =	100
Column Totals:	143 (A)		516 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-74U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 4/3	100					Sandy Loam	
6 - 10	7.5YR 5/2	100					Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 10 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin - CJE_PLL City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-75W

Investigator(s): CJE PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.364037 Long: -93.017655 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil ✓, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: KETB-48
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-76U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ✔ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-75W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	15	✔	FACW
2. Salix discolor	3		FACW
3.			
4.			
5.			
6.			
7.			
	18% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha latifolia	30	✔	OBL
2. Calamagrostis canadensis	25	✔	OBL
3. Equisetum sylvaticum	20		FACW
4. Galium asprellum	10		OBL
5. Mentha arvensis	10		FACW
6. Scirpus cyperinus	5		OBL
7. Rumex crispus	2		FAC
8.			
9.			
10.			
11.			
12.			
	102% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	48	x 2 =	96
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		172 (B)

Prevalence Index = B/A = 1.43

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-75W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 2/1	100					Muck	
1 - 13	10YR 5/2	70	10YR 5/4	30	C	M	Sandy Clay	
13 - 24	10YR 4/2	60	7.5YR 5/6	40	C	M	Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ✔ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 1

Hydric Soil Present? Yes ✔ No ___

Remarks:

Soils are naturally problematic due to historical ground disturbance, but conditions have since met new normal conditions.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-76U

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Flat Local relief (concave, convex, none): Linear Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.363956 Long: -93.017762 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-75W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-76U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus balsamifera	15		FACW
2. Picea glauca	10		FACU
3. Larix laricina	5		FACW
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Populus balsamifera	15		FACW
2. Picea glauca	10		FACU
3. Salix humilis	5		FACU
4.			
5.			
6.			
7.			
	30%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Fragaria virginiana	20		FACU
2. Poa pratensis	15		FACU
3. Trifolium hybridum	15		FACU
4. Achillea millefolium	10		FACU
5. Hieracium aurantiacum	10		UPL
6. Taraxacum officinale	10		FACU
7. Lotus corniculatus	5		FACU
8.			
9.			
10.			
11.			
12.			
	85%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	10	x 5 =	50
Column Totals:	145 (A)		520 (B)

Prevalence Index = B/A = 3.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-76U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					Loam	
2 - 6	10YR 4/3	70	10YR 4/6	30	C	M	Sandy Clay	
6 - 18	10YR 5/3	80	7.5YR 4/6	20	C	M	Sandy Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Auger refusal at 18 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-77W

Investigator(s): CJE PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.366891 Long: -93.016684 Datum: NAD 83

Soil Map Unit Name: B28B, Buhl loam, 1 to 5 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-47
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-78U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 1
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-77W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	35	✔	FACW
2. Fraxinus nigra	20	✔	FACW
3. Salix discolor	15	✔	FACW
4. Abies balsamea	5		FAC
5.			
6.			
7.			
	75% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	25	✔	OBL
2. Carex lacustris	15	✔	OBL
3. Glyceria striata	15	✔	OBL
4. Equisetum palustre	10		FACW
5. Galium asprellum	5		OBL
6. Impatiens capensis	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	85	x 2 =	170
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		245 (B)

Prevalence Index = B/A = 1.63

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-77W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/1	100					Muck	
6 - 24	10YR 2/1	100					Mucky Clay/Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 18

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-78U

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): K Lat: 47.366879 Long: -93.016891 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-77W and SP-79W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-78U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	25		FAC
2. Abies balsamea	15		FAC
3. Picea glauca	10		FACU
4.			
5.			
6.			
7.			
	50%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	15		FACU
2. Abies balsamea	5		FAC
3.			
4.			
5.			
6.			
7.			
	20%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	50		UPL
2. Pteridium aquilinum	20		FACU
3. Aralia nudicaulis	10		FACU
4. Diervilla lonicera	5		UPL
5. Fragaria vesca	3		UPL
6. Abies balsamea	2		FAC
7.			
8.			
9.			
10.			
11.			
12.			
	90%	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	47	x 3 =	141
FACU species	55	x 4 =	220
UPL species	58	x 5 =	290
Column Totals:	160 (A)		651 (B)

Prevalence Index = B/A = 4.07

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-78U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	7.5YR 3/2	100					Loam	
2 - 5	10YR 5/3						Loam	
5 - 8	10YR 3/3	100					Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 8 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-03

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-79W

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): K Lat: 47.366852 Long: -93.017069 Datum: NAD 83

Soil Map Unit Name: 1050, Tailings basin NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: KETB-49
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-78U. Wetland community is an alder thicket, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-79W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	10		FACU
2. Fraxinus nigra	10		FACW
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	60		FACW
2. Fraxinus nigra	5		FACW
3.			
4.			
5.			
6.			
7.			
	65% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Glyceria striata	70		OBL
2. Fraxinus nigra	10		FACW
3. Carex lacustris	5		OBL
4. Galium asprellum	5		OBL
5. Rubus pubescens	5		FACW
6. Symphyotrichum novae-angliae	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	185 (A)		310 (B)

Prevalence Index = B/A = 1.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-79W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 2/1	95	10YR 4/4	5	C	PL	Loam	
10 - 16	10YR 6/1	100					Silt Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil

Depth (inches): 16

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 16 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-80W

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.370195 Long: -93.019122 Datum: NAD 83

Soil Map Unit Name: B28B, Buhl loam, 1 to 5 percent slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-50

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-81U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): 1	
Water Table Present?	Yes _____	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-80W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	20		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	20% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Carex lacustris	30		OBL
2. Typha latifolia	30		OBL
3. Impatiens capensis	15		FACW
4. Cirsium palustre	10		FACW
5. Rubus pubescens	10		FACW
6. Geum macrophyllum	5		FACW
7. Rubus idaeus	5		FAC
8. Solidago gigantea	5		FACW
9.			
10.			
11.			
12.			
	110% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	65	x 2 =	130
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		205 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-80W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 5	10YR 2/1	100					Mucky Loam/Clay	
5 - 8	10YR 3/1	100					Sandy Loam	
8 - 24	2.5Y 5/1	90	7.5YR 5/6	10	C	M	Sandy Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-81U

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.370216 Long: -93.019226 Datum: NAD 83

Soil Map Unit Name: B28B, Buhl loam, 1 to 5 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-80W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-81U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Abies balsamea	20		FAC
2. Populus tremuloides	20		FAC
3.			
4.			
5.			
6.			
7.			
	40% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Corylus cornuta	45		FACU
2. Alnus incana	10		FACW
3.			
4.			
5.			
6.			
7.			
	55% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Eurybia macrophylla	30		UPL
2. Diervilla lonicera	20		UPL
3. Maianthemum canadense	15		FACU
4. Pteridium aquilinum	10		FACU
5. Solidago canadensis	5		FACU
6. Viola pubescens	5		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	85% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	40	x 3 =	120
FACU species	80	x 4 =	320
UPL species	50	x 5 =	250
Column Totals:	180 (A)		710 (B)

Prevalence Index = B/A = 3.94

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-81U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 6	7.5YR 3/2	100					Sandy Loam	
6 - 10	7.5YR 4/3	100					Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 10 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-82W

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.371034 Long: -93.020556 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-51

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-83U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-82W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	30		FACW
2. Salix discolor	10		FACW
3.			
4.			
5.			
6.			
7.			
	40% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Glyceria striata	70		OBL
2. Lycopus americanus	15		OBL
3. Carex lacustris	10		OBL
4. Carex trisperma	10		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	105	x 1 =	105
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		185 (B)

Prevalence Index = B/A = 1.28

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-82W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 24	10YR 2/1	100					Muck	
24 - 36	10YR 2/1	100					Mucky Peat	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-83U

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.3711491 Long: -93.0208686 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-82W and SP-84W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-83U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	65		FAC
2. Picea glauca	2		FACU
3.			
4.			
5.			
6.			
7.			
	67% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Betula papyrifera	7		FACU
2. Corylus cornuta	7		FACU
3. Amelanchier interior	2		UPL
4.			
5.			
6.			
7.			
	16% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Pteridium aquilinum	40		FACU
2. Eurybia macrophylla	25		UPL
3. Rubus idaeus	15		FAC
4. Solidago canadensis	15		FACU
5. Poa pratensis	10		FACU
6. Phalaris arundinacea	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	110% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Parthenocissus quinquefolia	60		FACU
2.			
3.			
4.			
	60% = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	80	x 3 =	240
FACU species	141	x 4 =	564
UPL species	27	x 5 =	135
Column Totals:	253 (A)		949 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-83U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 4/3	100					Sandy Loam	
12 - 16	10YR 4/3	100					Silt Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 16 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-84W

Investigator(s): CJE, PLL Section, Township, Range: S4, T56N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.371036 Long: -93.020749 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-52

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-83U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-84W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix interior	25		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix interior	15		FACW
2. Alnus incana	10		FACW
3. Salix discolor	10		FACW
4.			
5.			
6.			
7.			
	35% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Typha latifolia	40		OBL
2. Carex lacustris	30		OBL
3. Calamagrostis canadensis	15		OBL
4. Glyceria canadensis	10		OBL
5. Geum macrophyllum	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	95	x 1 =	95
FACW species	65	x 2 =	130
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		225 (B)

Prevalence Index = B/A = 1.41

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-84W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Mucky Loam/Clay	
4 - 14	7.5YR 4/1	90	10YR 4/6	10	C	M	Clay Loam	
14 - 24	10YR 4/1	20	10YR 4/6	80	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 4

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-85W

Investigator(s): CJE, PLL Section, Township, Range: S33, T57N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): K Lat: 47.371582 Long: -93.0238 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-53
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-86U. Wetland community is a fresh (wet) meadow, Type 2, PEM1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-85W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix interior	5	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix interior	5	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Calamagrostis canadensis	60	✔	OBL
2. Phalaris arundinacea	25	✔	FACW
3. Salix interior	15		FACW
4. Rubus idaeus	10		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		190 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-85W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	7.5YR 2.5/2	95	7.5YR 4/4	5	C	M	Silt Loam	
4 - 8	5YR 4/2	95	7.5YR 4/4	5	C	M	Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None Compacted Soil

Depth (inches): 8

Hydric Soil Present? Yes ✔ No ___

Remarks:

Auger refusal at 8 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-86U

Investigator(s): CJE, PLL Section, Township, Range: S33, T57N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.371731 Long: -93.024244 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plots are SP-85W and SP-87W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-86U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	30		FACU
2. Populus tremuloides	15		FAC
3.			
4.			
5.			
6.			
7.			
	45% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Betula papyrifera	15		FACU
2. Populus tremuloides	10		FAC
3.			
4.			
5.			
6.			
7.			
	25% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Rubus idaeus	20		FAC
2. Phalaris arundinacea	10		FACW
3. Solidago canadensis	5		FACU
4. Taraxacum officinale	5		FACU
5. Populus tremuloides	3		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	43% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	45	x 3 =	135
FACU species	58	x 4 =	232
UPL species	0	x 5 =	0
Column Totals:	113 (A)		387 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-86U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 12	7.5YR 3/2	100					Sandy Loam	
12 - 18	10YR 5/3	100					Silt Loam	
18 - 24	10YR 2/1	90	10YR 5/6	10	C	M	Silt Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-87W

Investigator(s): CJE, PLL Section, Township, Range: S33, T57N, R21W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.371826 Long: -93.024383 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: PUBF

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: KETB-54
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-86U. Wetland community is a shallow marsh, Type 3, PEM1C.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-87W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix discolor	20	✔	FACW
2. Populus balsamifera	5	✔	FACW
3.			
4.			
5.			
6.			
7.			
	25% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	35	✔	FACW
2. Scirpus cyperinus	30	✔	OBL
3. Typha angustifolia	20	✔	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		170 (B)

Prevalence Index = B/A = 1.55

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-87W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	7.5YR 2.5/1	100					Mucky Loam/Clay	Mucky loam
4 - 12	10YR 5/1	80	10YR 5/6	20	C	M	Clay	
12 - 24	7.5YR 4/3	95	7.5YR 4/6	5	C	M	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✔ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 4

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-88W

Investigator(s): CJE, PLL Section, Township, Range: S33, T57N, R21W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): K Lat: 47.37384 Long: -93.023712 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: KETB-55

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-89U. Wetland community is a shrub-carr, Type 6, PSS1B.

Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): 1	
Water Table Present?	Yes _____	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-88W

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus balsamifera	10		FACW
2. Betula papyrifera	5		FACU
3.			
4.			
5.			
6.			
7.			
	15% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	35		FACW
2. Salix discolor	15		FACW
3. Salix interior	15		FACW
4. Picea mariana	5		FACW
5.			
6.			
7.			
	70% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Equisetum laevigatum	25		FACW
2. Carex trisperma	20		OBL
3. Typha angustifolia	20		OBL
4. Equisetum variegatum	15		FACW
5. Equisetum palustre	5		FACW
6. Lotus corniculatus	5		FACU
7. Salix discolor	5		FACW
8. Salix interior	5		FACW
9.			
10.			
11.			
12.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	135	x 2 =	270
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	185 (A)		350 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

PSS with Emergent community pocket. Moss spp cover ground.

SOIL

Sampling Point: SP-88W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	7.5YR 2.5/2	100					Mucky Loam/Clay	Saturated
6 - 12	7.5YR 5/2	95	7.5YR 4/4	5	C	M	Clay Loam	Saturated
12 - 18	7.5YR 5/3	90	7.5YR 5/8	10	C	M	Sandy Clay Loam	Saturated
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 18 inches below ground surface by coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2021 Keetac Exterior Tailings Basin City/County: Keewatin/ Itasca Sampling Date: 2021-08-02

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP-89U

Investigator(s): CJE PLL Section, Township, Range: S33, T57N, R21W

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): K Lat: 47.373842 Long: -93.023853 Datum: NAD 83

Soil Map Unit Name: 1003B, Udorthents, loamy (cut and fill land) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-88W.
Per NRCS analysis method, the antecedent precipitation for the three months prior to August was rated 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: SP-89U

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula papyrifera	15		FACU
2. Populus balsamifera	15		FACW
3. Salix humilis	10		FACU
4.			
5.			
6.			
7.			
	40%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Alnus incana	10		FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Solidago canadensis	30		FACU
2. Hieracium aurantiacum	15		UPL
3. Achillea millefolium	10		FACU
4. Carex gracillima	10		FACU
5. Poa pratensis	10		FACU
6. Phalaris arundinacea	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	80%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	0	x 3 =	0	
FACU species	85	x 4 =	340	
UPL species	15	x 5 =	75	
Column Totals:	130	(A)	475	(B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-89U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Sandy Loam	
2 - 6	7.5YR 3/3	100					Clay Loam	
6 - 12	5YR 4/3	100					Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Auger refusal at 12 inches below ground surface by compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Keetac Exterior Tailins Basin City/County: Itasca County Sampling Date: 2022-09-29

Applicant/Owner: U. S. Steel State: Minnesota Sampling Point: SP-90W

Investigator(s): MJS2, CJE Section, Township, Range: sec 13 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K Lat: 47.338438 Long: -93.079523 Datum: NAD 83

Soil Map Unit Name: Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: KETB-21
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in a wetland, corresponding upland plot is SP-91U. Wetland community is a shallow marsh, Type 3, PEM1C. Per NRCS analysis method, the antecedent precipitation for the three months prior to September was rated 17 out of a possible 18, indicating that the prior period has been wetter than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3	
Water Table Present?	Yes ✓	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0	**Wetland Hydrology Present?** Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-90W

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix discolor*	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex comosa*	50	Y	OBL
2. *Poa palustris*	10	N	FACW
3. *Equisetum palustre*	10	N	FACW
4. *Carex intumescens*	10	N	FACW
5. *Typha angustifolia*	10	N	OBL
6. *Lemna minor*	5	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65.00	x 1 =	65.00
FACW species	40.00	x 2 =	80.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	105.00 (A)		145.00 (B)

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-90W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3	100					L	Saturated
3-12	10YR 4/2	80	10YR 4/6	20			L	Saturated
12-18	7.5YR 4/3	80	7.5YR 4/6	20			L	Saturated
18-24	10YR 4/2	90	10YR 4/6	10			CL	Moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine-textured soil

Depth (inches): 18

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Keetac Exterior Tailins Basin City/County: Itasca County Sampling Date: 2022-09-29

Applicant/Owner: U. S. Steel State: Minnesota Sampling Point: SP-91U

Investigator(s): MJS2, CJE Section, Township, Range: sec 13 T056N R022W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 8-15

Subregion (LRR or MLRA): LRR K Lat: 47.338506 Long: -93.079439 Datum: NAD 83

Soil Map Unit Name: Keewatin silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is located in an upland, corresponding wetland plot is SP-91U. Per NRCS analysis method, the antecedent precipitation for the three months prior to September was rated 17 out of a possible 18, indicating that the prior period has been wetter than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** _____ **No** ✓

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: SP-91U

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	40	Y	FAC
2. *Betula papyrifera*	25	Y	FACU
3. *Populus balsamifera*	20	Y	FACW
4. *Acer rubrum*	5	N	FAC
5.			
6.			
7.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	20	Y	FACU
2. *Fraxinus nigra*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex pensylvanica*	60	Y	FACU
2. *Fragaria virginiana*	25	Y	FACU
3. *Eurybia macrophylla*	10	N	UPL
4. *Osmorhiza claytonii*	10	N	FACU
5. *Asarum canadense*	5	N	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.86 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	30.00	x 2 =	60.00
FAC species	45.00	x 3 =	135.00
FACU species	140.00	x 4 =	560.00
UPL species	15.00	x 5 =	75.00
Column Totals:	230.00 (A)		830.00 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-91U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					L	Moist
4-12	10YR 4/3	100					L	Moist
12-24	10YR 5/4	100					L	Moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Appendix A

2023 Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-01

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.375492 Long: -93.023867 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-01

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-02. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	15	Y	FAC
2. *Populus tremuloides*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	14	Y	FACW
2. *Abies balsamea*	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
	24.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	15	Y	FACW
2. *Calamagrostis canadensis*	15	Y	OBL
3. *Carex stipata*	10	Y	OBL
4. *Carex scoparia*	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25.00	x 1 =	25.00
FACW species	34.00	x 2 =	68.00
FAC species	30.00	x 3 =	90.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	89.00 (A)		183.00 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-01

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	95	10YR 4/4	5	C	M/PL	SIL	Moist, redox.
6-8	7.5YR 5/2	90	10YR 4/4	10	C	M	CL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-02

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.375280 Long: -93.024143 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-01 and SP23-03. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-02

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	15	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	15	Y	FAC
2. *Lonicera canadensis*	10	Y	FACU
3. *Populus balsamifera*	5	N	FACW
4. *Alnus incana*	2	N	FACW
5. *Rhamnus cathartica*	2	N	FAC
6.			
7.			
	34.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Pteridium aquilinum*	40	Y	FACU
2. *Solidago gigantea*	15	Y	FACW
3. *Cirsium arvense*	15	Y	FACU
4. *Rubus idaeus*	10	N	FAC
5. *Ribes hirtellum*	3	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	83.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	40.00	x 2 =	80.00
FAC species	27.00	x 3 =	81.00
FACU species	65.00	x 4 =	260.00
UPL species	0.00	x 5 =	0.00
Column Totals:	132.00 (A)		421.00 (B)

Prevalence Index = B/A = 3.19

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-02

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/3	100					LFS	Dry, no redox.
4-8	7.5YR 4/4	100					L	Dry, no redox.
8-12	5YR 5/3	100					L	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-03

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.375317 Long: -93.024563 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-02

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-02. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-03

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	30	Y	FAC
2. *Populus balsamifera*	10	Y	FACW
3. *Acer rubrum*	5	N	FAC
4.			
5.			
6.			
7.			
	45.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	15	Y	FACW
2. *Acer rubrum*	5	Y	FAC
3. *Corylus cornuta*	3	N	FACU
4.			
5.			
6.			
7.			
	23.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex stipata*	20	Y	OBL
2. *Calamagrostis canadensis*	15	Y	OBL
3. *Equisetum palustre*	15	Y	FACW
4. *Rubus pubescens*	10	N	FACW
5. *Alnus incana*	5	N	FACW
6. *Fragaria virginiana*	3	N	FACU
7. *Carex gracillima*	2	N	FACU
8.			
9.			
10.			
11.			
12.			
	70.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35.00	x 1 =	35.00
FACW species	55.00	x 2 =	110.00
FAC species	40.00	x 3 =	120.00
FACU species	8.00	x 4 =	32.00
UPL species	0.00	x 5 =	0.00
Column Totals:	138.00 (A)		297.00 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 30 percent.

SOIL Sampling Point: SP23-03

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	98	7.5YR 4/4	2	C	M	SL	Dry, redox.
3-7	7.5YR 5/2	95	7.5YR 5/4	5	C	M	SIL	Dry, redox.
7-12	10YR 5/2	95	10YR 5/6	5	C	M	SIL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-04

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374005 Long: -93.025020 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-03

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-05. The wetland community is a shallow marsh, Type 3, PEM1Hb. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✔ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 1
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-04

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	20	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	20.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus pennsylvanica*	10	Y	FACW
2. *Populus tremuloides*	5	Y	FAC
3. *Corylus americana*	3	N	FACU
4. *Acer rubrum*	2	N	FAC
5.			
6.			
7.			
	20.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex debilis*	35	Y	FACW
2. *Impatiens capensis*	25	Y	FACW
3. *Calamagrostis canadensis*	20	Y	OBL
4. *Doellingeria umbellata*	10	N	FACW
5. *Solidago gigantea*	5	N	FACW
6. *Alisma triviale*	5	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	100.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25.00	x 1 =	25.00
FACW species	85.00	x 2 =	170.00
FAC species	27.00	x 3 =	81.00
FACU species	3.00	x 4 =	12.00
UPL species	0.00	x 5 =	0.00
Column Totals:	140.00 (A)		288.00 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-04

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					MMI	Saturated, mucky loam, no redox.
6-10	10YR 4/2	95	10YR 4/4	5	C	M	SIL	Saturated, no redox
10-12	10YR 5/2	90	10YR 5/6	10	C	M	SCL	Saturated, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-05

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374143 Long: -93.024959 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-04. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-05

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	30	Y	FAC
2. *Fraxinus pennsylvanica*	15	Y	FACW
3. *Betula papyrifera*	5	N	FACU
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	25	Y	FACU
2. *Amelanchier arborea*	15	Y	FACU
3. *Fraxinus pennsylvanica*	10	N	FACW
4. *Rhamnus cathartica*	5	N	FAC
5.			
6.			
7.			
	55.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	60	Y	UPL
2. *Rubus pubescens*	20	Y	FACW
3. *Calamagrostis canadensis*	1	N	OBL
4. *Symphyotrichum ericoides*	1	N	FACU
5. *Acer rubrum*	1	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	83.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1.00	x 1 =	1.00
FACW species	45.00	x 2 =	90.00
FAC species	36.00	x 3 =	108.00
FACU species	46.00	x 4 =	184.00
UPL species	60.00	x 5 =	300.00
Column Totals:	188.00 (A)		683.00 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 17 percent.

SOIL Sampling Point: SP23-05

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/3	100					L	Dry, no redox
6-12	7.5YR 4/3	100					L	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-06

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373156 Long: -93.025498 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-04

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-07 The wetland community is a shrub-carr, Type 6, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-06

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix discolor*	25	Y	FACW
2. *Salix interior*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	35.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Glyceria grandis*	35	Y	OBL
2. *Scirpus cyperinus*	15	Y	OBL
3. *Phalaris arundinacea*	10	N	FACW
4. *Bidens cernua*	5	N	OBL
5. *Calamagrostis canadensis*	5	N	OBL
6. *Typha angustifolia*	3	N	OBL
7. *Alisma triviale*	2	N	OBL
8.			
9.			
10.			
11.			
12.			
	75.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65.00	x 1 =	65.00
FACW species	45.00	x 2 =	90.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	110.00 (A)		155.00 (B)

Prevalence Index = B/A = 1.41

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 25 percent.

SOIL Sampling Point: SP23-06

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	95	10YR 4/4	5	C	M/PL	SIL	Moist, redox.
2-12	10YR 5/2	90	10YR 5/6	10	C	M	SIL	Moist, redox.
12-18	7.5YR 5/3	75	7.5YR 5/8	25	C	M	CL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-07

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373326 Long: -93.025552 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-06. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-07

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula papyrifera*	50	Y	FACU
2. *Populus tremuloides*	5	N	FAC
3. *Acer rubrum*	5	N	FAC
4.			
5.			
6.			
7.			
	60.0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	20	Y	FAC
2. *Corylus americana*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
	25.0	= Total Cover	

Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	60	Y	UPL
2. *Rubus idaeus*	20	N	FAC
3. *Pteridium aquilinum*	15	N	FACU
4. *Solidago canadensis*	10	N	FACU
5. *Aralia nudicaulis*	10	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115.0	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	50.00	x 3 =	150.00
FACU species	90.00	x 4 =	360.00
UPL species	60.00	x 5 =	300.00
Column Totals:	200.00 (A)		810.00 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-07

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	95	10YR 5/6	5	C	M	L	Dry, redox observed.
2-14	10YR 3/3	95	10YR 4/6	5	C	M	L	Dry.
14-18	10YR 4/3	95	10YR 4/6	5	C	M	SIL	Dry.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 18

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 18 inches below the ground surface due to compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-08

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.372776 Long: -93.025041 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-05

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-09. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-08

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	50	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix discolor*	10	Y	FACW
2. *Populus tremuloides*	5	Y	FAC
3. *Fraxinus pennsylvanica*	3	N	FACW
4.			
5.			
6.			
7.			
	18.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex scoparia*	45	Y	FACW
2. *Fragaria virginiana*	15	N	FACU
3. *Poa palustris*	10	N	FACW
4. *Carex debilis*	5	N	FACW
5. *Calamagrostis canadensis*	5	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	73.00	x 2 =	146.00
FAC species	55.00	x 3 =	165.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	148.00 (A)		376.00 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 20 Percent.

SOIL Sampling Point: SP23-08

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					L	Moist, no redox
2-6	10YR 5/2	90	7.5YR 4/6	10	C	M	CL	Moist, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 6

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 6 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-09

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.372695 Long: -93.025120 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-08. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** ✔

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

Remarks:

None observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-09

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula papyrifera*	15	Y	FACU
2. *Populus tremuloides*	10	Y	FAC
3. *Populus balsamifera*	5	N	FACW
4.			
5.			
6.			
7.			
	30.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	20	Y	FACU
2. *Betula papyrifera*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
	25.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Fragaria virginiana*	40	Y	FACU
2. *Lotus corniculatus*	40	Y	FACU
3. *Achillea millefolium*	5	N	FACU
4. *Solidago canadensis*	5	N	FACU
5. *Solidago gigantea*	3	N	FACW
6. *Antennaria neglecta*	2	N	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	95.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	8.00	x 2 =	16.00
FAC species	10.00	x 3 =	30.00
FACU species	130.00	x 4 =	520.00
UPL species	2.00	x 5 =	10.00
Column Totals:	150.00 (A)		576.00 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 5 percent.

SOIL Sampling Point: SP23-09

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100					SL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 4

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 4 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-10

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374008 Long: -93.022474 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-06

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-11. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-10

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	50	Y	FAC
2. *Fraxinus pennsylvanica*	25	Y	FACW
3.			
4.			
5.			
6.			
7.			
	75.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus pennsylvanica*	40	Y	FACW
2. *Acer rubrum*	15	Y	FAC
3. *Alnus incana*	5	N	FACW
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex intumescens*	35	Y	FACW
2. *Athyrium angustum*	25	Y	FAC
3. *Rubus pubescens*	20	Y	FACW
4. *Brachyelytrum erectum*	3	N	FACU
5. *Asarum canadense*	2	N	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	125.00	x 2 =	250.00
FAC species	90.00	x 3 =	270.00
FACU species	3.00	x 4 =	12.00
UPL species	2.00	x 5 =	10.00
Column Totals:	220.00 (A)		542.00 (B)

Prevalence Index = B/A = 2.46

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 15 percent.

SOIL Sampling Point: SP23-10

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/1	100					L	Dry, no redox.
4-10	7.5YR 4/2	95	7.5YR 4/6	5	C	M	LVFS	Dry, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments

Depth (inches): 10

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 10 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-11

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374262 Long: -93.022647 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-10. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-11

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	75	Y	FAC
2. *Fraxinus pennsylvanica*	5	N	FACW
3.			
4.			
5.			
6.			
7.			
	80.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	15	Y	FACU
2. *Fraxinus pennsylvanica*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Asarum canadense*	30	Y	UPL
2. *Athyrium angustum*	30	Y	FAC
3. *Carex pensylvanica*	20	Y	UPL
4. *Rubus idaeus*	12	N	FAC
5. *Trillium cernuum*	2	N	FAC
6. *Eurybia macrophylla*	1	N	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	95.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	10.00	x 2 =	20.00
FAC species	119.00	x 3 =	357.00
FACU species	15.00	x 4 =	60.00
UPL species	51.00	x 5 =	255.00
Column Totals:	195.00 (A)		692.00 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-11

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/2	100					LS	Dry, no redox.
3-9	7.5YR 3/3	100					LVFS	Dry, no redox.
9-16	7.5YR 4/3	92	7.5YR 4/6	8	C	M	LVFS	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 16

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 16 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-12

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373604 Long: -93.021809 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-13. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

Sufficient hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-12

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	40	Y	FAC
2. *Fraxinus nigra*	35	Y	FACW
3. *Acer rubrum*	5	N	FAC
4.			
5.			
6.			
7.			
	80.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	15	Y	FACU
2. *Fraxinus nigra*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	20.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	70	Y	UPL
2. *Streptopus lanceolatus*	10	N	FACU
3. *Rhamnus cathartica*	10	N	FAC
4. *Fraxinus nigra*	5	N	FACW
5. *Solidago gigantea*	5	N	FACW
6. *Trillium cernuum*	2	N	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	102.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	50.00	x 2 =	100.00
FAC species	57.00	x 3 =	171.00
FACU species	25.00	x 4 =	100.00
UPL species	70.00	x 5 =	350.00
Column Totals:	202.00 (A)		721.00 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-12

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					L	Dry, no redox
2-5	7.5YR 3/3	100					L	Dry, No redox
5-6	10YR 4/4	100					L	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 6 inches below the ground surface due to compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-13

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373401 Long: -93.021627 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-07

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-12. The wetland community is an alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✔ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-13

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	10	Y	FACW
2. *Betula papyrifera*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
	15.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	45	Y	FACW
2. *Rhamnus cathartica*	10	N	FAC
3.			
4.			
5.			
6.			
7.			
	55.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex gynandra*	55	Y	OBL
2. *Glyceria canadensis*	30	Y	OBL
3. *Calamagrostis canadensis*	15	N	OBL
4. *Bidens frondosa*	5	N	FACW
5. *Galium labradoricum*	5	N	OBL
6. *Persicaria sagittata*	3	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	113.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	108.00	x 1 =	108.00
FACW species	60.00	x 2 =	120.00
FAC species	10.00	x 3 =	30.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	183.00 (A)		278.00 (B)

Prevalence Index = B/A = 1.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-13

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					MMI	Mucky loam, moist.
6-10	10YR 5/2	90	10YR 4/6	10	C	M	SIL	Moist, redox.
10-18	7.5YR 4/4	90	2.5Y 5/2	10	D	M	LS	Moist, depletions.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-14

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374777 Long: -93.023787 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-08

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-15. The wetland community is a shrub-carr, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-14

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix nigra*	25	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	1	N	FACW
2. *Scirpus cyperinus*	1	N	OBL
3. *Solidago gigantea*	1	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	3.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	26.00	x 1 =	26.00
FACW species	2.00	x 2 =	4.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	28.00 (A)		30.00 (B)

Prevalence Index = B/A = 1.07

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-14

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	100					VFS	Dry, no redox
3-10	10YR 5/2	95	10YR 4/6	5	C	M	VFSL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 10

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 10 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-14

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-15

Investigator(s): CJE Section, Township, Range: sec 33 T057N R021W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 8-15

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374859 Long: -93.023794 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-14. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** ✔

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

Remarks:

Sufficient hydrology indicators were not observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-15

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix discolor*	3	Y	FACW
2. *Alnus incana*	2	Y	FACW
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus idaeus*	90	Y	FAC
2. *Equisetum arvense*	5	N	FAC
3. *Fallopia convolvulus*	1	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	96.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0.00	x 1 = 0.00
FACW species 5.00	x 2 = 10.00
FAC species 95.00	x 3 = 285.00
FACU species 1.00	x 4 = 4.00
UPL species 0.00	x 5 = 0.00
Column Totals: 101.00 (A)	299.00 (B)

Prevalence Index = B/A = 2.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-15

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 3/2	100					L	Dry, no redox
2-8	7.5YR 5/3	90	7.5YR 4/6	10	C	M	VFSL	Dry, redox.
8-10	7.5YR 4/3	90	7.5YR 4/6	10	C	M	LVFS	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 10

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 10 inches below the ground surface due to compacted soil. Soils are disturbed in this area due to historic grading activities, resulting in compacted soils.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-16

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.352077 Long: -93.017937 Datum: WGS84

Soil Map Unit Name: Buhl loam, 1 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-09

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-17. The wetland community is a alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

Indicator D3 observed as a compacted clay layer 6 inches below the ground surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-16

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	20	Y	FAC
2. *Populus tremuloides*	20	Y	FAC
3. *Betula papyrifera*	10	Y	FACU
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	50	Y	FACW
2. *Abies balsamea*	10	N	FAC
3. *Betula papyrifera*	5	N	FACU
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	50	Y	FACW
2. *Carex disperma*	30	Y	OBL
3. *Acer rubrum*	15	N	FAC
4. *Equisetum pratense*	15	N	FACW
5. *Rubus idaeus*	10	N	FAC
6. *Solidago gigantea*	5	N	FACW
7. *Fragaria virginiana*	5	N	FACU
8.			
9.			
10.			
11.			
12.			
	130.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	120.00	x 2 =	240.00
FAC species	75.00	x 3 =	225.00
FACU species	20.00	x 4 =	80.00
UPL species	0.00	x 5 =	0.00
Column Totals:	245.00 (A)		575.00 (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-16

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 4/3	100					CL	Moist, no redox.
4-8	7.5YR 4/4	90	7.5YR 4/6	10	C	M	CL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil

Depth (inches): 8

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils are significantly disturbed from historic grading activities associated with the construction of the adjacent road.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-17

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Summit Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.352052 Long: -93.017865 Datum: WGS84

Soil Map Unit Name: Buhl loam, 1 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-16. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? **Yes** ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-17

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Y	FAC
2. *Betula papyrifera*	30	Y	FACU
3. *Populus tremuloides*	10	N	FAC
4. *Ulmus americana*	10	N	FACW
5.			
6.			
7.			
	80.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	10	Y	FACU
2. *Acer rubrum*	5	Y	FAC
3. *Abies balsamea*	1	N	FAC
4.			
5.			
6.			
7.			
	16.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	30	Y	UPL
2. *Aralia nudicaulis*	25	Y	FACU
3. *Carex pensylvanica*	15	N	UPL
4. *Rubus pubescens*	15	N	FACW
5. *Acer rubrum*	5	N	FAC
6. *Trientalis borealis*	5	N	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	95.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	25.00	x 2 =	50.00
FAC species	56.00	x 3 =	168.00
FACU species	65.00	x 4 =	260.00
UPL species	45.00	x 5 =	225.00
Column Totals:	191.00 (A)		703.00 (B)

Prevalence Index = B/A = 3.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 5 percent.

SOIL Sampling Point: SP23-17

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					L	Dry, no redox
4-8	10YR 4/2	100					L	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-18

Investigator(s): CJE Section, Township, Range: sec 04 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 88 Lat: 47.355707 Long: -93.015555 Datum: WGS84

Soil Map Unit Name: Buhl loam, 1 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-10

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-19. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-18

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	80	Y	FACW
2. *Populus tremuloides*	5	N	FAC
3.			
4.			
5.			
6.			
7.			
	85.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus nigra*	20	Y	FACW
2. *Rhamnus cathartica*	10	Y	FAC
3. *Prunus virginiana*	2	N	FACU
4.			
5.			
6.			
7.			
	32.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	25	Y	FACW
2. *Carex intumescens*	20	Y	FACW
3. *Calamagrostis canadensis*	20	Y	OBL
4. *Fraxinus nigra*	15	N	FACW
5. *Fragaria virginiana*	10	N	FACU
6. *Athyrium angustum*	3	N	FAC
7. *Streptopus lanceolatus*	2	N	FACU
8. *Gymnocarpium dryopteris*	2	N	FACU
9.			
10.			
11.			
12.			
	97.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20.00	x 1 =	20.00
FACW species	160.00	x 2 =	320.00
FAC species	18.00	x 3 =	54.00
FACU species	16.00	x 4 =	64.00
UPL species	0.00	x 5 =	0.00
Column Totals:	214.00 (A)		458.00 (B)

Prevalence Index = B/A = 2.14

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-18

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/1	100					L	Dry, no redox
3-9	7.5YR 4/2	97	7.5YR 5/6	3	C	M	SIL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 9

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 9 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-19

Investigator(s): Cje Section, Township, Range: sec 04 T056N R021W

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 88 Lat: 47.355870 Long: -93.015571 Datum: WGS84

Soil Map Unit Name: Buhl loam, 1 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-18. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-19

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	60	Y	FACW
2. *Populus tremuloides*	10	N	FAC
3. *Acer rubrum*	10	N	FAC
4.			
5.			
6.			
7.			
	80.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Prunus virginiana*	15	Y	FACU
2. *Corylus americana*	10	Y	FACU
3. *Rhamnus cathartica*	10	Y	FAC
4. *Populus tremuloides*	3	N	FAC
5.			
6.			
7.			
	38.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	20	Y	FACW
2. *Populus tremuloides*	20	Y	FAC
3. *Prunus virginiana*	15	Y	FACU
4. *Athyrium angustum*	5	N	FAC
5. *Eurybia macrophylla*	5	N	UPL
6. *Solidago canadensis*	5	N	FACU
7. *Fragaria vesca*	3	N	UPL
8.			
9.			
10.			
11.			
12.			
	73.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	80.00	x 2 =	160.00
FAC species	58.00	x 3 =	174.00
FACU species	45.00	x 4 =	180.00
UPL species	8.00	x 5 =	40.00
Column Totals:	191.00 (A)		554.00 (B)

Prevalence Index = B/A = 2.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-19

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					VFSL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 5

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 5 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-20

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.349271 Long: -93.020318 Datum: WGS84

Soil Map Unit Name: Buhl loam, 1 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-11

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-12. The wetland community is a sedge meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-20

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex scoparia*	85	Y	FACW
2. *Carex debilis*	5	N	FACW
3. *Doellingeria umbellata*	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	95.00	x 2 =	190.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		205.00 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-20

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/2	95	7.5YR 4/4	5	C	M/PL	L	Dry, redox.
4-10	7.5YR 4/4	95	7.5YR 4/6	5	C	M	L	Dry, redox present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments

Depth (inches): 10

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-21

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.349249 Long: -93.020346 Datum: WGS84

Soil Map Unit Name: Buhl loam, 1 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-20. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? **Yes** ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-21

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	35	Y	FAC
2. *Populus tremuloides*	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
	50.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	15	Y	FAC
2. *Corylus americana*	10	Y	FACU
3.			
4.			
5.			
6.			
7.			
	25.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	65	Y	UPL
2. *Aralia nudicaulis*	20	Y	FACU
3. *Asarum canadense*	10	N	UPL
4. *Athyrium angustum*	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	70.00	x 3 =	210.00
FACU species	30.00	x 4 =	120.00
UPL species	75.00	x 5 =	375.00
Column Totals:	175.00 (A)		705.00 (B)

Prevalence Index = B/A = 4.03

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-21

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 2.5/2	100					L	Dry, no redox.
2-6	7.5YR 3/2	100					L	Dry, no redox
6-9	7.5YR 4/3	95	7.5YR 4/6	5			L	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 9

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 9 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-22

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.347038 Long: -93.021591 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-13

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-23. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-22

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	55	Y	FAC
2. *Fraxinus nigra*	35	Y	FACW
3.			
4.			
5.			
6.			
7.			
	90.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Abies balsamea*	15	Y	FAC
2. *Corylus cornuta*	10	Y	FACU
3. *Acer rubrum*	5	N	FAC
4.			
5.			
6.			
7.			
	30.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	35	Y	FACW
2. *Carex intumescens*	20	Y	FACW
3. *Fraxinus nigra*	15	N	FACW
4. *Solidago gigantea*	15	N	FACW
5. *Calamagrostis canadensis*	5	N	OBL
6. *Acer rubrum*	3	N	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	93.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	120.00	x 2 =	240.00
FAC species	78.00	x 3 =	234.00
FACU species	10.00	x 4 =	40.00
UPL species	0.00	x 5 =	0.00
Column Totals:	213.00 (A)		519.00 (B)

Prevalence Index = B/A = 2.44

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 7 percent.

SOIL Sampling Point: SP23-22

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					VFSL	Dry, no redox.
2-9	10YR 4/2	95	10YR 4/6	5	C	M	VFSL	Dry, redox.
9-12	10YR 5/2	90	10YR 5/6	10	C	M	VFSL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 12 inches below the ground surface due to compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-23

Investigator(s): Cje Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.347052 Long: -93.021531 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-22. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** ✔

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

Remarks:

Sufficient hydrology indicators were not observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-23

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	80	Y	FACW
2. *Populus tremuloides*	10	N	FAC
3.			
4.			
5.			
6.			
7.			
	90.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus americana*	10	Y	FACU
2. *Fraxinus nigra*	10	Y	FACW
3. *Populus tremuloides*	5	N	FAC
4. *Acer rubrum*	5	N	FAC
5.			
6.			
7.			
	30.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	25	Y	FACW
2. *Eurybia macrophylla*	25	Y	UPL
3. *Acer rubrum*	5	N	FAC
4. *Aralia nudicaulis*	5	N	FACU
5. *Fraxinus nigra*	5	N	FACW
6. *Streptopus lanceolatus*	3	N	FACU
7. *Trientalis borealis*	3	N	FAC
8. *Brachyelytrum erectum*	3	N	FACU
9. *Calamagrostis canadensis*	2	N	OBL
10.			
11.			
12.			
	76.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	120.00	x 2 =	240.00
FAC species	28.00	x 3 =	84.00
FACU species	21.00	x 4 =	84.00
UPL species	25.00	x 5 =	125.00
Column Totals:	196.00 (A)		535.00 (B)

Prevalence Index = B/A = 2.73

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-23

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					L	Dry, no redox.
2-10	10YR 4/2	100					VFSL	Dry, no redox.
10-18	10YR 4/3	90	10YR 4/6	10	C	M	VFSL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-24

Investigator(s): CJE Section, Township, Range: sec 08 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.344765 Long: -93.026840 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-14

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-25. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

Indicator D3 was observed as a layer of fine textured soil present 12 inches below the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-24

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	60	Y	FAC
2. *Fraxinus nigra*	25	Y	FACW
3. *Ulmus americana*	3	N	FACW
4.			
5.			
6.			
7.			
	88.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus nigra*	25	Y	FACW
2. *Acer rubrum*	2	N	FAC
3.			
4.			
5.			
6.			
7.			
	27.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex intumescens*	30	Y	FACW
2. *Rubus pubescens*	10	Y	FACW
3. *Fraxinus nigra*	5	N	FACW
4. *Calamagrostis canadensis*	2	N	OBL
5. *Cicuta maculata*	1	N	OBL
6. *Epilobium ciliatum*	1	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	49.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3.00	x 1 =	3.00
FACW species	99.00	x 2 =	198.00
FAC species	62.00	x 3 =	186.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	164.00 (A)		387.00 (B)

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 50 percent.

SOIL Sampling Point: SP23-24

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 2.5/2	100					VFSL	Dry, no redox
6-12	7.5YR 4/2	90	7.5YR 5/8	10	C	M	L	Dry, redox.
12-14	10YR 5/8	100					CL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

A dense layer of fine textured soil was observed 12 inches below the ground surface and auger refusal occurred 14 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-25

Investigator(s): CJE Section, Township, Range: sec 08 T056N R021W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.344706 Long: -93.026962 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-24. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-25

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	65	Y	FAC
2. *Fraxinus nigra*	10	N	FACW
3.			
4.			
5.			
6.			
7.			
	75.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	15	Y	FACU
2. *Fraxinus nigra*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	20.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Aralia nudicaulis*	25	Y	FACU
2. *Eurybia macrophylla*	20	Y	UPL
3. *Athyrium angustum*	15	Y	FAC
4. *Corylus cornuta*	15	Y	FACU
5. *Fraxinus nigra*	10	N	FACW
6. *Fragaria virginiana*	10	N	FACU
7. *Rubus pubescens*	5	N	FACW
8.			
9.			
10.			
11.			
12.			
	100.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.86 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	30.00	x 2 =	60.00
FAC species	80.00	x 3 =	240.00
FACU species	65.00	x 4 =	260.00
UPL species	20.00	x 5 =	100.00
Column Totals:	195.00 (A)		660.00 (B)

Prevalence Index = B/A = 3.38

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-25

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/1	100					L	Dry, no redox
3-8	10YR 3/3	100					VFSL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-26

Investigator(s): CJE Section, Township, Range: sec 08 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.343252 Long: -93.027720 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-15

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-27. The wetland community is a fresh (Wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-26

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	35	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	35.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex scoparia*	30	Y	FACW
2. *Equisetum sylvaticum*	25	Y	FACW
3. *Rubus pubescens*	20	Y	FACW
4. *Rubus idaeus*	15	N	FAC
5. *Sium suave*	10	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10.00	x 1 =	10.00
FACW species	110.00	x 2 =	220.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	135.00 (A)		275.00 (B)

Prevalence Index = B/A = 2.04

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-26

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					SL	Dry, no redox.
4-12	10YR 5/2	90	7.5YR 5/8	10	C	M	SL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 12 inches below the ground surface due to compacted soil. Soils are disturbed from historic grading activities.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-27

Investigator(s): CJE Section, Township, Range: sec 08 T056N R021W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.343233 Long: -93.028192 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-26. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-27

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	45	Y	FAC
2. *Acer rubrum*	20	Y	FAC
3. *Fraxinus nigra*	15	N	FACW
4.			
5.			
6.			
7.			
	80.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	20	Y	FACU
2. *Acer rubrum*	10	Y	FAC
3. *Fraxinus nigra*	5	N	FACW
4.			
5.			
6.			
7.			
	35.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	30	Y	FACW
2. *Eurybia macrophylla*	25	Y	UPL
3. *Fraxinus nigra*	10	N	FACW
4. *Trientalis borealis*	10	N	FAC
5. *Acer rubrum*	10		
6. *Aralia nudicaulis*	5	N	FACU
7. *Gaultheria procumbens*	5	N	FACU
8. *Rubus idaeus*	5	N	FAC
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	60.00	x 2 =	120.00
FAC species	90.00	x 3 =	270.00
FACU species	30.00	x 4 =	120.00
UPL species	25.00	x 5 =	125.00
Column Totals:	205.00 (A)		635.00 (B)

Prevalence Index = B/A = 3.1

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-27

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/2	100					VFSL	Dry, no redox.
3-9	7.5YR 4/3	100					VFSL	Dry, no redox
9-13	7.5YR 4/4	100					SL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 13

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-28

Investigator(s): CJE Section, Township, Range: sec 17 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.337871 Long: -93.035238 Datum: WGS84

Soil Map Unit Name: Mcquade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-16

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-29. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-28

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	30	Y	FAC
2. *Fraxinus nigra*	25	Y	FACW
3. *Acer rubrum*	5	N	FAC
4.			
5.			
6.			
7.			
	60.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus nigra*	10	Y	FACW
2. *Acer rubrum*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	15.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex disperma*	40	Y	OBL
2. *Fraxinus nigra*	10	N	FACW
3. *Calamagrostis canadensis*	10	N	OBL
4. *Carex scoparia*	5	N	FACW
5. *Lycopus uniflorus*	5	N	OBL
6. *Athyrium angustum*	5	N	FAC
7. *Cicuta maculata*	3	N	OBL
8.			
9.			
10.			
11.			
12.			
	78.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	58.00	x 1 =	58.00
FACW species	50.00	x 2 =	100.00
FAC species	45.00	x 3 =	135.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	153.00 (A)		293.00 (B)

Prevalence Index = B/A = 1.92

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-28

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 2.5/2	100					SL	Dry, no redox
2-10	2.5Y 5/2	95	10YR 4/6	5	C	M	SL	Moist, redox.
10-12	2.5Y 4/3	95	10YR 4/6	5	C	M	SL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-15

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-29

Investigator(s): CJE Section, Township, Range: sec 17 T056N R021W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.337781 Long: -93.035319 Datum: WGS84

Soil Map Unit Name: Mcquade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-28. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-29

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	65	Y	FAC
2. *Acer rubrum*	15	N	FAC
3.			
4.			
5.			
6.			
7.			
	80.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	20	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	35	Y	UPL
2. *Athyrium angustum*	15	Y	FAC
3. *Streptopus lanceolatus*	15	Y	FACU
4. *Pyrola elliptica*	10	N	FACU
5. *Trientalis borealis*	10	N	FAC
6. *Rubus pubescens*	5	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	90.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0.00	x 1 = 0.00
FACW species 5.00	x 2 = 10.00
FAC species 105.00	x 3 = 315.00
FACU species 45.00	x 4 = 180.00
UPL species 35.00	x 5 = 175.00
Column Totals: 190.00 (A)	680.00 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 10 percent.

SOIL Sampling Point: SP23-29

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					SL	Dry, no redox.
3-6	10YR 3/4	95	7.5YR 4/6	5	C	M	SL	Dry, redox.
6-14	10YR 5/4	100					SCL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 14

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-16

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-30

Investigator(s): CJE Section, Township, Range: sec 18 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.336003 Long: -93.063499 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-31. The wetland community is a fresh (Wet) meadow, Type 2, PEM1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 6

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-30

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	3	N	FACW
2. *Populus deltoides*	1	N	FAC
3.			
4.			
5.			
6.			
7.			
	4.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	10	Y	FACW
2. *Populus balsamifera*	5	Y	FACW
3. *Salix interior*	5	Y	FACW
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex utriculata*	40	Y	OBL
2. *Phalaris arundinacea*	40	Y	FACW
3. *Rubus pubescens*	10	N	FACW
4. *Typha latifolia*	5	N	OBL
5. *Solidago canadensis*	5	N	FACU
6. *Symphyotrichum puniceum*	3	N	OBL
7. *Anemone canadensis*	2	N	FACW
8.			
9.			
10.			
11.			
12.			
	105.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	48.00	x 1 =	48.00
FACW species	75.00	x 2 =	150.00
FAC species	1.00	x 3 =	3.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	129.00 (A)		221.00 (B)

Prevalence Index = B/A = 1.71

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-30

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/1	100					SL	Moist, no redox
3-10	7.5YR 4/2	95	10YR 4/6	5	C	M	SCL	Moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 10

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-16

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-31

Investigator(s): CJE Section, Township, Range: sec 18 T056N R021W

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.335927 Long: -93.063653 Datum: WGS84

Soil Map Unit Name: Udorthents, loamy (cut and fill land) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-30. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-31

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus balsamifera*	25	Y	FACW
2. *Picea glauca*	3	N	FACU
3. *Abies balsamea*	2	N	FAC
4.			
5.			
6.			
7.			
	30.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Fragaria virginiana*	30	Y	FACU
2. *Hieracium greenii*	20	Y	FACU
3. *Poa pratensis*	20	Y	FACU
4. *Phleum pratense*	15	N	FACU
5. *Lotus corniculatus*	5	N	FACU
6. *Solidago canadensis*	5	N	FACU
7. *Trifolium hybridum*	5	N	FACU
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	30.00	x 2 =	60.00
FAC species	2.00	x 3 =	6.00
FACU species	103.00	x 4 =	412.00
UPL species	0.00	x 5 =	0.00
Column Totals:	135.00 (A)		478.00 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-31

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					SL	Dry, no redox.
4-10	10YR 4/4	100					LS	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 10

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 10 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-16

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-32

Investigator(s): CJE Section, Township, Range: sec 13 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.337362 Long: -93.080566 Datum: WGS84

Soil Map Unit Name: Keewatin silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-17

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-33. The wetland community is a hardwood swamp, Type 7, PFO1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-32

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	30	Y	FACW
2. *Acer rubrum*	20	Y	FAC
3. *Quercus bicolor*	10	N	FACW
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus americana*	15	Y	FACU
2. *Fraxinus nigra*	10	Y	FACW
3. *Viburnum opulus*	5	N	FACW
4. *Prunus virginiana*	2	N	FACU
5.			
6.			
7.			
	32.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Matteuccia struthiopteris*	30	Y	FAC
2. *Impatiens capensis*	25	Y	FACW
3. *Rubus pubescens*	25	Y	FACW
4. *Cicuta maculata*	5	N	OBL
5. *Lycopus uniflorus*	5	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10.00	x 1 =	10.00
FACW species	105.00	x 2 =	210.00
FAC species	50.00	x 3 =	150.00
FACU species	17.00	x 4 =	68.00
UPL species	0.00	x 5 =	0.00
Column Totals:	182.00 (A)		438.00 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-32

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					FSL	Dry, no redox
2-8	10YR 4/2	95	10YR 4/6	5	C	M	LFS	Dry, redox.
8-18	10YR 4/4	90	7.5YR 4/6	10	C	M	SCL	Dry, redox.
18-24	10YR 4/6	100					SCL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-16

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-33

Investigator(s): Cje Section, Township, Range: sec 13 T056N R022W

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.337496 Long: -93.080920 Datum: WGS84

Soil Map Unit Name: Keewatin silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-32. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-33

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	30	Y	FACW
2. *Betula papyrifera*	30	Y	FACU
3. *Acer rubrum*	20	Y	FAC
4.			
5.			
6.			
7.			
	80.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	45	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	45.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Athyrium angustum*	25	Y	FAC
2. *Trientalis borealis*	15	Y	FAC
3. *Aralia nudicaulis*	10	N	FACU
4. *Corylus cornuta*	10	N	FACU
5. *Trillium cernuum*	3	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	63.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	30.00	x 2 =	60.00
FAC species	63.00	x 3 =	189.00
FACU species	95.00	x 4 =	380.00
UPL species	0.00	x 5 =	0.00
Column Totals:	188.00 (A)		629.00 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-33

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					SL	
4-10	7.5YR 4/3	90	7.5YR 4/4	10	C	M	SL	Dry, redox.
10-24	7.5YR 5/3	90	7.5YR 4/6	10	C	M	VFSL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-34

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.345225 Long: -93.096164 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots SP23-35.and SP23-36. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-34

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	50	Y	FACW
2. *Populus tremuloides*	10	N	FAC
3.			
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	10	Y	FAC
2. *Corylus cornuta*	10	Y	FACU
3. *Alnus incana*	5	Y	FACW
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Fragaria virginiana*	20	Y	FACU
2. *Rubus idaeus*	15	Y	FAC
3. *Tanacetum vulgare*	10	Y	FACU
4. *Solidago canadensis*	10	Y	FACU
5. *Corylus cornuta*	5	N	FACU
6. *Abies balsamea*	4	N	FAC
7. *Clintonia borealis*	3	N	FAC
8. *Poa palustris*	2	N	FACW
9. *Equisetum arvense*	2	N	FAC
10. *Achillea millefolium*	2	N	FACU
11. *Bromus kalmii*	1	N	FAC
12.			
	74.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	57.00	x 2 =	114.00
FAC species	45.00	x 3 =	135.00
FACU species	57.00	x 4 =	228.00
UPL species	0.00	x 5 =	0.00
Column Totals:	159.00 (A)		477.00 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-34

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					LS	Dry, no redox
2-6	10YR 3/4	100					COS	Dry, no redox.
6-12	7.5YR 4/4	100					COS	Dry, gravels, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-35

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.345125 Long: -93.096553 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No _____**
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	If yes, optional Wetland Site ID: Wetland 2023-18

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-34. The wetland community is an alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

Water-stained leaves observed in depressions within the wetland.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-35

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	25	Y	FAC
2. *Populus balsamifera*	15	Y	FACW
3. *Betula papyrifera*	5	N	FACU
4.			
5.			
6.			
7.			
	45.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	30	Y	FACW
2. *Salix discolor*	10	Y	FACW
3. *Abies balsamea*	5	N	FAC
4. *Populus balsamifera*	5	N	FACW
5.			
6.			
7.			
	50.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Poa palustris*	30	Y	FACW
2. *Onoclea sensibilis*	20	Y	FACW
3. *Carex intumescens*	15	N	FACW
4. *Fragaria virginiana*	10	N	FACU
5. *Carex scoparia*	5	N	FACW
6. *Equisetum arvense*	5	N	FAC
7. *Solidago gigantea*	5	N	FACW
8.			
9.			
10.			
11.			
12.			
	90.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	135.00	x 2 =	270.00
FAC species	35.00	x 3 =	105.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	185.00 (A)		435.00 (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 10 percent.

SOIL Sampling Point: SP23-35

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/4	100	10YR				SL	Dry, no redox
2-8	10YR 4/2	90	10YR 4/6	10	C	M	LVFS	Moist, redox.
8-18	10YR 4/4	100					S	Moist, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? Yes ✓ No ___

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-36

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.345363 Long: -93.096494 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-19

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-34. The wetland community is an alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 18

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

Remarks:

Indicator D3 was observed as a layer of fine textured soil from the grounds surface to a depth of 6 inches below the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-36

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	30.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	40	Y	FACW
2. *Equisetum palustre*	5	N	FACW
3. *Pyrola elliptica*	3	N	FACU
4. *Fragaria virginiana*	3	N	FACU
5. *Populus balsamifera*	2	N	FACW
6. *Solidago gigantea*	2	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	55.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	79.00	x 2 =	158.00
FAC species	0.00	x 3 =	0.00
FACU species	6.00	x 4 =	24.00
UPL species	0.00	x 5 =	0.00
Column Totals:	85.00 (A)		182.00 (B)

Prevalence Index = B/A = 2.14

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 45 percent.

SOIL Sampling Point: SP23-36

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/2	90	10YR 4/6	10	C	M	CL	Moist, redox.
6-18	10YR 5/3	95	10YR 4/6	5	C	M	LS	Moist, redox.
18-24	10YR 4/3	100					FS	Saturated, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 0

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Fine textured soil observed from 0 to 6 inches below the grounds surface.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-37

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.344307 Long: -93.096348 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-20

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-38. The wetland community is an alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-37

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	15	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	55	Y	FACW
2. *Salix discolor*	10	N	FACW
3.			
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	20	Y	FACW
2. *Onoclea sensibilis*	15	Y	FACW
3. *Fragaria virginiana*	10	Y	FACU
4. *Cicuta maculata*	10	Y	OBL
5. *Thalictrum dasycarpum*	5	N	FACW
6. *Impatiens capensis*	5	N	FACW
7. *Lycopus americanus*	5	N	OBL
8. *Scirpus cyperinus*	5	N	OBL
9.			
10.			
11.			
12.			
	75.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20.00	x 1 =	20.00
FACW species	125.00	x 2 =	250.00
FAC species	0.00	x 3 =	0.00
FACU species	10.00	x 4 =	40.00
UPL species	0.00	x 5 =	0.00
Column Totals:	155.00 (A)		310.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 25 percent.

SOIL Sampling Point: SP23-37

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					L	Moist, no redox
2-8	10YR 5/2	90	10YR 4/6	10	C	M	CL	Moist, redox
8-24	10YR 5/2	90	10YR 5/6	10	C	M	S	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-38

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.344143 Long: -93.096399 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-37. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-38

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula papyrifera*	60	Y	FACU
2. *Populus tremuloides*	15	N	FAC
3. *Abies balsamea*	15	N	FAC
4.			
5.			
6.			
7.			
	90.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	15	Y	FACW
2. *Abies balsamea*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	20.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	25	Y	UPL
2. *Matteuccia struthiopteris*	25	Y	FAC
3. *Fallopia convolvulus*	25	Y	FACU
4. *Osmunda claytoniana*	20	N	FAC
5. *Fragaria virginiana*	10	N	FACU
6. *Aralia nudicaulis*	5	N	FACU
7. *Rubus pubescens*	5	N	FACW
8.			
9.			
10.			
11.			
12.			
	115.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	20.00	x 2 =	40.00
FAC species	80.00	x 3 =	240.00
FACU species	100.00	x 4 =	400.00
UPL species	25.00	x 5 =	125.00
Column Totals:	225.00 (A)		805.00 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-38

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 5/4	98	10YR 5/8	2	C	M	SIL	Moist, redox.
10-18	10YR 5/4	98	10YR 5/6	2	C	M	VFSL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-39

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.343960 Long: -93.096261 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-21

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-38. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 10

Wetland Hydrology Present? **Yes ✔** **No ____**

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

Remarks:

Indicator D3 observed as a layer of fine textured located 4 inches below the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-39

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	5	Y	FACU
2. *Alnus incana*	3	Y	FACW
3.			
4.			
5.			
6.			
7.			
	8.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex retrorsa*	40	Y	OBL
2. *Athyrium angustum*	25	Y	FAC
3. *Thalictrum dasycarpum*	10	N	FACW
4. *Rubus pubescens*	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40.00	x 1 =	40.00
FACW species	18.00	x 2 =	36.00
FAC species	25.00	x 3 =	75.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	88.00 (A)		171.00 (B)

Prevalence Index = B/A = 1.94

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 20 Percent.

SOIL Sampling Point: SP23-39

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	98	10YR 4/4	2	C	M	L	Moist, redox.
4-10	10YR 4/1	95	10YR 4/4	5	C	M	CL	Moist, redox.
10-16	10YR 4/2	70	10YR 4/6	30	C	M	CL	Saturated, redox.
16-24	10YR 4/4	95	7.5YR 4/6	5	C	M	LS	Saturated, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 4

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-40

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.343098 Long: -93.096052 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-22

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-12. The wetland community is an alder thicket, Type 6, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 18

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-40

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	40	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	5	Y	OBL
2. *Lycopus uniflorus*	2	Y	OBL
3. *Equisetum arvense*	2	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	9.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7.00	x 1 =	7.00
FACW species	40.00	x 2 =	80.00
FAC species	2.00	x 3 =	6.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	49.00 (A)		93.00 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

bare ground present at 90 percent.

SOIL Sampling Point: SP23-40

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					L	Dry, no redox.
2-8	10YR 5/2	80	10YR 4/6	20	C	M	SIL	Moist, redox.
8-24	10YR 4/4	100					VFSL	Moist, no redox, saturation at 18 inches.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Saturation present 18 inches below the ground surface.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-41

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.342807 Long: -93.096057 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-40. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-41

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula papyrifera*	10	Y	FACU
2. *Abies balsamea*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	15.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	15	Y	FACW
2. *Betula papyrifera*	5	Y	FACU
3. *Abies balsamea*	2	N	FAC
4.			
5.			
6.			
7.			
	22.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Solidago canadensis*	25	Y	FACU
2. *Potentilla norvegica*	15	Y	FAC
3. *Acer rubrum*	15	Y	FAC
4. *Carex gracillima*	10	N	FACU
5. *Tanacetum vulgare*	10	N	FACU
6. *Anaphalis margaritacea*	5	N	FACU
7. *Abies balsamea*	5	N	FAC
8. *Alnus incana*	5	N	FACW
9. *Rubus pubescens*	5	N	FACW
10. *Rubus idaeus*	5	N	FAC
11. *Eurybia macrophylla*	2	N	UPL
12.			
	102.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	25.00	x 2 =	50.00
FAC species	47.00	x 3 =	141.00
FACU species	65.00	x 4 =	260.00
UPL species	2.00	x 5 =	10.00
Column Totals:	139.00 (A)		461.00 (B)

Prevalence Index = B/A = 3.32

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-41

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					L	Dry, no redox.
2-10	10YR 4/4	100					SL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 10

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 10 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-42

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.343020 Long: -93.095172 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-23

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-43. The wetland community is a fresh (Wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-42

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	45	Y	FACW
2. *Scutellaria lateriflora*	15	Y	OBL
3. *Carex intumescens*	15	Y	FACW
4. *Carex scoparia*	10	N	FACW
5. *Rosa palustris*	3	N	OBL
6. *Lycopus americanus*	2	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	90.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20.00	x 1 =	20.00
FACW species	70.00	x 2 =	140.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	105.00 (A)		205.00 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 15 percent.

SOIL Sampling Point: SP23-42

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					L	Dry, no redox
2-10	10YR 5/2	90	10YR 4/6	10	C	M	L	Moist, redox.
10-24	2.5Y 6/3	95	10YR 4/6	5	C	M	VFSL	Moist, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-43

Investigator(s): CJE Section, Township, Range: sec 11 T056N R022W

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.342904 Long: -93.095399 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-42. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-43

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	90	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	90.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	15	Y	FACU
2. *Populus tremuloides*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Lonicera dioica*	60	Y	FACU
2. *Pteridium aquilinum*	15	N	FACU
3. *Eurybia macrophylla*	10	N	UPL
4. *Dendrolycopodium dendroideum*	5	N	FACU
5. *Cornus canadensis*	5	N	FAC
6. *Aralia nudicaulis*	5	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	100.00	x 3 =	300.00
FACU species	100.00	x 4 =	400.00
UPL species	10.00	x 5 =	50.00
Column Totals:	210.00 (A)		750.00 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-43

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					L	Dry, no redox
4-8	10YR 3/6	100					LS	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-44

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.355606 Long: -93.093050 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-24

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-45. The wetland community is an alder thicket, Type 6, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✔ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

Indicator D3 was observed as a layer of fine textured soil located 2 inches below the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-44

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	65	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Solanum dulcamara*	65	Y	FAC
2. *Glyceria grandis*	25	Y	OBL
3. *Carex retrorsa*	15	N	OBL
4. *Impatiens capensis*	10	N	FACW
5. *Doellingeria umbellata*	5	N	FACW
6. *Solidago gigantea*	3	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	123.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40.00	x 1 =	40.00
FACW species	83.00	x 2 =	166.00
FAC species	65.00	x 3 =	195.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	188.00 (A)		401.00 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-44

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 2.5/2	100					L	Saturated, no redox.
2-4	10YR 4/1	95	10YR 4/6	5	C	M	CL	Saturated, redox.
4-24	10YR 5/6	95	10YR 5/8	5	C	M	SCL	Saturated, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 2

Hydric Soil Present? Yes ✓ No ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-45

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.355661 Long: -93.092800 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-44. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-45

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	75	Y	FAC
2. *Betula papyrifera*	15	N	FACU
3.			
4.			
5.			
6.			
7.			
	90.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer rubrum*	20	Y	FAC
2. *Corylus cornuta*	10	Y	FACU
3.			
4.			
5.			
6.			
7.			
	30.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	35	Y	UPL
2. *Pteridium aquilinum*	20	Y	FACU
3. *Athyrium angustum*	15	N	FAC
4. *Lonicera dioica*	10	N	FACU
5. *Fallopia convolvulus*	5	N	FACU
6. *Solidago canadensis*	5	N	FACU
7. *Anemone canadensis*	5	N	FACW
8. *Equisetum palustre*	3	N	FACW
9. *Rubus idaeus*	2	N	FAC
10.			
11.			
12.			
	100.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	8.00	x 2 =	16.00
FAC species	112.00	x 3 =	336.00
FACU species	65.00	x 4 =	260.00
UPL species	35.00	x 5 =	175.00
Column Totals:	220.00 (A)		787.00 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-45

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					L	Dry, no redox
2-8	10YR 4/4	100					SL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-46

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.357041 Long: -93.092902 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-47. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-46

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	60	Y	FAC
2. *Betula papyrifera*	10	N	FACU
3.			
4.			
5.			
6.			
7.			
	70.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	45	Y	FACW
2. *Acer rubrum*	10	N	FAC
3. *Populus balsamifera*	5	N	FACW
4. *Salix discolor*	2	N	FACW
5.			
6.			
7.			
	62.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	30	Y	OBL
2. *Fragaria virginiana*	15	Y	FACU
3. *Acer rubrum*	15	Y	FAC
4. *Solidago gigantea*	10	N	FACW
5. *Eurybia macrophylla*	5	N	UPL
6. *Carex gracillima*	3	N	FACU
7. *Doellingeria umbellata*	3	N	FACW
8.			
9.			
10.			
11.			
12.			
	81.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	65.00	x 2 =	130.00
FAC species	85.00	x 3 =	255.00
FACU species	28.00	x 4 =	112.00
UPL species	5.00	x 5 =	25.00
Column Totals:	213.00 (A)		552.00 (B)

Prevalence Index = B/A = 2.59

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-46

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					L	Dry, no redox
2-8	10YR 4/4	90	10YR 4/6	10	C	M	SL	Dry, redox.
8-10	10YR 4/4	100					LS	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 10

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators were not found in this area over several attempts moving further down gradient. Auger refusal occurred 10 inches below the ground surface due to coarse fragments. Indicator F8 is not appliable because the area is not a closed depression.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-47

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.356662 Long: -93.092356 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-25

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-46. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-47

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	2	N	FACW
2. *Lycopus uniflorus*	2	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	4.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	2.00	x 2 =	4.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	4.00 (A)		6.00 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation is significantly disturbed from historical excavation removing the surface soil layers. Poor soil quality and early inundation both contribute to the lack of vegetation.

SOIL Sampling Point: SP23-47

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					L	Dry, no redox.
2-12	7.5YR 4/2	90	7.5YR 4/6	10	C	M	LS	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils are significantly disturbed from historical excavation. Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-48

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.357255 Long: -93.091752 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-26

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-49. The wetland community is a sedge meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-48

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	25	Y	FACW
2. *Salix lucida*	10	Y	FACW
3. *Salix discolor*	5	N	FACW
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Scirpus cyperinus*	50	Y	OBL
2. *Carex utriculata*	20	Y	OBL
3. *Salix lucida*	3	N	FACW
4. *Carex intumescens*	2	N	FACW
5. *Equisetum arvense*	1	N	FAC
6. *Poa palustris*	1	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	77.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70.00	x 1 =	70.00
FACW species	46.00	x 2 =	92.00
FAC species	1.00	x 3 =	3.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	117.00 (A)		165.00 (B)

Prevalence Index = B/A = 1.41

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 50 percent.

SOIL Sampling Point: SP23-48

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 3/4	95	5YR 3/4	5	C	M	CL	Moist, redox.
4-8	7.5YR 4/2	95	7.5YR 4/6	5	C	M	CL	Moist, redox.
8-14	10YR 4/2	90	7.5YR 4/6	10	C	M	CL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 14

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 14 inches below the ground surface due to compacted soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-49

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.356996 Long: -93.091970 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-48. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-49

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula papyrifera*	25	Y	FACU
2. *Populus tremula*	25	Y	FAC
3. *Abies balsamea*	10	N	FAC
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	15	Y	FACW
2. *Betula papyrifera*	10	Y	FACU
3. *Abies balsamea*	5	N	FAC
4.			
5.			
6.			
7.			
	30.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	30	Y	UPL
2. *Equisetum arvense*	5	N	FAC
3. *Pyrola elliptica*	5	N	FACU
4. *Hieracium greenii*	5	N	FACU
5. *Acer rubrum*	3	N	FAC
6. *Populus tremuloides*	2	N	FAC
7. *Abies balsamea*	2	N	FAC
8.			
9.			
10.			
11.			
12.			
	52.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	52.00	x 3 =	156.00
FACU species	45.00	x 4 =	180.00
UPL species	30.00	x 5 =	150.00
Column Totals:	142.00 (A)		516.00 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-49

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/2	100					SL	Dry, no redox
3-8	10YR 3/4	100					SL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-50

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.369247 Long: -93.082396 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-27

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-51. The wetland community is an alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

Indicator D3 was observed as a layer of fine textured soil starting at the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-50

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	70	Y	FACW
2. *Salix petiolaris*	10	N	FACW
3.			
4.			
5.			
6.			
7.			
	80.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	70	Y	OBL
2. *Phalaris arundinacea*	50	Y	FACW
3. *Alnus incana*	10	N	FACW
4. *Scirpus cyperinus*	5	N	OBL
5. *Poa palustris*	5	N	FACW
6. *Equisetum palustre*	3	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	143.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75.00	x 1 =	75.00
FACW species	148.00	x 2 =	296.00
FAC species	10.00	x 3 =	30.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	233.00 (A)		401.00 (B)

Prevalence Index = B/A = 1.72

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-50

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	95	10YR 4/6	5	C	M/PL	CL	Moist, redox.
2-24	10YR 5/2	90	7.5YR 4/6	10	C	M	CL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 0

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-51

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.369211 Long: -93.082420 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-50. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-51

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Y	FAC
2. *Fraxinus nigra*	25	Y	FACW
3. *Betula papyrifera*	20	Y	FACU
4. *Populus balsamifera*	10	N	FACW
5.			
6.			
7.			
	85.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Sambucus racemosa*	25	Y	FACU
2. *Acer spicatum*	15	Y	FACU
3. *Corylus cornuta*	5	N	FACU
4.			
5.			
6.			
7.			
	45.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rubus idaeus*	15	Y	FAC
2. *Osmorhiza claytonii*	10	Y	FACU
3. *Eurybia macrophylla*	10	Y	UPL
4. *Osmundastrum cinnamomeum*	5	N	FACW
5. *Galium aparine*	5	N	FACU
6. *Athyrium angustum*	5	N	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	50.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	40.00	x 2 =	80.00
FAC species	50.00	x 3 =	150.00
FACU species	80.00	x 4 =	320.00
UPL species	10.00	x 5 =	50.00
Column Totals:	180.00 (A)		600.00 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 50 percent.

SOIL Sampling Point: SP23-51

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 2.5/2	100					L	Dry, no redox.
2-12	10YR 3/2	100					VFSL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-52

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.370246 Long: -93.081232 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-28

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-53. The wetland community is a fresh (Wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-52

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus balsamifera*	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex scoparia*	60	Y	FACW
2. *Agrostis scabra*	40	Y	FAC
3. *Poa palustris*	15	N	FACW
4. *Impatiens capensis*	15	N	FACW
5. *Carex bebbii*	10	N	OBL
6. *Solidago gigantea*	10	N	FACW
7. *Scirpus cyperinus*	5	N	OBL
8. *Fragaria virginiana*	3	N	FACU
9.			
10.			
11.			
12.			
	158.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	110.00	x 2 =	220.00
FAC species	40.00	x 3 =	120.00
FACU species	3.00	x 4 =	12.00
UPL species	0.00	x 5 =	0.00
Column Totals:	168.00 (A)		367.00 (B)

Prevalence Index = B/A = 2.18

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Area was logged in the recent past.

SOIL Sampling Point: SP23-52

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/2	95	5YR 3/4	5	C	M	L	Moist, redox.
6-10	7.5YR 4/1	100					VFSL	Moist, no redox.
10-24	10YR 5/3	95	10YR 4/6	5	C	M	CL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-53

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Crest Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.370393 Long: -93.081717 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-52 and SP23-55. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** ✔

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

Remarks:

Sufficient hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-53

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus balsamifera*	5	Y	FACW
2. *Corylus americana*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
	10.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Impatiens capensis*	50	Y	FACW
2. *Solanum nigrum*	10	N	FACU
3. *Rubus idaeus*	10	N	FAC
4. *Eurybia macrophylla*	5	N	UPL
5. *Agrostis scabra*	5	N	FAC
6. *Cirsium vulgare*	5	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	85.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	55.00	x 2 =	110.00
FAC species	15.00	x 3 =	45.00
FACU species	20.00	x 4 =	80.00
UPL species	5.00	x 5 =	25.00
Column Totals:	95.00 (A)		260.00 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Area was logged in the recent past. Bare ground present at 15 percent.

SOIL Sampling Point: SP23-53

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/2	100					L	Dry, no redox.
4-10	10YR 4/3	95	10YR 3/6	5	C	M	CL	Dry, redox.
10-18	10YR 5/2	100					CL	Dry.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments. The fine textured soils in this profile were not acting as a restrictive layer due to landscape position.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-17

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-54

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.370356 Long: -93.082380 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-29

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-53. The wetland community is a fresh (wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-54

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	15	Y	FAC
2. *Fraxinus nigra*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	5	Y	FAC
2. *Corylus cornuta*	5	Y	FACU
3. *Fraxinus nigra*	5	Y	FACW
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Poa palustris*	45	Y	FACW
2. *Impatiens capensis*	10	Y	FACW
3. *Bromus ciliatus*	10	Y	FACW
4. *Fraxinus nigra*	10	Y	FACW
5. *Solanum dulcamara*	10	Y	FAC
6. *Phalaris arundinacea*	5	N	FACW
7. *Scirpus cyperinus*	5	N	OBL
8. *Equisetum arvense*	3	N	FAC
9. *Fragaria virginiana*	2	N	FACU
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 90.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	95.00	x 2 =	190.00
FAC species	33.00	x 3 =	99.00
FACU species	7.00	x 4 =	28.00
UPL species	0.00	x 5 =	0.00
Column Totals:	140.00 (A)		322.00 (B)

Prevalence Index = B/A = 2.3

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Area was logged in the recent past.

SOIL Sampling Point: SP23-54

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					L	Dry, no redox
2-6	10YR 4/2	95	7.5YR 4/6	5	C	M	SCL	Moist, redox
6-12	10YR 4/2	95	10YR 4/6	5	C	M	VFSL	Moist, redox
12-24	10YR 5/4	95	10YR 5/8	5	C	M	VFSL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Indicator A11 is met when the two 10YR 4/2-layer thicknesses are combined.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-55

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.358710 Long: -93.091690 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-30

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-56. The wetland community is a shrub-carr, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-55

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	30	Y	FACW
2. *Salix discolor*	15	Y	FACW
3. *Populus tremuloides*	2	N	FAC
4.			
5.			
6.			
7.			
	47.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	75	Y	FACW
2. *Rubus pubescens*	3	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	78.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	123.00	x 2 =	246.00
FAC species	2.00	x 3 =	6.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	125.00 (A)		252.00 (B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 12 percent.

SOIL Sampling Point: SP23-55

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 3/1	97	7.5YR 4/4	3	C	M	L	Moist, redox
2-6	7.5YR 5/2	90	7.5YR 4/6	10	C	M	SIL	Moist, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments

Depth (inches): 6

Hydric Soil Present? Yes ✓ No ___

Remarks:

Auger refusal occurred 6 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-56

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.358989 Long: -93.091763 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-55 and SP23-57. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-56

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	30	Y	FAC
2. *Picea glauca*	5	N	FACU
3. *Abies balsamea*	5	N	FAC
4. *Betula papyrifera*	3	N	FACU
5.			
6.			
7.			
	43.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Abies balsamea*	10	Y	FAC
2. *Salix petiolaris*	5	Y	FACW
3. *Alnus incana*	5	Y	FACW
4. *Populus tremuloides*	2	N	FAC
5.			
6.			
7.			
	22.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Abies balsamea*	20	Y	FAC
2. *carex pensylvanica*	15	Y	UPL
3. *Fragaria virginiana*	10	Y	FACU
4. *Phleum pratense*	5	N	FACU
5. *Tanacetum vulgare*	5	N	FACU
6. *Poa pratensis*	5	N	FACU
7. *Acer rubrum*	5		
8. *Lotus corniculatus*	3	N	FACU
9. *Symphyotrichum ericoides*	2	N	FACU
10.			
11.			
12.			
	70.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.43 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	10.00	x 2 =	20.00
FAC species	67.00	x 3 =	201.00
FACU species	38.00	x 4 =	152.00
UPL species	15.00	x 5 =	75.00
Column Totals:	130.00 (A)		448.00 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 30 percent.

SOIL Sampling Point: SP23-56

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 3/3	10					VFSL	Dry, no redox
2-5	7.5YR 4/3	100					SL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 5

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-57

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.359244 Long: -93.091613 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-31

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-56. The wetland community is a deep marsh, Type 4, PEM1H. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✔ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-57

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	5	Y	FACW
2. *Salix discolor*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	10.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	80	Y	OBL
2. *Sagittaria latifolia*	3	N	OBL
3. *Alisma triviale*	2	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85.00	x 1 =	85.00
FACW species	10.00	x 2 =	20.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	95.00 (A)		105.00 (B)

Prevalence Index = B/A = 1.11

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 15 percent.

SOIL Sampling Point: SP23-57

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					MPT	Fibric, saturated, no redox.
4-6	10YR 2/1	100					SIL	Saturated, no redox.
6-18	10YR 4/2	95	10YR 4/4	5	C	M	SL	Saturated, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ✔ Stratified Layers (A5)
- ✔ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-58

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.362193 Long: -93.090076 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-59 and SP23-60. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-58

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	25	Y	FAC
2. *Populus tremuloides*	25	Y	FAC
3. *Betula papyrifera*	10	N	FACU
4.			
5.			
6.			
7.			
	60.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Abies balsamea*	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	25	Y	UPL
2. *Lonicera canadensis*	10	Y	FACU
3. *Hieracium greenii*	10	Y	FACU
4. *Lotus corniculatus*	5	N	FACU
5. *Achillea millefolium*	3	N	FACU
6. *Trifolium hybridum*	2	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	55.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	65.00	x 3 =	195.00
FACU species	40.00	x 4 =	160.00
UPL species	25.00	x 5 =	125.00
Column Totals:	130.00 (A)		480.00 (B)

Prevalence Index = B/A = 3.69

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Moss and lichen cover is 45 percent.

SOIL Sampling Point: SP23-58

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/2	100					VFSL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments

Depth (inches): 16

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 16 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-59

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.362332 Long: -93.089464 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✔, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-32

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-58. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-59

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	25	Y	OBL
2. *Cornus alba*	10	Y	FACW
3. *Carex intumescens*	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25.00	x 1 =	25.00
FACW species	20.00	x 2 =	40.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	45.00 (A)		65.00 (B)

Prevalence Index = B/A = 1.44

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 60 percent.

SOIL Sampling Point: SP23-59

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					MMI	Mucky loam, no redox, dry.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ✓ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bed rock/large rock

Depth (inches): 1

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils are naturally problematic due to historical disturbance and minimal time to develop a soil profile. Disturbance is a result of historical grading and excavating in this area.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-60

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.361907 Long: -93.089979 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-33

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-58. The wetland community is a deep marsh, Type 4, PEM1G. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ✔ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✔ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-60

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	50	Y	OBL
2. *Phalaris arundinacea*	45	Y	FACW
3. *Symphyotrichum ericoides*	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50.00	x 1 =	50.00
FACW species	45.00	x 2 =	90.00
FAC species	0.00	x 3 =	0.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		160.00 (B)

Prevalence Index = B/A = 1.6

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation assessed along shore of a reservoir which was drawn down at the time of the wetland delineation.

SOIL Sampling Point: SP23-60

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	95	7.5YR 4/4	5	C	M	SCL	Moist, redox.
2-14	10YR 4/2	80	7.5YR 4/4	20	C	M	SCL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-61

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.363985 Long: -93.088655 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-34

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-62. The wetland community is a fresh (Wet) meadow, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicator D3 was observed as a layer of fine textured soil present 4 inches below the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-61

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Equisetum arvense*	35	Y	FAC
2. *Poa pratensis*	20	Y	FACU
3. *Phalaris arundinacea*	20	Y	FACW
4. *Carex bebbii*	8	N	OBL
5. *Melilotus officinalis*	5	N	FACU
6. *Trifolium hybridum*	5	N	FACU
7. *Typha angustifolia*	3	N	OBL
8. *Salix petiolaris*	2	N	FACW
9. *Persicaria hydropiper*	2	N	OBL
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	13.00	x 1 =	13.00
FACW species	22.00	x 2 =	44.00
FAC species	35.00	x 3 =	105.00
FACU species	30.00	x 4 =	120.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		282.00 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Area had been logged in the recent past.

SOIL Sampling Point: SP23-61

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					SCL	Moist, no redox.
4-6	2.5Y 6/2	30	7.5YR 4/4	20	C	M	CL	Moist, redox.
	10YR 4/2	50					CL	
6-16	10YR 4/2	90	7.5YR 4/4	10	C	M	CL	Moist, redox.
16-18	2.5Y 6/2	90	7.5YR 4/4	10	C	M	SIL	Dry, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 4

Hydric Soil Present? Yes ✓ No ___

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-62

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.363816 Long: -93.088880 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-61 and SP23-63. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-62

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	15	Y	FAC
2. *Abies balsamea*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Melilotus officinalis*	35	Y	FACU
2. *Trifolium hybridum*	30	Y	FACU
3. *Impatiens capensis*	15	N	FACW
4. *Tanacetum vulgare*	15	N	FACU
5. *Silene latifolia*	5	N	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	20.00	x 3 =	60.00
FACU species	80.00	x 4 =	320.00
UPL species	5.00	x 5 =	25.00
Column Totals:	120.00 (A)		435.00 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Area has been logged in the recent past.

SOIL Sampling Point: SP23-62

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					FS	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 6 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-63

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.363770 Long: -93.088915 Datum: WGS84

Soil Map Unit Name: Eagleview and Menahga soils, 1 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-35

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-62. The wetland community is a hardwood swamp, Type 7, PFO1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 12

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-63

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	20	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	6	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	6.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	45	Y	OBL
2. *Anemone canadensis*	30	Y	FACW
3. *Carex intumescens*	10	N	FACW
4. *Impatiens capensis*	10	N	FACW
5. *Mentha arvensis*	5	N	FACW
6. *Cirsium arvense*	3	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	103.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45.00	x 1 =	45.00
FACW species	61.00	x 2 =	122.00
FAC species	20.00	x 3 =	60.00
FACU species	3.00	x 4 =	12.00
UPL species	0.00	x 5 =	0.00
Column Totals:	129.00 (A)		239.00 (B)

Prevalence Index = B/A = 1.85

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Logging has occurred near the wetlands edge in the recent past.

SOIL Sampling Point: SP23-63

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	95	10YR 4/4	5	C	M/PL	L	Moist, redox
4-12	10YR 4/1	93	10YR 4/6	7	C	M	VFSL	Saturated, no redox.
12-18	10YR 6/2	90	10YR 4/4	10	C	M	VFSL	Saturated, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-64

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.365380 Long: -93.087848 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-36

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-65. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-64

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix discolor*	5	Y	FACW
2. *Populus tremuloides*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	10.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	35	Y	OBL
2. *Scirpus cyperinus*	30	Y	OBL
3. *Cornus alba*	15	N	FACW
4. *Tanacetum vulgare*	2	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	82.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 65.00	x 1 = 65.00
FACW species 20.00	x 2 = 40.00
FAC species 5.00	x 3 = 15.00
FACU species 2.00	x 4 = 8.00
UPL species 0.00	x 5 = 0.00
Column Totals: 92.00 (A)	128.00 (B)

Prevalence Index = B/A = 1.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 18 percent.

SOIL Sampling Point: SP23-64

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/4	80	7.5YR 4/6	20	C	M	SIL	Dry, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 6

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils have been disturbed due to historic grading and excavation activities.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-65

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Summit Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.365453 Long: -93.087964 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-64 and SP23-66. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-65

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Amelanchier arborea*	20	Y	FACU
2. *Salix discolor*	15	Y	FACW
3. *Cornus racemosa*	5	N	FAC
4. *Corylus cornuta*	2	N	FACU
5.			
6.			
7.			
	42.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Solidago canadensis*	30	Y	FACU
2. *Pteridium aquilinum*	25	Y	FACU
3. *Rubus idaeus*	20	Y	FAC
4. *Melilotus officinalis*	5	N	FACU
5. *Fragaria virginiana*	5	N	FACU
6. *Tanacetum vulgare*	3	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	88.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	25.00	x 3 =	75.00
FACU species	90.00	x 4 =	360.00
UPL species	0.00	x 5 =	0.00
Column Totals:	130.00 (A)		465.00 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 12 percent.

SOIL Sampling Point: SP23-65

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					LS	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soil.

Depth (inches): 2

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 2 inches below the ground surface due to compacted soil. The compaction is a result of historical disturbance from earth work during the construction of access roads in this area.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-66

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.365728 Long: -93.087856 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-37

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-65. The wetland community is a Shrub-carr, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-66

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	35	Y	FACW
2. *Salix petiolaris*	25	Y	FACW
3. *Salix discolor*	5	N	FACW
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	35	Y	FACW
2. *Rubus idaeus*	15	Y	FAC
3. *Alnus incana*	10	Y	FACW
4. *Equisetum palustre*	10	Y	FACW
5. *Athyrium angustum*	10	Y	FAC
6. *Cornus alba*	5	N	FACW
7. *Impatiens capensis*	5	N	FACW
8. *Juncus effusus*	5	N	OBL
9. *Salix discolor*	5	N	FACW
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	135.00	x 2 =	270.00
FAC species	25.00	x 3 =	75.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	165.00 (A)		350.00 (B)

Prevalence Index = B/A = 2.12

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Area has been partially logged in the recent past.

SOIL Sampling Point: SP23-66

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	Dry, no redox
3-11	2.5Y 6/2	90	7.5YR 5/4	10	C	M	SIL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments

Depth (inches): 11

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 11 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-67

Investigator(s): CJE Section, Township, Range: sec 02 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.365910 Long: -93.087160 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: PSS1D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-33

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland XXX, the corresponding upland sample plot is SP23-58. The wetland community is a shrub-carr, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✔ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 2

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-67

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix petiolaris*	30	Y	FACW
2. *Alnus incana*	25	Y	FACW
3. *Salix discolor*	20	Y	FACW
4.			
5.			
6.			
7.			
	75.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Bidens cernua*	20	Y	OBL
2. *Carex stipata*	15	Y	OBL
3. *Equisetum palustre*	15	Y	FACW
4. *Carex intumescens*	15	Y	FACW
5. *Carex lacustris*	15	Y	OBL
6. *Glyceria canadensis*	10	N	OBL
7. *Scirpus cyperinus*	10	N	OBL
8. *Alisma triviale*	5	N	OBL
9. *Carex gynandra*	5	N	OBL
10.			
11.			
12.			
	110.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80.00	x 1 =	80.00
FACW species	105.00	x 2 =	210.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	185.00 (A)		290.00 (B)

Prevalence Index = B/A = 1.57

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-67

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					MMI	Mucky loam, no redox.
4-18	7.5YR 4/4	90	7.5YR 5/4	10	C	M	CL	Saturated, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✓ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-68

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.369917 Long: -93.079872 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-40

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-69. The wetland community is a fresh (Wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-68

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	10	Y	FACW
2. *Salix petiolaris*	5	Y	FACW
3. *Salix discolor*	5	Y	FACW
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	65	Y	OBL
2. *Scirpus cyperinus*	25	Y	OBL
3. *Phalaris arundinacea*	20	N	FACW
4. *Juncus effusus*	10	N	OBL
5. *Onoclea sensibilis*	5	N	FACW
6. *Equisetum hyemale*	3	N	FAC
7. *Larix laricina*	2	N	FACW
8.			
9.			
10.			
11.			
12.			
	130.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100.00	x 1 =	100.00
FACW species	47.00	x 2 =	94.00
FAC species	3.00	x 3 =	9.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	150.00 (A)		203.00 (B)

Prevalence Index = B/A = 1.35

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-68

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/2	95	7.5YR 4/4	5	C	PL	SL	Moist, redox.
4-8	7.5YR 4/3	100					LS	Moist, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-69

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.369942 Long: -93.079874 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-68 and SP23-71. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-69

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Poa pratensis*	30	Y	FACU
2. *Solidago canadensis*	20	Y	FACU
3. *Elymus virginicus*	15	Y	FACW
4. *Equisetum arvense*	10	N	FAC
5. *Tanacetum vulgare*	10	N	FACU
6. *Fragaria virginiana*	8	N	FACU
7. *Melilotus officinalis*	5	N	FACU
8. *Trifolium hybridum*	2	N	FACU
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	10.00	x 3 =	30.00
FACU species	75.00	x 4 =	300.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		360.00 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-69

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5YR 2.5/2	100					LS	Dry, no redox
1-4	7.5YR 3/4	100					LS	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 4

Hydric Soil Present? Yes _____ No ✓

Remarks:

Auger refusal occurred 4 inches below the grounds surface due to coarse fragments. The soils are disturbed from historic road construction activities.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-70

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.369749 Long: -93.079474 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-41

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-72. The wetland community is an alder thicket, Type 6, PSS1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-70

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	60	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Bidens cernua*	55	Y	OBL
2. *Phalaris arundinacea*	32	Y	FACW
3. *Fraxinus nigra*	3	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55.00	x 1 =	55.00
FACW species	95.00	x 2 =	190.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	150.00 (A)		245.00 (B)

Prevalence Index = B/A = 1.63

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 10 percent.

SOIL Sampling Point: SP23-70

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5R 2.5/1	100					VFSL	Dry, no redox.
1-5	7.5YR 5/2	85	7.5YR 5/6	15	C	M	VFSL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 5

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 5 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-71

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.370139 Long: -93.079147 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✔, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-40

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-69. The wetland community is a fresh (Wet) meadow, Type 1, PEM1E. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ✔ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ✔ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-71

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	10	Y	FACW
2. *Salix discolor*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	70	Y	FACW
2. *Rubus idaeus*	15	N	FAC
3. *Solidago gigantea*	10	N	FACW
4. *Impatiens capensis*	5	N	FACW
5. *Solanum nigrum*	3	N	FACU
6. *Cirsium arvense*	2	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	105.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	100.00	x 2 =	200.00
FAC species	15.00	x 3 =	45.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	120.00 (A)		265.00 (B)

Prevalence Index = B/A = 2.21

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-71

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					MUCK	Moist, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ✓ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Cobble.

Depth (inches): 2

Hydric Soil Present? Yes ✓ No ___

Remarks:

Soils are problematic. Thin muck layer over cobble in a constructed feature. Soils are disturbed from the construction of the water diversion feature.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-72

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.370011 Long: -93.078549 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-42

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-72. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-72

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	15	Y	OBL
2. *Rubus pubescens*	3	N	FACW
3. *Cirsium vulgare*	2	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	3.00	x 2 =	6.00
FAC species	0.00	x 3 =	0.00
FACU species	2.00	x 4 =	8.00
UPL species	0.00	x 5 =	0.00
Column Totals:	20.00 (A)		29.00 (B)

Prevalence Index = B/A = 1.45

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-72

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	85	7.5YR 4/4	15	C	M/PL	SIL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Course fragments.

Depth (inches): 5

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 5 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-73

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.370140 Long: -93.078606 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-70 and SP23-72. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sufficient hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-73

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	25	Y	FACW
2. *Populus tremuloides*	15	Y	FAC
3. *Betula papyrifera*	5	N	FACU
4.			
5.			
6.			
7.			
	45.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	15	Y	FACU
2. *Rhamnus cathartica*	10	Y	FAC
3. *Acer rubrum*	5	N	FAC
4.			
5.			
6.			
7.			
	30.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Solidago gigantea*	30	Y	FACW
2. *Calamagrostis canadensis*	30	Y	OBL
3. *Apocynum androsaemifolium*	25	Y	UPL
4. *Cirsium arvense*	10	N	FACU
5. *Tanacetum vulgare*	5	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.43 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	55.00	x 2 =	110.00
FAC species	30.00	x 3 =	90.00
FACU species	35.00	x 4 =	140.00
UPL species	25.00	x 5 =	125.00
Column Totals:	175.00 (A)		495.00 (B)

Prevalence Index = B/A = 2.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-73

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	100					SIL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Course fragments.

Depth (inches): 5

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 5 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-74

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.371963 Long: -93.078411 Datum: WGS84

Soil Map Unit Name: Slickens NWI classification: L2UBK

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-44

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-75. The wetland community is a fresh (Wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-74

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	18	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	18.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	95	Y	FACW
2. *Populus tremuloides*	5	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	95.00	x 2 =	190.00
FAC species	23.00	x 3 =	69.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	118.00 (A)		259.00 (B)

Prevalence Index = B/A = 2.19

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-74

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	5YR 3/4	100					SIL	Dry, no redox
2-18	5YR 6/2	75	5YR 6/6	25	C	M	SIL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-75

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Summit Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.371980 Long: -93.078237 Datum: WGS84

Soil Map Unit Name: Slickens NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-74. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-75

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	15	Y	FAC
2. *Populus balsamifera*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Poa pratensis*	25	Y	FACU
2. *Rubus idaeus*	25	Y	FAC
3. *Rubus pubescens*	20	Y	FACW
4. *Tanacetum vulgare*	10	N	FACU
5. *Eurybia macrophylla*	10	N	UPL
6. *Bromus arvensis*	5	N	FACU
7. *Achillea millefolium*	5	N	FACU
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	30.00	x 2 =	60.00
FAC species	45.00	x 3 =	135.00
FACU species	45.00	x 4 =	180.00
UPL species	10.00	x 5 =	50.00
Column Totals:	130.00 (A)		425.00 (B)

Prevalence Index = B/A = 3.27

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-75

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	5YR 3/3	100					L	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 2

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 2 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-76

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374888 Long: -93.077208 Datum: WGS84

Soil Map Unit Name: Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-44

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-77. The wetland community is a fresh (wet) meadow, Type 2, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-76

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	5	Y	FACW
2. *Populus tremuloides*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	10.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	60	Y	FACW
2. *Calamagrostis canadensis*	50	Y	OBL
3. *Scirpus cyperinus*	5	N	OBL
4. *Cicuta maculata*	5	N	OBL
5. *Carex scoparia*	3	N	FACW
6. *Equisetum sylvaticum*	2	N	FACW
7. *Mentha arvensis*	1	N	FACW
8.			
9.			
10.			
11.			
12.			
	126.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60.00	x 1 =	60.00
FACW species	71.00	x 2 =	142.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	136.00 (A)		217.00 (B)

Prevalence Index = B/A = 1.6

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-76

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	95	10YR 4/4	5	C	M/PL	VFSL	Moist, redox.
4-10	10YR 5/2	90	10YR 4/6	10	C	M	VFSL	Moist, redox.
10-24	10YR 5/4	90	10YR 6/6	10	C	M	FSL	Moist, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-24

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-77

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374705 Long: -93.077381 Datum: WGS84

Soil Map Unit Name: Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-76. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-77

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	65	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Corylus cornuta*	15	Y	FACU
2. *Viburnum dentatum*	15	Y	FAC
3. *Acer rubrum*	2	N	FAC
4.			
5.			
6.			
7.			
	32.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Pteridium aquilinum*	25	Y	FACU
2. *Solidago gigantea*	20	Y	FACW
3. *Rubus idaeus*	20	Y	FAC
4. *Asarum canadense*	10	N	UPL
5. *Fraxinus nigra*	10	N	FACW
6. *Brachyelytrum erectum*	5	N	FACU
7. *Calamagrostis canadensis*	5	N	OBL
8. *Eurybia macrophylla*	5	N	UPL
9. *Rhamnus cathartica*	5	N	FAC
10.			
11.			
12.			
	105.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	30.00	x 2 =	60.00
FAC species	107.00	x 3 =	321.00
FACU species	45.00	x 4 =	180.00
UPL species	15.00	x 5 =	75.00
Column Totals:	202.00 (A)		641.00 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-77

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3	100					VFSL	Dry, no redox.
3-9	10YR 6/3	100					LVFS	Dry, noredox.
9-24	7.5YR 4/3	100					VFSL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-78

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373821 Long: -93.077711 Datum: WGS84

Soil Map Unit Name: Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-44

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-79. The wetland community is a shrub-carr, Type 6, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-78

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix interior*	45	Y	FACW
2. *Salix discolor*	20	Y	FACW
3. *Alnus incana*	10	N	FACW
4. *Spiraea alba*	5	N	FACW
5.			
6.			
7.			
	80.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	180.00	x 2 =	360.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	180.00 (A)		360.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-78

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	Dry, no redox
3-10	2.5Y 5/2	95	7.5YR 5/6	5	C	M	SI	Dry, redox
10-16	10YR 5/4	70	7.5YR 5/6	30	C		SI	Dry, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 16

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Auger refusal occurred 16 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-79

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Summit Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373736 Long: -93.077691 Datum: WGS84

Soil Map Unit Name: Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-78 and SP23-80. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-79

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	60	Y	FAC
2. *Betula papyrifera*	5	N	FACU
3.			
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Sambucus racemosa*	10	Y	FACU
2. *Amelanchier arborea*	5	Y	FACU
3. *Populus tremuloides*	3	N	FAC
4. *Rhamnus alnifolia*	2	N	OBL
5.			
6.			
7.			
	20.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus idaeus*	60	Y	FAC
2. *Lonicera canadensis*	25	Y	FACU
3. *Aralia nudicaulis*	5	N	FACU
4. *Cirsium arvense*	5	N	FACU
5. *Solidago gigantea*	3	N	FACW
6. *Phalaris arundinacea*	2	N	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	5.00	x 2 =	10.00
FAC species	123.00	x 3 =	369.00
FACU species	55.00	x 4 =	220.00
UPL species	0.00	x 5 =	0.00
Column Totals:	185.00 (A)		601.00 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-79

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	10YR 4/1	100					SIL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Tree roots

Depth (inches): 24

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-80

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373686 Long: -93.077526 Datum: WGS84

Soil Map Unit Name: Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✔, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-44

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-79. The wetland community is a fresh (Wet) meadow, Type 1, PEM1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ✔ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-80

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix petiolaris*	3	Y	FACW
2. *Populus tremuloides*	2	Y	FAC
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	103.00	x 2 =	206.00
FAC species	2.00	x 3 =	6.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	105.00 (A)		212.00 (B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-80

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					SIL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 3

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Plot was in a constructed ditch noticeably lower in elevation than surrounding areas. Historical grading has disturbed the soils in this location. Auger refusal occurred 3 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-81

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.373755 Long: -93.076162 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-45

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-82. The wetland community is an alder thicket, Type 6, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✔ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-81

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	40	Y	FACW
2. *Salix interior*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	40	Y	FACW
2. *Fraxinus americana*	5	N	FACU
3. *Solidago gigantea*	3	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	48.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	93.00	x 2 =	186.00
FAC species	25.00	x 3 =	75.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	123.00 (A)		281.00 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 52 percent.

SOIL Sampling Point: SP23-81

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2						SICL	Dry, no redox.
2-5	10YR 5/3	90	7.5YR 5/6	10	C	M	SIL	Dry, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 5

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils are disturbed in this area due to historical grading activities.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-82

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.374012 Long: -93.076536 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-81. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-82

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Rubus idaeus*	35	Y	FAC
2. *Solidago canadensis*	25	Y	FACU
3. *Tanacetum vulgare*	15	N	FACU
4. *Solidago gigantea*	10	N	FACW
5. *Lotus corniculatus*	10	N	FACU
6. *Poa pratensis*	5	N	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	10.00	x 2 =	20.00
FAC species	35.00	x 3 =	105.00
FACU species	55.00	x 4 =	220.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		345.00 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-82

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					VFSL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-83

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.378009 Long: -93.073916 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-46

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-84. The wetland community is a hardwood swamp, Type 7, PFO1B. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ✔ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-83

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	35	Y	FAC
2. *Acer rubrum*	10	Y	FAC
3. *Fraxinus nigra*	5	N	FACW
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus nigra*	10	Y	FACW
2. *Alnus incana*	10	Y	FACW
3. *Frangula alnus*	3	N	FAC
4. *Acer rubrum*	2	N	FAC
5.			
6.			
7.			
	25.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Carex scoparia*	35	Y	FACW
2. *Osmunda claytoniana*	15	Y	FAC
3. *Rubus allegheniensis*	10	N	FACU
4. *Cornus racemosa*	10	N	FAC
5. *Rubus pubescens*	5	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	65.00	x 2 =	130.00
FAC species	75.00	x 3 =	225.00
FACU species	10.00	x 4 =	40.00
UPL species	0.00	x 5 =	0.00
Column Totals:	150.00 (A)		395.00 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 25 percent.

SOIL Sampling Point: SP23-83

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	100					SIL	Dry, no redox.
10-20	2.5Y 4/1	90	7.5YR 4/4	10	C	M	SIL	Dry, redox.
20-24	10YR 5/4	70	7.5YR 4/4	30	C	M	VFS	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-84

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.377938 Long: -93.074150 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-83, and SP23-84. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sufficient hydrology indicators were observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-84

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	20	Y	FAC
2. *Acer rubrum*	10	Y	FAC
3. *Betula papyrifera*	5	N	FACU
4.			
5.			
6.			
7.			
	35.0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	50	Y	FACW
2. *Acer rubrum*	40	Y	FAC
3.			
4.			
5.			
6.			
7.			
	90.0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Rubus pubescens*	80	Y	FACW
2. *Acer rubrum*	3	N	FAC
3. *Lonicera dioica*	3	N	FACU
4. *Cornus racemosa*	2	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	88.0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	130.00	x 2 =	260.00
FAC species	75.00	x 3 =	225.00
FACU species	8.00	x 4 =	32.00
UPL species	0.00	x 5 =	0.00
Column Totals:	213.00 (A)		517.00 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-84

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					VFSL	Dry, no redox.
3-18	10YR 3/1	50					VFSL	Dry, no redox.
	10YR 5/3	50					VFSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 18

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 18 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-85

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.377645 Long: -93.074722 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-47

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-84. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ✔ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-85

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer spicatum*	15	Y	FACU
2. *Alnus incana*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Scirpus cyperinus*	3	Y	OBL
2. *Equisetum palustre*	1	Y	FACW
3. *Rubus pubescens*	1	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3.00	x 1 =	3.00
FACW species	12.00	x 2 =	24.00
FAC species	0.00	x 3 =	0.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	30.00 (A)		87.00 (B)

Prevalence Index = B/A = 2.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-85

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					VFSL	Dry, no redox.
3-6	10YR 4/3	60	5YR 3/4	40	C	M	VFSL	Dry, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 8

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils are disturbed from historic grading activities. Auger refusal occurred 8 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-86

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.380479 Long: -93.069575 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-48

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-87. The wetland community is a shallow marsh, Type 3, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 8

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-86

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	10	Y	FACW
2. *Salix interior*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	40	Y	OBL
2. *Typha angustifolia*	40	Y	OBL
3. *Poa palustris*	12	N	FACW
4. *Cirsium arvense*	5	N	FACU
5. *Populus balsamifera*	3	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80.00	x 1 =	80.00
FACW species	30.00	x 2 =	60.00
FAC species	0.00	x 3 =	0.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	115.00 (A)		160.00 (B)

Prevalence Index = B/A = 1.39

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-86

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 4/1	90	7.5YR 4/4	10	C	M/PL	SICL	Saturated, redox.
12-24	2.5Y 4/1	95	7.5YR 4/4	5	C	M	SICL	Saturated, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-87

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.380401 Long: -93.069350 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots is SP23-86 and SP23-88. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-87

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	25	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Picea glauca*	3	Y	FACU
2. *Populus balsamifera*	2	Y	FACW
3. *Populus tremuloides*	2	Y	FAC
4.			
5.			
6.			
7.			
	7.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Equisetum arvense*	45	Y	FAC
2. *Phalaris arundinacea*	35	Y	FACW
3. *Tanacetum vulgare*	15	N	FACU
4. *Salix petiolaris*	3	N	FACW
5. *Cornus alba*	2	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	67.00	x 2 =	134.00
FAC species	47.00	x 3 =	141.00
FACU species	18.00	x 4 =	72.00
UPL species	0.00	x 5 =	0.00
Column Totals:	132.00 (A)		347.00 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-87

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 4/1	100					SICL	Dry, no redox
6-14	10YR 4/3	100					LS	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Tree roots.

Depth (inches): 14

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal 14 inches below ground surface due to tree roots.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-88

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.381025 Long: -93.069193 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: L2UBK

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-49

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-87. The wetland community is a Shallow marsh, Type 3, PEM1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-88

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100.00	x 1 =	100.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		100.00 (B)

Prevalence Index = B/A = 1.0

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-88

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	7.5YR 3/2	90	2.5Y 5/1	5	D	M	SIL	Saturated, concentrations and depetions.
			7.5YR 4/4	5	D	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-89

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.379847 Long: -93.072458 Datum: WGS84

Soil Map Unit Name: Nashwauk fine sandy loam, 1 to 10 percent slopes NWI classification: PFO1/4D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-50

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-91. The wetland community is a hardwood swamp, Type 7, PFO1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-89

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	60	Y	FACW
2. *Populus tremuloides*	30	Y	FAC
3.			
4.			
5.			
6.			
7.			
	90.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus nigra*	25	Y	FACW
2. *Alnus incana*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	35.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	40	Y	OBL
2. *Fraxinus nigra*	15	Y	FACW
3. *Solidago gigantea*	10	N	FACW
4. *Athyrium angustum*	10	N	FAC
5. *Acer rubrum*	3	N	FAC
6. *Galium labradoricum*	2	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	80.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	42.00	x 1 =	42.00
FACW species	120.00	x 2 =	240.00
FAC species	43.00	x 3 =	129.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	205.00 (A)		411.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 20 present.

SOIL Sampling Point: SP23-89

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	95	7.5YR 4/4	5	C	M/PL	VFSL	Dry, redox.
6-12	7.5YR 4/2	90	7.5YR 4/6	10	C	M	VSFL	Dry, redox
12-24	7.5YR 4/3	85	7.5YR 4/6	15	C	M	SL	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✔ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-90

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.379761 Long: -93.072375 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-50

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-91. The wetland community is a deep marsh, Type 4, PEM1H. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 4
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicator D3 was observed as a layer of fine textured soil present 8 inches below the grounds surface.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-90

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Alnus incana*	10	Y	FACW
2. *Salix discolor*	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Typha angustifolia*	55	Y	OBL
2. *Phalaris arundinacea*	20	N	FACW
3. *Calamagrostis canadensis*	20	N	OBL
4. *Sagittaria latifolia*	5	N	OBL
5. *Equisetum fluviatile*	3	N	OBL
6. *Scirpus cyperinus*	2	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	105.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85.00	x 1 =	85.00
FACW species	35.00	x 2 =	70.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	120.00 (A)		155.00 (B)

Prevalence Index = B/A = 1.29

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-90

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	5YR 3/2	100					MUCK	Saturated, no redox.
8-24	5YR 4/3	90	7.5YR 4/6	10	C	M	CL	Saturated, redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ✓ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Fine textured soil.

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-91

Investigator(s): CJE Section, Township, Range: sec 36 T057N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.379673 Long: -93.072345 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plots are SP23-89 and SP23-90. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-91

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus balsamifera*	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Tanacetum vulgare*	45	Y	FACU
2. *Solidago canadensis*	25	Y	FACU
3. *Phalaris arundinacea*	15	N	FACW
4. *Rubus idaeus*	10	N	FAC
5. *Bromus kalmii*	5	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0.00	x 1 = 0.00
FACW species 20.00	x 2 = 40.00
FAC species 15.00	x 3 = 45.00
FACU species 70.00	x 4 = 280.00
UPL species 0.00	x 5 = 0.00
Column Totals: 105.00 (A)	365.00 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-91

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 3/3	100					S	Dry, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 12 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-92

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.367074 Long: -93.084845 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-38 and 39

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-93. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ✔ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-92

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	15	Y	FACW
2. *Populus tremuloides*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix discolor*	10	Y	FACW
2. *Alnus incana*	10	Y	FACW
3. *Populus tremuloides*	5	Y	FAC
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	35	Y	OBL
2. *Glyceria grandis*	35	Y	OBL
3. *Scirpus cyperinus*	15	N	OBL
4. *Cornus racemosa*	10	N	FAC
5. *Fraxinus nigra*	3	N	FACW
6. *Typha angustifolia*	2	N	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	87.00	x 1 =	87.00
FACW species	38.00	x 2 =	76.00
FAC species	20.00	x 3 =	60.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	145.00 (A)		223.00 (B)

Prevalence Index = B/A = 1.54

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-92

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/4	70	7.5YR 4/6	30	C	M	SIL	Dry, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 9

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Soils are disturbed from historic grading activities. Auger refusal occurred 9 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-93

Investigator(s): CJE Section, Township, Range: sec 01 T056N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.367051 Long: -93.084952 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-92. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-93

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula papyrifera*	20	Y	FACU
2. *Populus tremuloides*	15	Y	FAC
3. *Abies balsamea*	3	N	FAC
4. *Larix laricina*	2	N	FACW
5.			
6.			
7.			
	40.0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Herb Stratum (Plot size: 5)			
1. *Carex gracillima*	40	Y	FACU
2. *Solidago canadensis*	20	Y	FACU
3. *Fragaria virginiana*	15	N	FACU
4. *Lotus corniculatus*	5	N	FACU
5. *Populus tremuloides*	5	N	FAC
6. *Tanacetum vulgare*	3	N	FACU
7. *Achillea millefolium*	2	N	FACU
8.			
9.			
10.			
11.			
12.			
	90.0	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	2.00	x 2 =	4.00
FAC species	23.00	x 3 =	69.00
FACU species	105.00	x 4 =	420.00
UPL species	0.00	x 5 =	0.00
Column Totals:	130.00 (A)		493.00 (B)

Prevalence Index = B/A = 3.79

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 10 percent.

SOIL Sampling Point: SP23-93

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/1	100					VFSL	Dry, gravels, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 3

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Auger refusal occurred 3 inches below the ground surface due to coarse fragments.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-94

Investigator(s): CJE Section, Township, Range: sec 13 T056N R022W

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.336398 Long: -93.067058 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: PFO1/4D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-95. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 16

Wetland Hydrology Present? **Yes** ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-94

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	15	Y	FAC
2. *Picea glauca*	5	Y	FACU
3. *Populus balsamifera*	5	Y	FACW
4. *Populus tremuloides*	5	Y	FAC
5. *Abies balsamea*	5	Y	FAC
6. *Larix laricina*	3	N	FACW
7.			
	38.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremuloides*	5	Y	FAC
2. *Populus balsamifera*	5	Y	FACW
3. *Abies balsamea*	5	Y	FAC
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Fragaria virginiana*	25	Y	FACU
2. *Equisetum arvense*	25	Y	FAC
3. *Lotus corniculatus*	25	Y	FACU
4. *Cornus alba*	15	N	FACW
5. *Hieracium greenii*	10	N	FACU
6. *Equisetum hyemale*	5	N	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	105.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 72.73 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	28.00	x 2 =	56.00
FAC species	65.00	x 3 =	195.00
FACU species	65.00	x 4 =	260.00
UPL species	0.00	x 5 =	0.00
Column Totals:	158.00 (A)		511.00 (B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-94

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 3/2	100					FS	Dry, no redox.
8-16	10YR 3/3	100					FS	Dry, no redox.
16-24	10YR 3/4	100					COS	Saturated, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: Itasca County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-95

Investigator(s): CJE Section, Township, Range: sec 13 T056N R022W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.336459 Long: -93.066989 Datum: WGS84

Soil Map Unit Name: Udorthents, nearly level to rolling NWI classification: PFO1/4D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✔, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-95. The wetland community is an alder thicket, Type 6, PSS1C. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 3

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-95

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	25	Y	FAC
2. *Larix laricina*	25	Y	FACW
3. *Populus tremuloides*	10	N	FAC
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus balsamifera*	5	Y	FACW
2. *Salix discolor*	5	Y	FACW
3. *Larix laricina*	5	Y	FACW
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Equisetum arvense*	45	Y	FAC
2. *Equisetum hyemale*	35	Y	FAC
3. *Salix discolor*	15	N	FACW
4. *Picea mariana*	3	N	FACW
5. *Typha angustifolia*	2	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	58.00	x 2 =	116.00
FAC species	115.00	x 3 =	345.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	175.00 (A)		463.00 (B)

Prevalence Index = B/A = 2.65

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-95

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					MUCK	Saturated, no redox.
2-16	10YR 3/3	85	7.5YR 4/4	15	C	M	SIL	Saturated, redox
16-24	10YR 3/3	100					COS	Saturated, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☑ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): _____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

Soils are naturally problematic due to historic disturbance.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-96

Investigator(s): CJE Section, Township, Range: sec 17 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.340030 Long: -93.034142 Datum: WGS84

Soil Map Unit Name: Mcquade-Fayal, depressional, complex, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a test pit. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 12
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Clay lens holding water in a test pit.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-96

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	3	Y	FACW
2. *Rubus pubescens*	1	Y	FACW
3. *Equisetum arvense*	1	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	4.00	x 2 =	8.00
FAC species	1.00	x 3 =	3.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	5.00 (A)		11.00 (B)

Prevalence Index = B/A = 2.2

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

None.

SOIL Sampling Point: SP23-96

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 2.5/1	95	7.5YR 4/4	5	C	M	MMI	Mucky clay loam, saturated, redox in mineral componant.
4-16	10Y 4/1	90	7.5YR 4/4	10	C	M	C	Saturated, redox
16-24	7.5YR 4/4	100					C	Saturated, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✔ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ✔ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-97

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.348715 Long: -93.022299 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes ✔ No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: Wetland 2023-12

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in a wetland, the corresponding upland sample plot is SP23-98. The wetland community is a seasonally flooded basin, Type 1, PEM1A. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

None.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-97

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Calamagrostis canadensis*	55	Y	OBL
2. *Rubus pubescens*	10	N	FACW
3. *Onoclea sensibilis*	10	N	FACW
4. *Athyrium angustum*	3	N	FAC
5. *Prunella vulgaris*	2	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55.00	x 1 =	55.00
FACW species	20.00	x 2 =	40.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	80.00 (A)		110.00 (B)

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 80 percent.

SOIL Sampling Point: SP23-97

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	7.5YR 5/4	5	C	M	VFSL	Dry, redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted soils.

Depth (inches): 5

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

None.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 2023 Additional Keetac ETB Wetland Delineation City/County: St. Louis County Sampling Date: 2023-08-25

Applicant/Owner: U. S. Steel - Keetac State: Minnesota Sampling Point: SP23-98

Investigator(s): CJE Section, Township, Range: sec 09 T056N R021W

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR K, MLRA 57 Lat: 47.348460 Long: -93.022402 Datum: WGS84

Soil Map Unit Name: Mcquade-Buhl complex, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot is located in an upland, the corresponding wetland sample plot is SP23-97. Per the NRCS analysis method, the antecedent precipitation for the three months prior to August scored a 6 out of a possible 18, indicating that the prior period has been drier than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed.

VEGETATION – Use scientific names of plants. Sampling Point: SP23-98

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Abies balsamea*	15	Y	FAC
2. *Alnus incana*	10	Y	FACW
3. *Corylus americana*	5	N	FACU
4. *Corylus cornuta*	5	N	FACU
5.			
6.			
7.			
	35.0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Eurybia macrophylla*	35	Y	UPL
2. *Rubus pubescens*	25	Y	FACW
3. *Fragaria virginiana*	20	Y	FACU
4. *Abies balsamea*	10	N	FAC
5. *Poa pratensis*	5	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95.0 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	35.00	x 2 =	70.00
FAC species	25.00	x 3 =	75.00
FACU species	35.00	x 4 =	140.00
UPL species	35.00	x 5 =	175.00
Column Totals:	130.00 (A)		460.00 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground present at 5 percent.

SOIL Sampling Point: SP23-98

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	100					VFSL	Dry, gravels, no redox.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse fragments.

Depth (inches): 6

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Auger refusal occurred 6 inches below the ground surface due to coarse fragments.

Appendix B

2021 Photographs

Appendix B: Wetland Delineation Photograph Log



Photograph 1 (IMG_3986): View southwest into the fresh wet meadow of Wetland KETB-01 on August 2, 2021.



Photograph 2 (IMG_4005): View northeast of the alder thicket community in Wetland KETB-02 on August 2, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 3 (IMG_4048): View southwest of the alder thicket community in Wetland KETB-03 on August 2, 2021.



Photograph 4 (IMG_4131): View northwest of the deep marsh community in Wetland KETB-04 on August 2, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 5 (IMG_4234): View northwest of the hardwood swamp community in Wetland KETB-05 on August 2, 2021.



Photograph 6 (IMG_4284): View south of the shrub-carr community Wetland KETB-06 on August 53, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 7 (IMG_4300): View west of the hardwood swamp community in Wetland KETB-07 on August 3, 2021.



Photograph 8 (IMG_4393): View southwest of the hardwood swamp community in Wetland KETB-08 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 9 (IMG_4421): View northwest of the fresh wet meadow community in Wetland KETB-09 on August 3, 2021.



Photograph 10 (IMG_4445): View east of the shallow marsh community in Wetland KETB-10 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 11 (IMG_4473): View southwest of the deep marsh community in Wetland KETB-11 on August 3, 2021.



Photograph 12 (IMG_4504): View southeast of the shallow marsh community in Wetland KETB-12 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 13 (IMG_4532): View south of the shrub-carr community in Wetland KETB-13 on August 3, 2021.



Photograph 14 (IMG_4561): View southwest of the shallow marsh community in Wetland KETB-14 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 15 (IMG_4591): View west of the fresh wet meadow community in Wetland KETB-15 on August 4, 2021.



Photograph 16 (IMG_4607): View south of the shallow marsh community in Wetland KETB-16 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 17 (IMG_4638): View east of the deep marsh community in Wetland KETB-17 on August 4, 2021.



Photograph 18 (IMG_4693): View north of coniferous bog community in Wetland KETB-18 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 19 (IMG_4751): View southeast of the fresh wet meadow community in Wetland KETB-19 on August 4, 2021.



Photograph 20 (IMG_4740): View northeast of the shrub-carr community in Wetland KETB-20 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 21 (IMG_4812): View north of the alder thicket community in Wetland KETB-21 on August 4, 2021.



Photograph 22 (IMG_4823): View west of the alder thicket community in Wetland KETB-23 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 23 (IMG_4876): View west of the shallow marsh community in Wetland KETB-24 on August 4, 2021.



Photograph 24 (IMG_5634): View southwest of the alder thicket community in Wetland KETB-25 on August 13, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 25 (IMG_5608): View northeast of the shallow marsh community in Wetland KETB-26 on August 13, 2021.



Photograph 26 (IMG_5546): View southeast of the shallow marsh community in Wetland KETB-27 on August 13, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 27 (IMG_5521): Photo of the alder thicket community in Wetland KETB-28 on August 13, 2021.



Photograph 28 (IMG_5499): View southwest of the shallow marsh community in Wetland KETB-29 on August 13, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 29 (IMG_5487): View west of the shrub-carr community in Wetland KETB-30 on August 13, 2021.



Photograph 30 (IMG_5479): View south of the shrub-carr community in Wetland KETB-31 on August 13, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 31 (IMG_5475): View northeast of the shrub-carr community in Wetland KETB-32 on August 13, 2021.



Photograph 32 (IMG_5459): View southwest of the deep marsh community in Wetland KETB-33 on August 13, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 33 (IMG_5446): View south of the shallow marsh community in Wetland KETB-34 on August 13, 2021.



Photograph 34 (IMG_2142): View southeast of the shallow marsh community in Wetland KETB-35 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 35 (IMG_5359): View east of the alder thicket community in Wetland KETB-36 on August 13, 2021.



Photograph 36 (IMG_2141): View west of the shrub-carr community in Wetland KETB-37 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 37 (IMG_2134): View south of the alder thicket community in Wetland KETB-38 on August 4, 2021.



Photograph 38 (IMG_2123): View northeast of the shrub-carr community in Wetland KETB-39 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 39 (IMG_2121): View south of the shrub-carr community in Wetland KETB-40 on August 4, 2021.



Photograph 40 (IMG_2107): View northeast of the alder thicket community in Wetland KETB-41 on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 41 (IMG_2114): View southeast of the shrub-carr community in Wetland KETB-42 on August 4, 2021.



Photograph 42 (IMG_2102): View east of the hardwood swamp community in Wetland KETB-43 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 43 (IMG_2095): View southwest of the shrub-carr community in Wetland KETB-44 on August 3, 2021.



Photograph 44 (IMG_2087): View north of the fresh wet meadow community in Wetland KETB-46 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 45 (IMG_2070): View northeast of the shrub-carr community in Wetland KETB-47 on August 3, 2021.



Photograph 46 (IMG_2079): View northeast of the shallow marsh community in Wetland KETB-48 on August 3, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 47 (IMG_2073): View northwest of the alder thicket community in Wetland KETB-49 on August 3, 2021.



Photograph 48 (IMG_2066): View east of the shallow marsh community in Wetland KETB-50 on August 2, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 49 (IMG_2062): View southwest of the fresh-wet meadow community in Wetland KETB-51 on August 2, 2021.



Photograph 50 (114732): View north of the shallow marsh community in Wetland KETB-54 on August 2, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 51 (110012): View east of the shallow marsh community in Wetland KETB-55 on August 2, 2021.



Photograph 52 (IMG_4203): View north of an upland mixed forest community on August 2, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 53 (IMG_5561): View northeast of an upland forest opening community on August 13, 2021.



Photograph 54 (IMG_4787): View south of a disturbed upland on August 4, 2021.

Appendix B: Wetland Delineation Photograph Log



Photograph 55 (IMG_4137): View southwest of the tailings basin berm on August 2, 2021.

Appendix B

2023 Photographs

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 1: View southwest into the fresh (wet) meadow of Wetland 2023-01 on August 14, 2023.



Photograph 2: View north into the hardwood swamp community of Wetland 2023-02 on August 14, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 3: View southwest of the shallow marsh community in Wetland 2023-03 on August 14, 2023.



Photograph 4: View southwest of the shrub-carr community in Wetland 2023-04 on August 14, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 5: View northeast of the hardwood swamp community in Wetland 2023-05 on August 14, 2023.



Photograph 6: View north of the hardwood swamp community in Wetland 2023-06 on August 14, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 7: View east of the alder thicket community in Wetland 2023-07 on August 14, 2023.



Photograph 8: View north of the shrub-carr community Wetland 2023-08 on August 14, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 9: View northeast of the alder thicket community in Wetland 2023-09 on August 15, 2023.



Photograph 10: View north of the hardwood swamp wetland community in Wetland 2023-10 on August 15, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 11: View west of the sedge meadow wetland community in Wetland 2023-11 on August 15, 2023.



Photograph 12: View north of Wetland 2023-12, a seasonally flooded basin, on August 15, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 13: View north of the hardwood swamp wetland community in Wetland 2023-13 on August 15, 2023.



Photograph 14: View west of the hardwood swamp wetland community in Wetland 23-14 on August 15, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 15: View north of the hardwood swamp community in Wetland 2023-16 on August 16, 2023.



Photograph 16: View northwest of the hardwood swamp wetland community in Wetland 2023-17 on August 14, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 17: View west of the alder thicket community in Wetland 2023-18 on August 17, 2023.



Photograph 18: View west of the alder thicket community in Wetland 2023-19 on August 17, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 19: View south of the alder thicket community in Wetland 2023-20 on August 17, 2023.



Photograph 20: View north of the seasonally flooded basin community in Wetland 2023-21 on August 17, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 21: View southwest of the fresh (wet) meadow community in Wetland 2023-22 on August 17, 2023.



Photograph 22: View north of the fresh (wet) meadow community in Wetland 2023-23 on August 17, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 23: View north of the alder thicket wetland community in Wetland 2023-24 on August 17, 2023.



Photograph 24: View north of the seasonally flooded basin wetland community in Wetland 2023-25 on August 17, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 25: View north of the sedge meadow community in Wetland 2023-26 on August 17, 2023.



Photograph 26: View south of the alder thicket community in Wetland 2023-27 on August 17, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 27: View northwest of the fresh (wet) meadow in Wetland 2023-28 on August 17, 2023.



Photograph 28: View north of the fresh (wet) meadow community in Wetland 2023-29 on August 17, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 29: View southwest of the shrub-carr community in Wetland 2023-30 on August 24, 2023.



Photograph 30: View north of the deep marsh community in Wetland 23-31 on August 24, 2024.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 31: View north of the seasonally flooded basin in Wetland 2023-32 on August 24, 2023.



Photograph 32: View east of the deep marsh community in Wetland 2023-33 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 33: View east of the shrub-carr community in Wetland 2023-33 on August 24, 2023.



Photograph 34: View north of the fresh (wet) meadow community in Wetland 23-34 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 35: View west of the hardwood swamp wetland community in Wetland 2023-35 on August 24, 2023.



Photograph 36: View north of the seasonally flooded basin community in Wetland 2023-36 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 37: View west of the shrub-carr community in Wetland 2023-37 on August 24, 2023.



Photograph 38: View north of the seasonally flooded basin wetland community in Wetland 2023-38 and Wetland 2023-39 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 39: View north of the fresh (wet) meadow community in Wetland 2023-40 on August 24, 2023.



Photograph 40: View north of the alder thicket community in Wetland 2023-41 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 41: View west of the seasonally flooded basin community in Wetland 2023-42 on August 24, 2023



Photograph 42: View west of fresh (wet) meadow community in Wetland 2023-43 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 43: View northwest of the shrub-carr community in Wetland 2023-44 on August 24, 2023.



Photograph 44: View north of the fresh (wet) meadow community in Wetland 2023-44 on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 45: View east of the fresh (wet) meadow community in Wetland 2023-44 on August 25, 2023.



Photograph 46: View south of the alder thicket community in Wetland 2023-45 on August 25, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 47: View north of the hardwood swamp community in Wetland 2023-46 on August 25, 2023.



Photograph 48: View south of the seasonally flooded basin community in Wetland 2023-47 on August 25, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 49: View southeast of the fresh (wet) meadow community in Wetland 2023-48 on August 25, 2023.



Photograph 50: View northwest of the shallow marsh community in Wetland 2023-49 on August 25, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 51: View west of the hardwood swamp wetland community in Wetland 2023-50 on August 25, 2023.



Photograph 52: View north of the deep marsh community in Wetland 2023-50 on August 25, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 53: View north of the alder thicket community in Wetland KETB-25 on August 25, 2023.



Photograph 54: View north of a test pit in the 2023 Study Area, on August 25, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 55: View south of a forested upland community on August 14, 2023.



Photograph 56: View north of a forested upland community on August 14, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 57: Example of existing trails on site, on August 17, 2023.



Photograph 58: View west of a logged upland area on August 24, 2023.

Appendix B: 2023 Wetland Delineation Photograph Log



Photograph 59: View north of an upland roadside ditch on August 24, 2023.



Photograph 60: View north of the historic tailings basin berm on August 24, 2023.

Appendix C

Functional Assessment Method

Select Wetland Functional Assessment Field Guidance
For Mining Project Permitting
Barr Engineering Company
June 2015

1.0 Field Functional Assessments

The objective of the field functional assessment is to collect data to allow for an evaluation of potential direct and indirect impacts from project development. Therefore, documentation of functional condition is needed to be able to determine impacts resulting from project development. This project will follow guidance for evaluation of wetland functions from the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.4* (MnRAM); however, a full MnRAM evaluation will not be completed. Select MnRAM functions will be used to evaluate the wetland functions for this project based on MnRAM 3.4 guidance. Wetland information should be collected in the field, as described below.

1. Wetland Community Classification – Follow Eggers and Reed classification system (17 communities as described in MnRAM) to identify the major (at least 10 percent of the wetland), distinct communities within each wetland and approximate percentage of each.

2. Topographic setting, which is used to define outlet characteristics
   - Depressional – no obvious inlets or outlets
   - Depressional – Flow-through (defined inflow and outflow)
   - Depressional – Tributary (no inlet, defined outflow)
   - Riverine (within the river/stream banks)
   - Lacustrine fringe (edge of deepwater areas) / shoreland
   - Extensive peatland / organic flat – noting percent cover of sphagnum moss and vegetation exemptions with percent cover if not true bog (therefore minerotrophic, not ombrotrophic)
   - Slope
   - Floodplain (outside waterbody banks)

3. Vegetative Diversity / Integrity (question 1 of MnRAM; carry full guidance in the field)
   - High – generally <20% invasive/non-native vegetation, inundated wetlands dominated by 3 or more native species, 5-10+native species present in other communities
   - Medium – generally 20-50% invasive/non-native vegetation, inundated wetlands dominated by 2 species, <5-9 species present in other communities
   - Low – generally >50% invasive/non-native vegetation, inundated wetlands dominated by 1 species, 50% or more of the trees are dead

4. Wetland Outlet Configuration
   - High – natural outlet condition
   - Medium – constructed outlet that is located close to historic wetland boundary (i.e., culvert, weir, permeable rock, ditch, etc.)
   - Low – constructed ditch outlet causing drainage or impounded wetland with no outlet or higher than the natural outlet

5. Upland Conditions / Land Uses
    - High – unaltered; full grass, shrub, or forest cover, natural slopes, no evidence of erosion
    - Medium – moderate vegetative cover, some artificial slopes, some evidence of erosion affecting wetland
    - Low – significant disturbance; intensive mining activities affecting wetland, limited vegetative cover, clear evidence of erosion

6. Wildlife Habitat
    - High – natural habitats surrounding wetland and connecting to other natural communities, no barriers to access from the wetland
    - Medium – moderate access to other natural communities, limited barriers to access from the wetland
    - Low – isolated from other natural communities or difficult access to other natural habitats (i.e., stockpiles, mine pits, roads, steep slopes, buildings, infrastructure, etc.)

7. Public Value
    - High – accessible to the public and provides recreational value
    - Medium – cumbersome public access with some recreational value
    - Low – no public access or no recreational value

8. Human Disturbance
    - High – significant alterations; roads stockpiles, mine pits, soil removal or disturbance, invasive species have significantly affected wetland
    - Medium – moderate alterations; roads stockpiles, mine pits, soil removal or disturbance, invasive species have affected wetland
    - Low – Unaltered; little evidence of human disturbances affecting wetland

Ratings for each of these characteristics will be utilized to develop a functional quality rating for each wetland. Ratings for items 3 through 7 will be given a score, as follows:

Low = 0.1, Medium = 0.5, High = 1.0

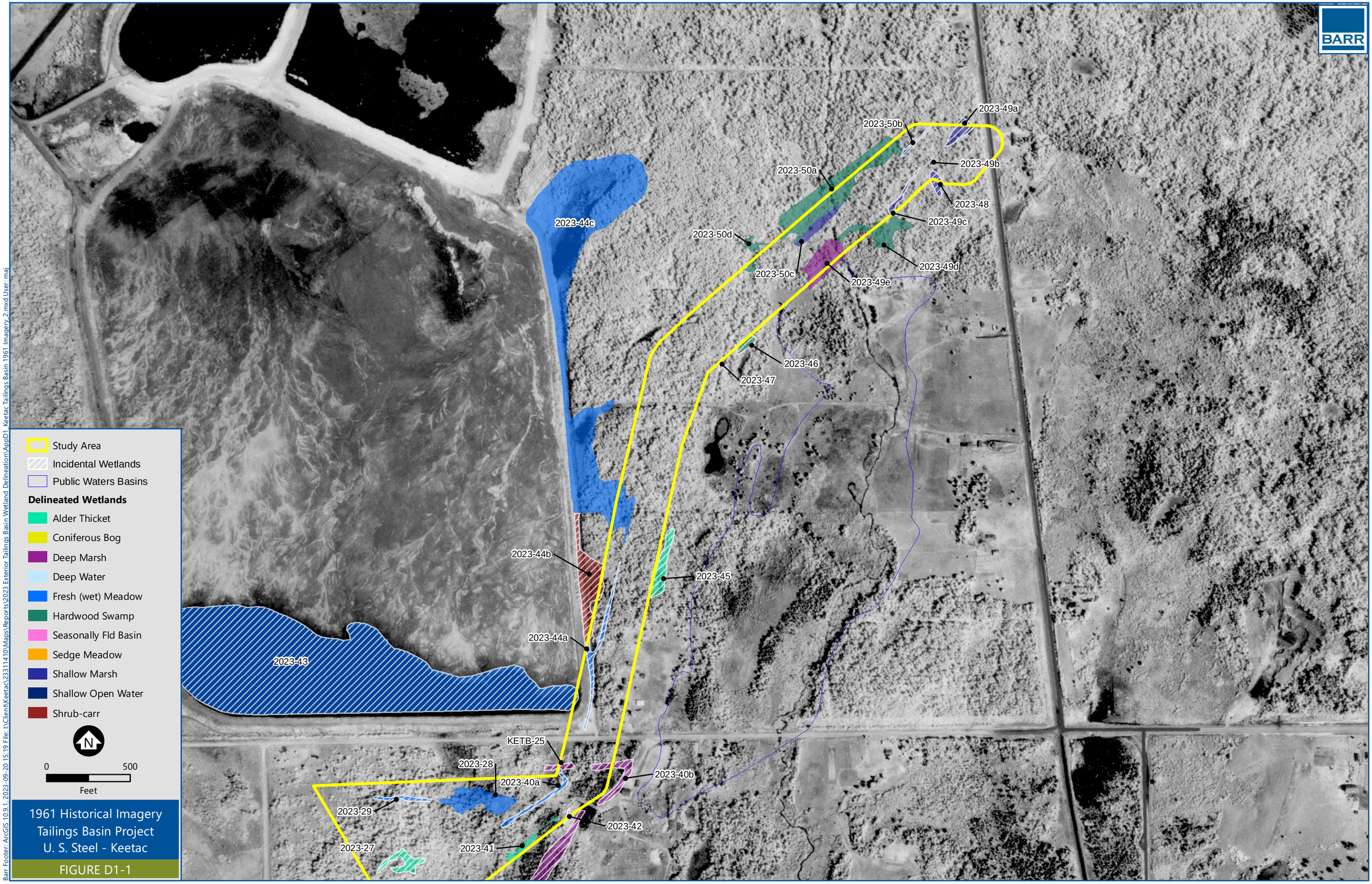
Based on these ratings for items 3 through 7, an average value will be calculated. An overall wetland functional assessment rating would then be given to the wetland based on the average value, as follows:

0 to 0.32 = Low, 0.33 to 0.65 = Medium, 0.66 to 1.0 = High

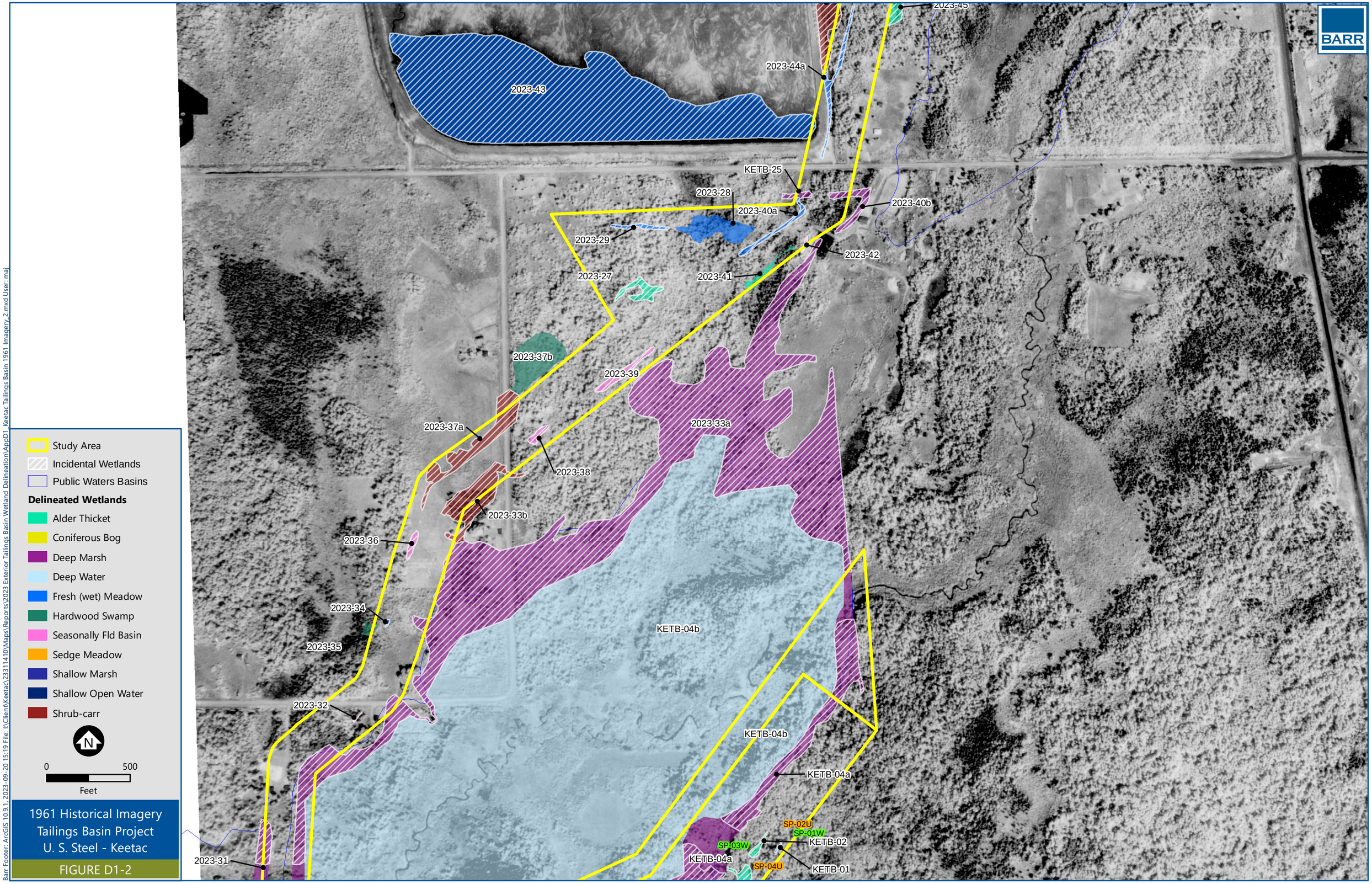
Item 8, human disturbance, would also be given a separate rating for each wetland.

Appendix D

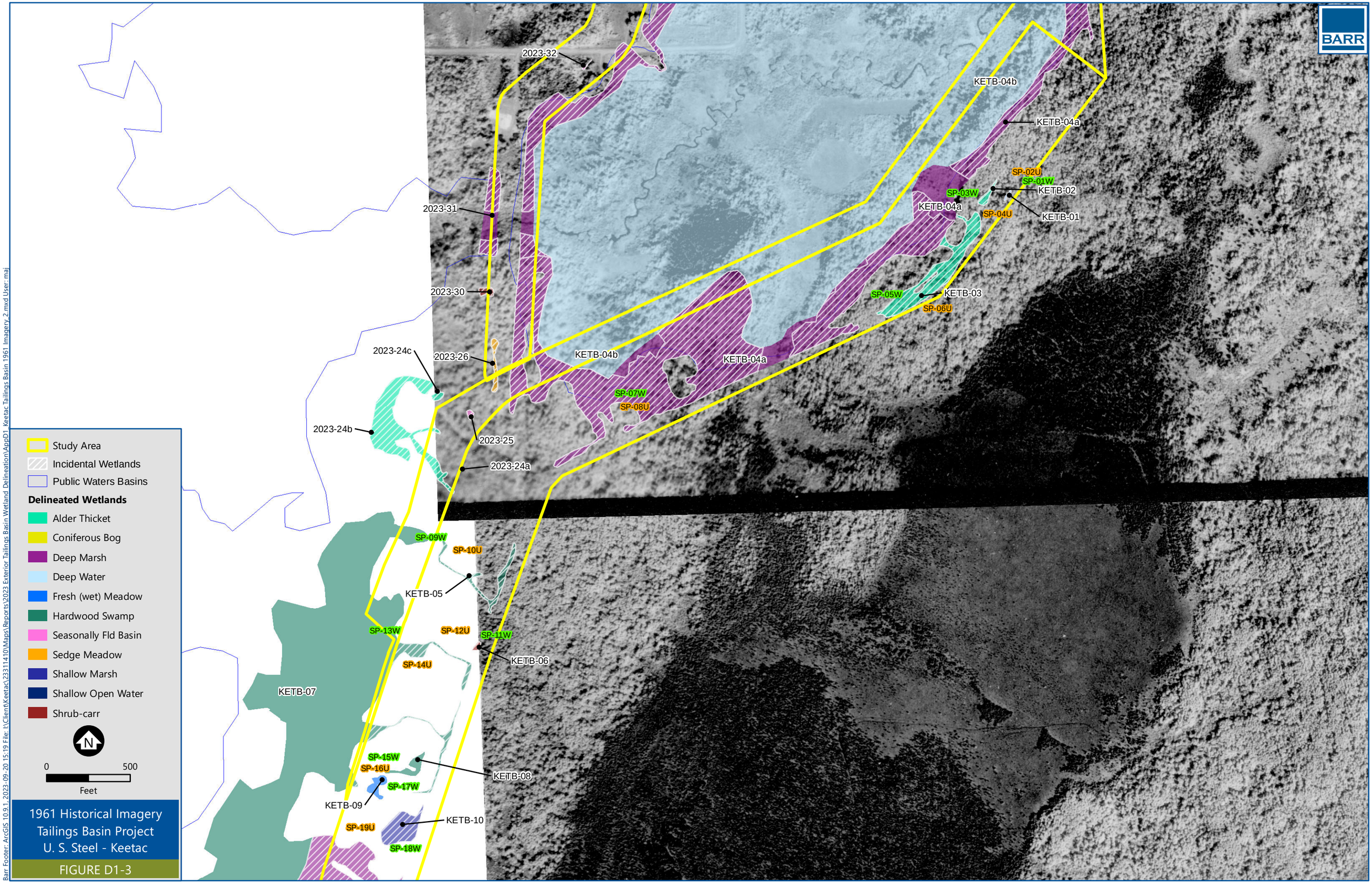
Historical Imagery Review



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KETB-04a
SP-02U
SP-01W
SP-03W
KETB-02
KETB-04a
KETB-01
SP-04U
2023-31
2023-30
SP-05W
KETB-03
SP-06U
2023-24c
2023-26
KETB-04b
KETB-04a
SP-07W
SP-08U
2023-24b
2023-25
2023-24a
SP-09W
SP-10U
KETB-05
SP-13W
SP-12U
SP-11W
KETB-06
SP-14U
KETB-07
SP-15W
SP-16U
KETB-08
SP-17W
KETB-09
KETB-10
SP-19U
SP-18W
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
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Feet
1961 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D1-3
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SP-20W
SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP-24W
KETB-13
SP-25U
SP-26W
2023-18
2023-19
KETB-14
2023-20
2023-21
2023-23
KETB-15
KETB-17
2023-22
SP-27W
SP-28U
SP-29W
SP-30W
KETB-16
SP-31U
SP-33U
SP-32W
KETB-18
SP-35U
KETB-19
SP-34W
KETB-21b
SP-36W
KETB-21a
KETB-23a
KETB-24a
SP-37W
SP-39W
SP-43U
2023-17
SP-38U
SP-42W
KETB-20
SP-40W
SP-44W
KETB-22
KETB-25a
SP-41U
SP-45U
KETB-23c
KETB-23b
KETB-24b

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

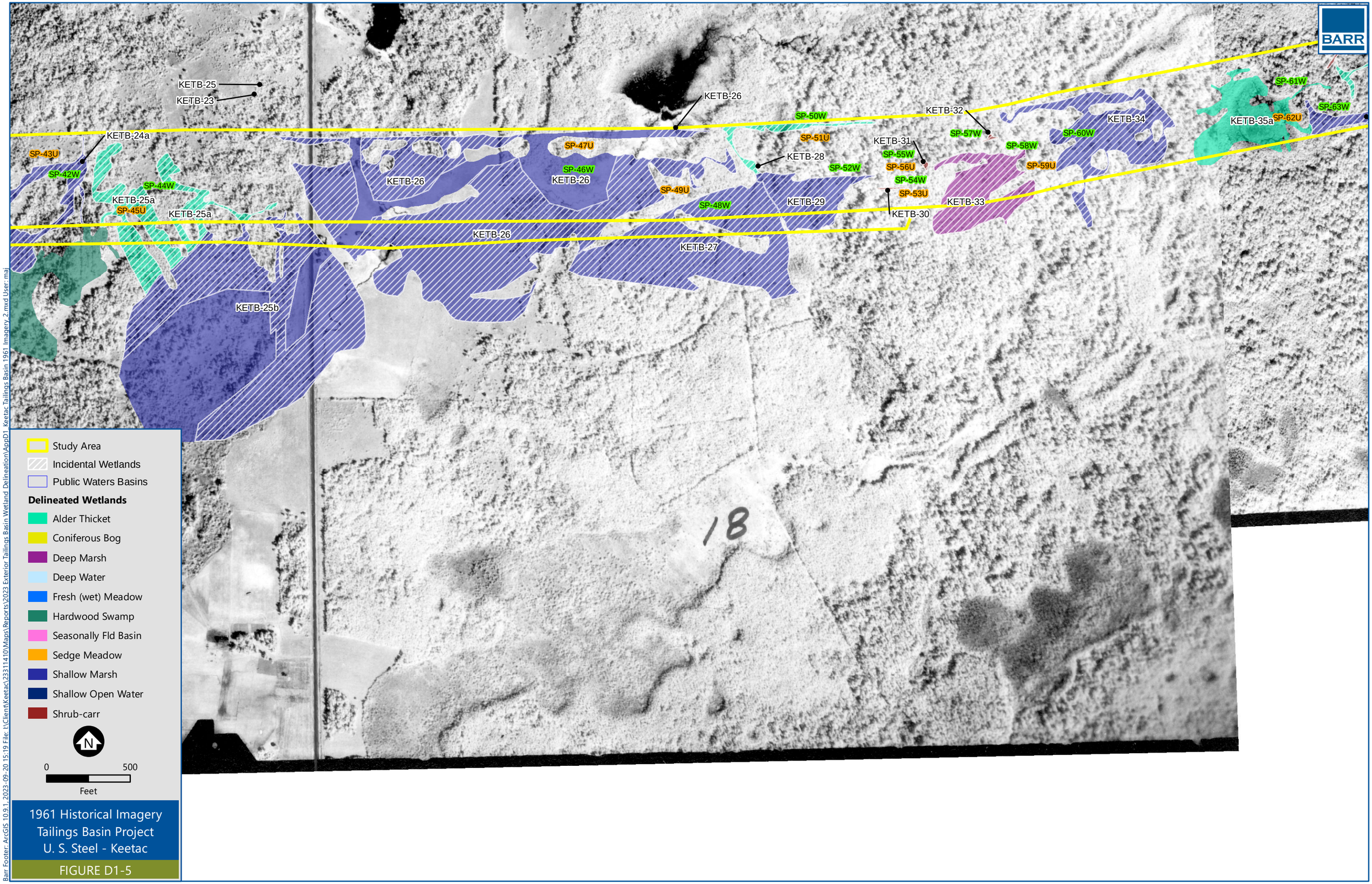
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1961 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D1-4

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2023-12
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2023-13
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KETB-39
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KETB-38
KETB-37
SP-66W
SP-64W
SP-65U
KETB-36a
KETB-36b
SP-61W
SP-63W
2023-16
KETB-34
KETB-35a
SP-62U
KETB-35b

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

1961 Historical Imagery
Tailings Basin Project
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FIGURE D1-6

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SP-76U
KETB-47
SP-73W
KETB-46
SP-74U
Wetland 2b
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

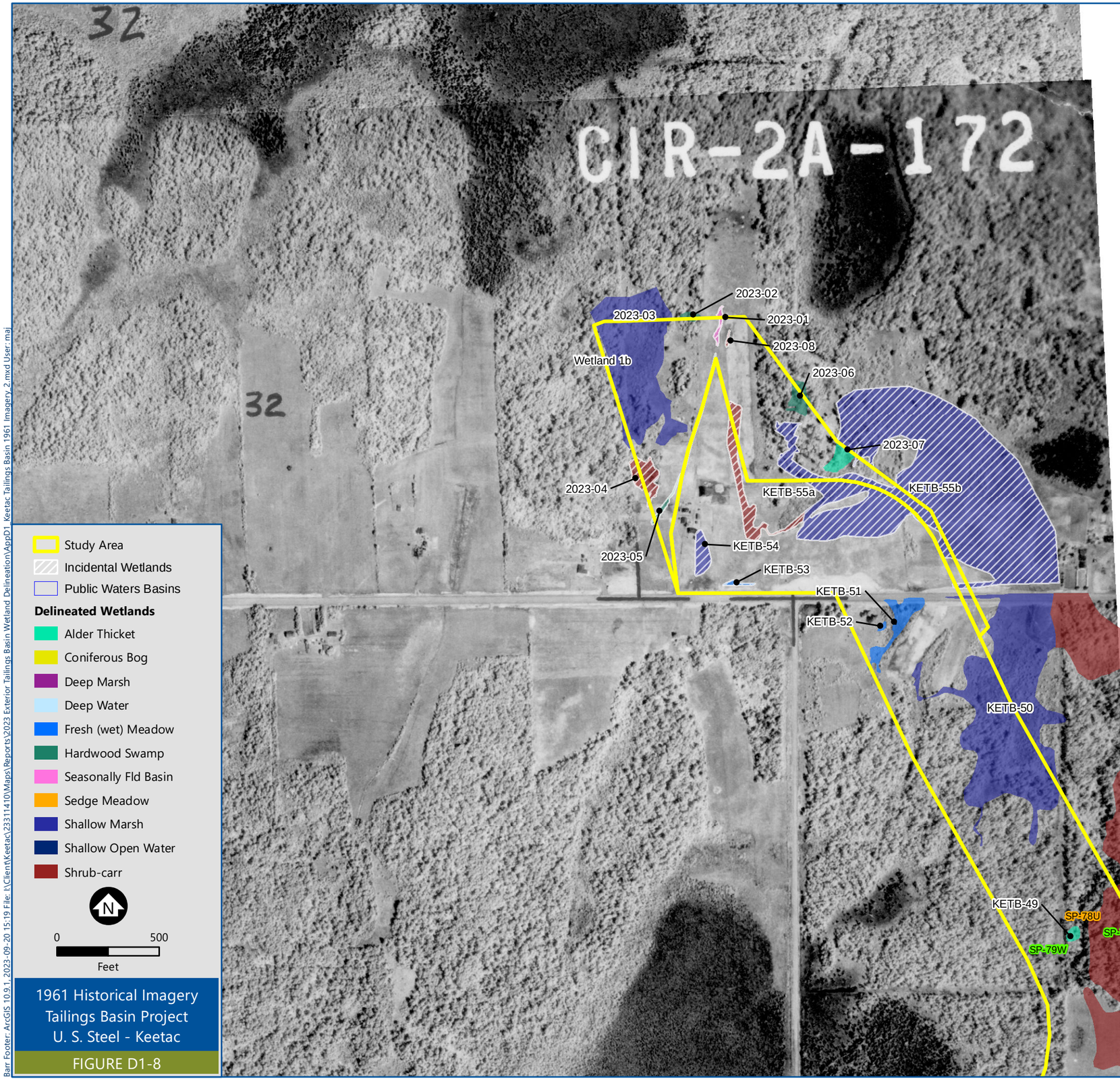
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Tailings Basin Project
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FIGURE D1-7

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Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

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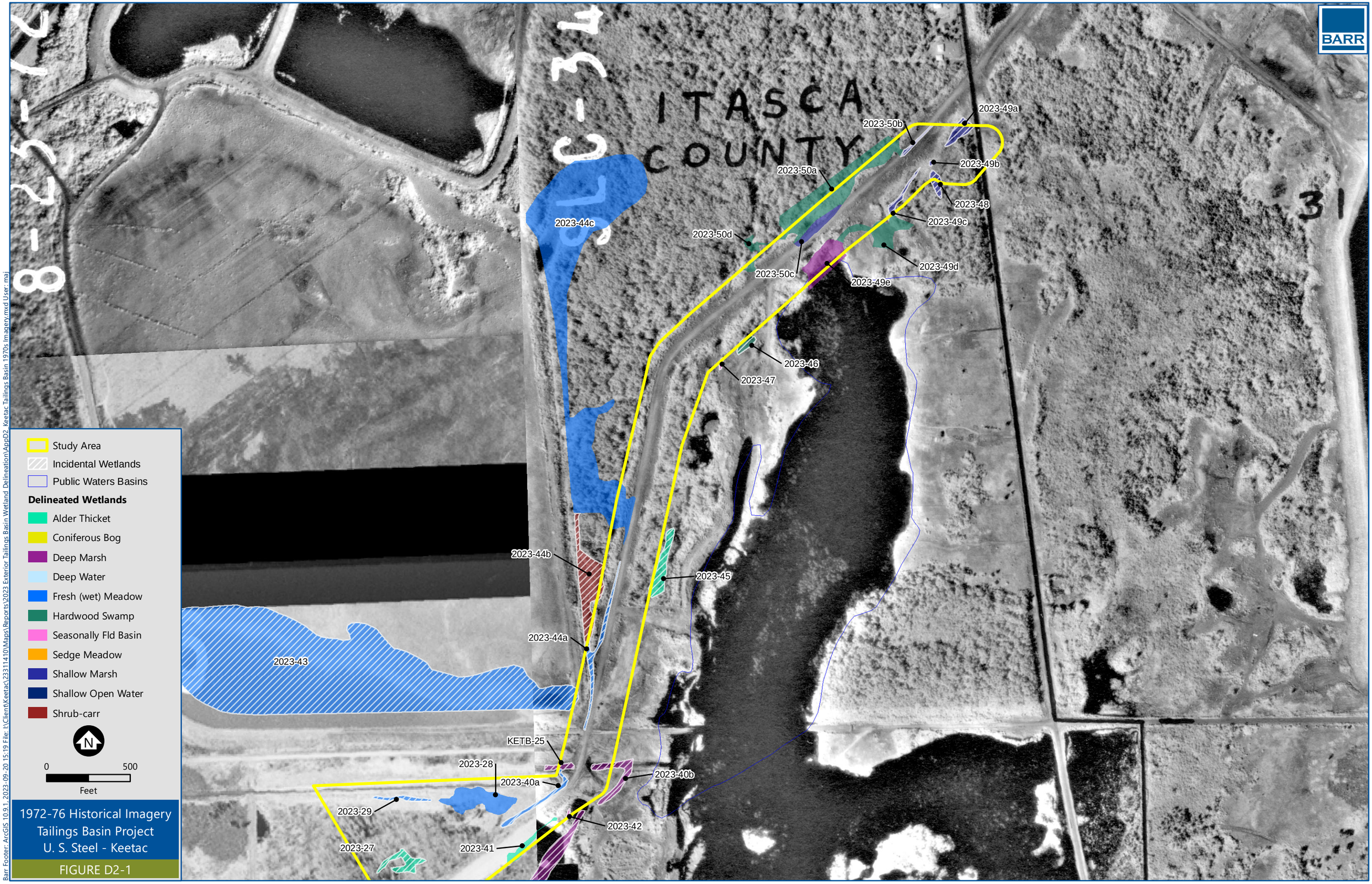
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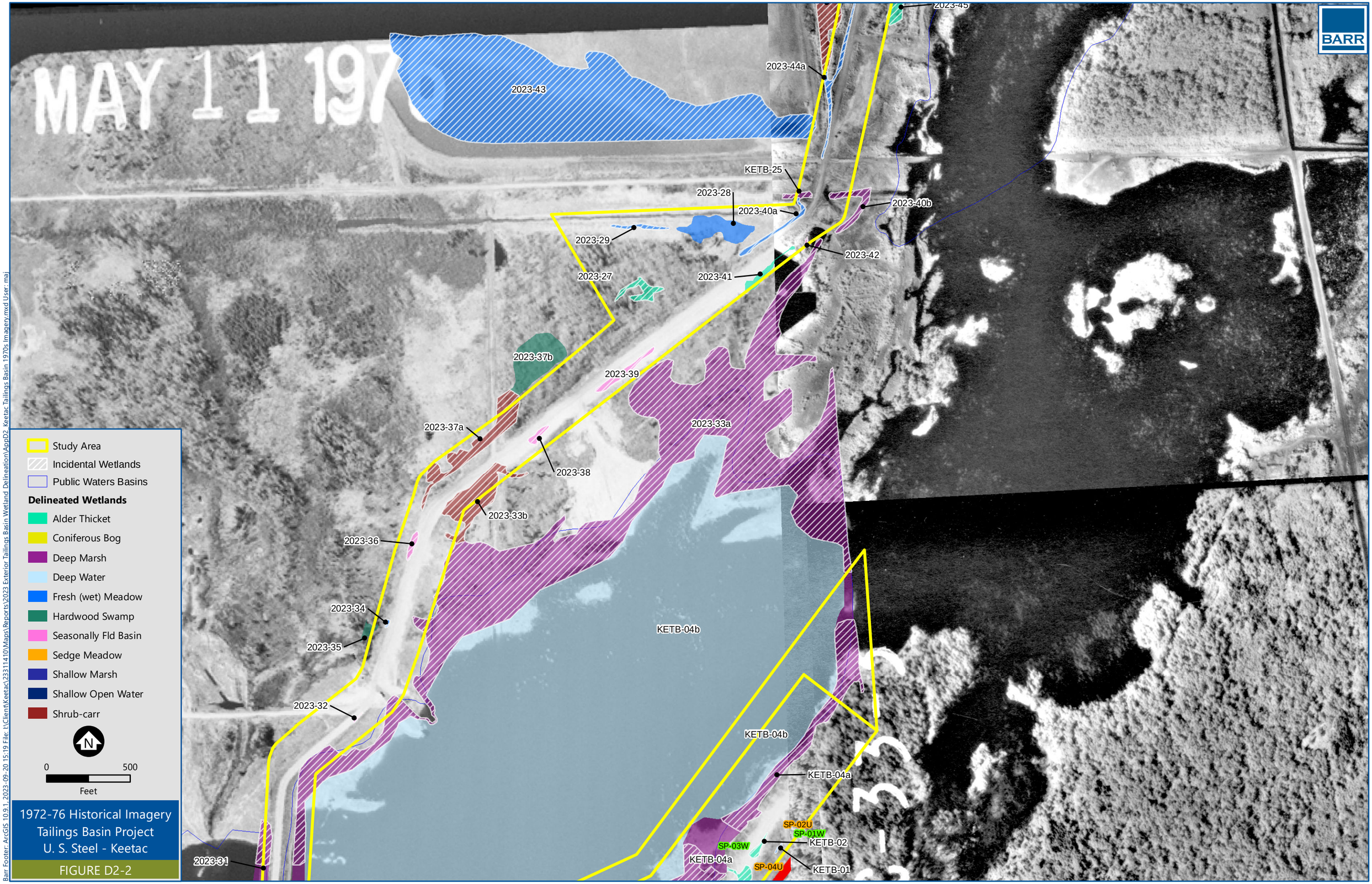
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Tailings Basin Project
U. S. Steel - Keetac

FIGURE D1-8

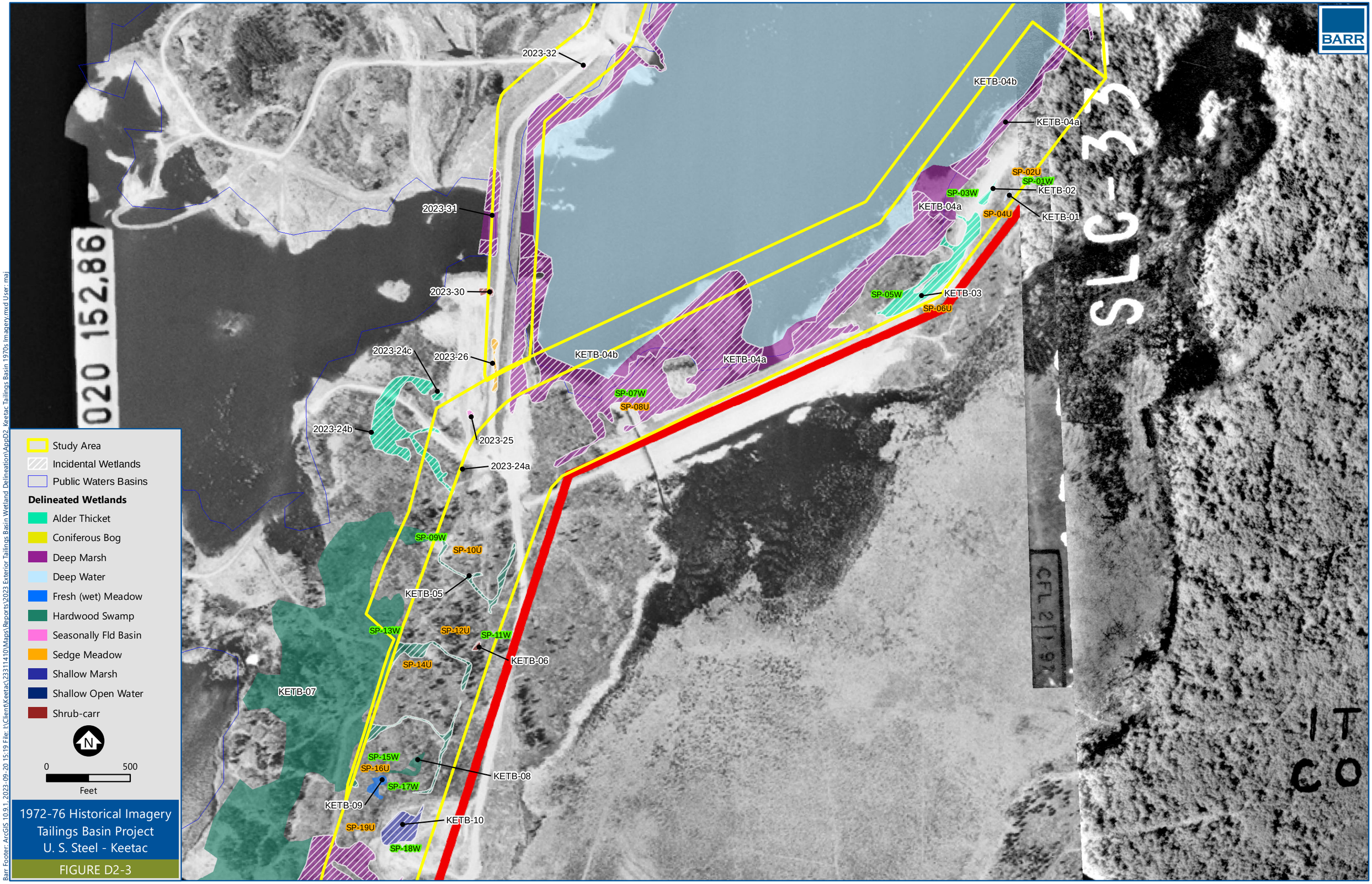
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SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP-24W
KETB-13
SP-25U
SP-26W
2023-18
2023-19
KETB-14
2023-20
2023-21
2023-23
KETB-15
KETB-17
2023-22
SP-27W
SP-28U
SP-29W
SP-30W
KETB-16
SP-31U
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SP-43U
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SP-42W
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SP-40W
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SP-41U
KETB-25a
SP-45U
KETB-23c
KETB-23b
KETB-24b

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
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Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

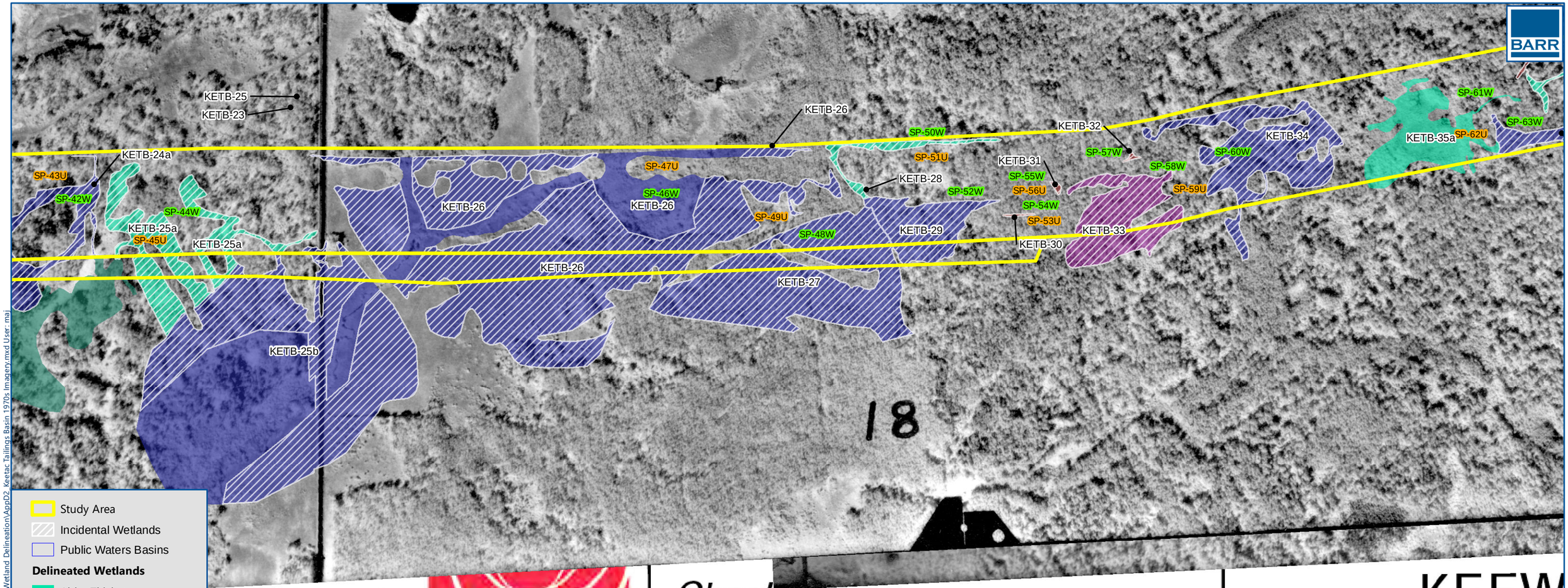
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1972-76 Historical Imagery
Tailings Basin Project
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FIGURE D2-4

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Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

1972-76 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D2-5

GEI Consultants
3159 Voyager Drive
Green Bay, WI 54311
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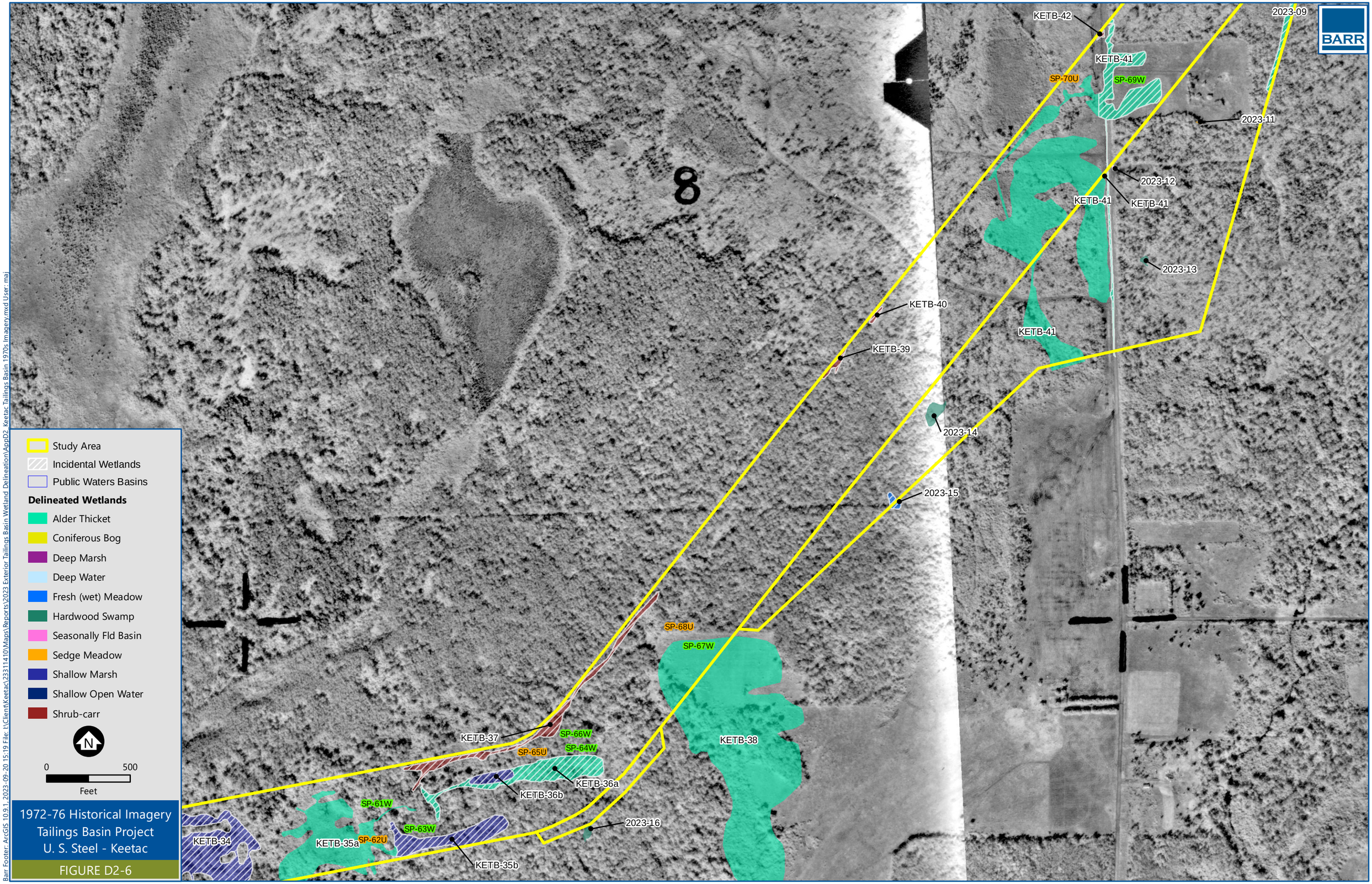
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Approved By:

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KETB-48
SP-75W
SP-76U
KETB-47
SP-73W
SP-74U
KETB-46
Wetland 2b
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

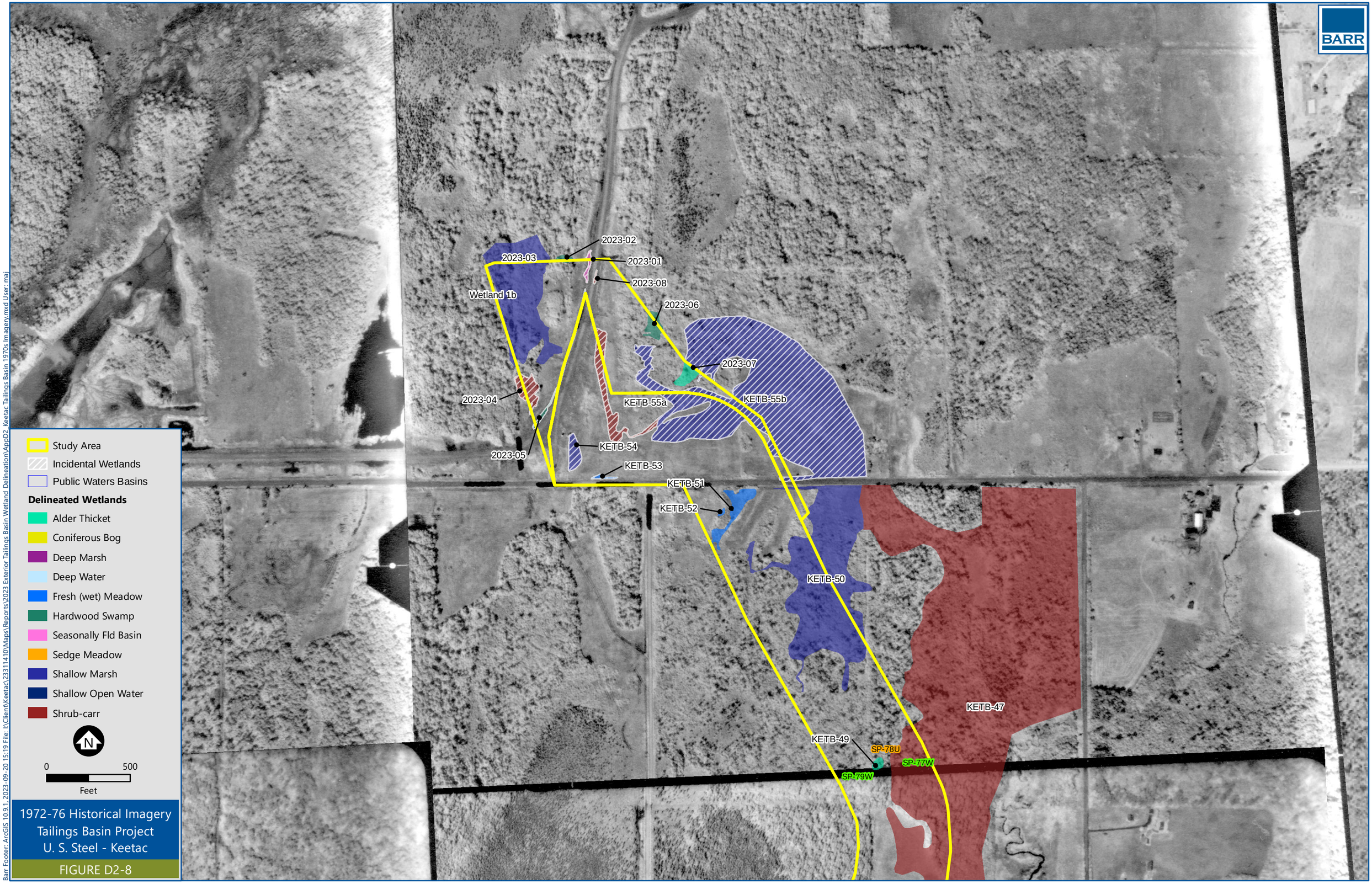
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1972-76 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D2-7

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1972-76 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D2-8

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ITASCA COUNTY

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2023-50b
2023-49a
2023-50a
2023-49b
2023-48
2023-49c
2023-50d
2023-50c
2023-49d
2023-49e
2023-46
2023-47
2023-44b
2023-45
2023-44a
2023-43
2023-40b
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

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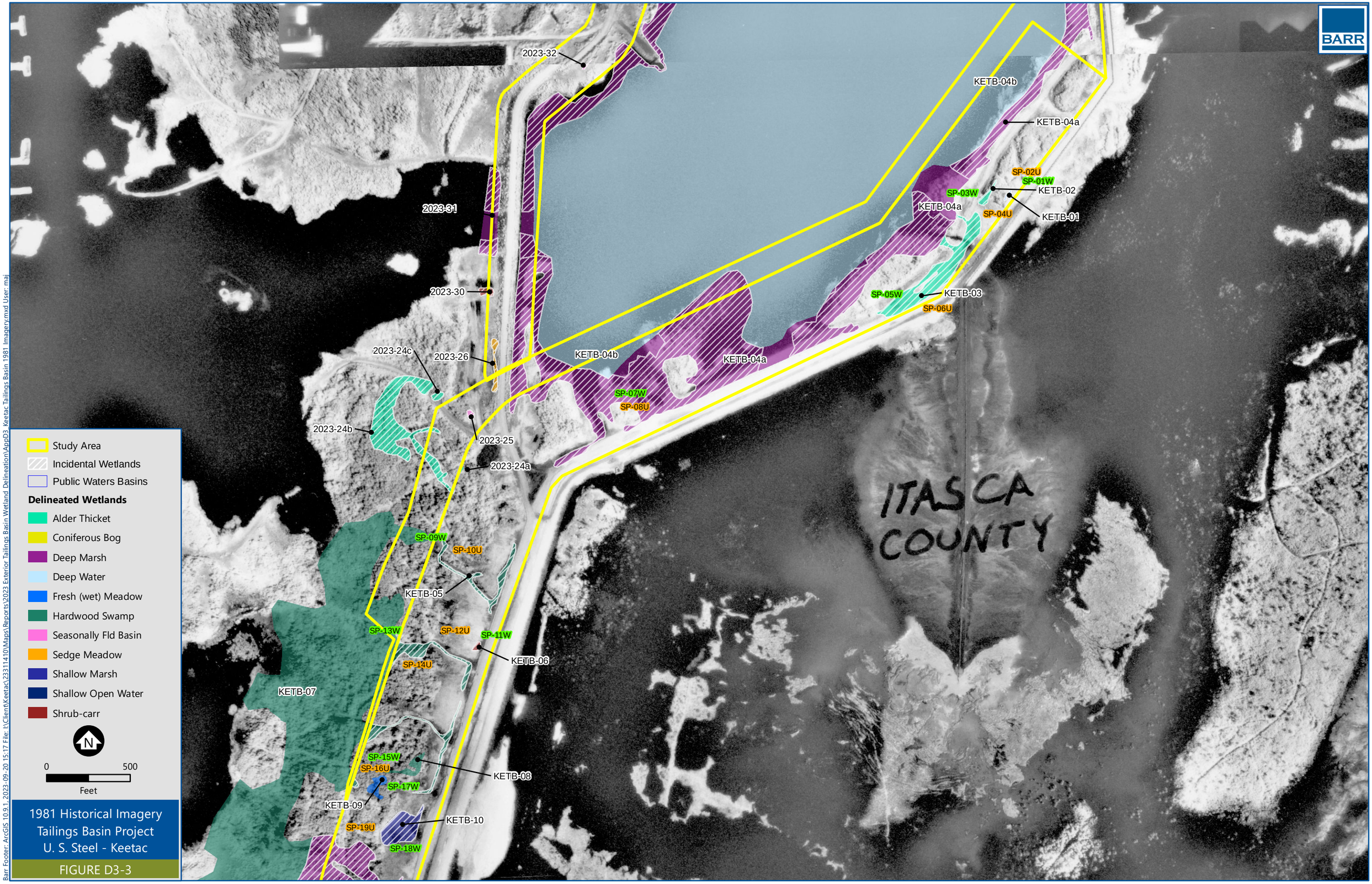
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1981 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D3-1

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2023-44a
2023-40b
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2023-40b
2023-29
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2023-27
2023-41
2023-37b
2023-39
2023-37a
2023-33a
2023-38
2023-33b
2023-36
2023-34
KETB-04b
2023-35
2023-32
KETB-04b
KETB-04a
SP-02U
SP-01W
SP-03W
KETB-02
KETB-04a
SP-04U
KETB-01
2023-31
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
1981 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D3-2
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Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:17 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD3_Keetac Tailings Basin 1981 Imagery.mxd User: maj



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KETB-11
SP-20W
SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP-24W
KETB-13
SP-25U
SP-26W
2023-18
2023-19
KETB-14
2023-20
2023-21
2023-23
KETB-15
KETB-17
2023-22
SP-27W
SP-28U
SP-29W
SP-30W
KETB-16
SP-31U
SP-33U
SP-32W
KETB-18
SP-35U
KETB-19
SP-34W
KETB-21b
SP-36W
KETB-21a
KETB-23a
KETB-24a
SP-37W
SP-39W
SP-43U
2023-17
SP-38U
SP-42W
KETB-20
SP-40W
SP-44W
KETB-22
SP-41U
KETB-25a
SP-45U
KETB-23c
KETB-23b
KETB-24b

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

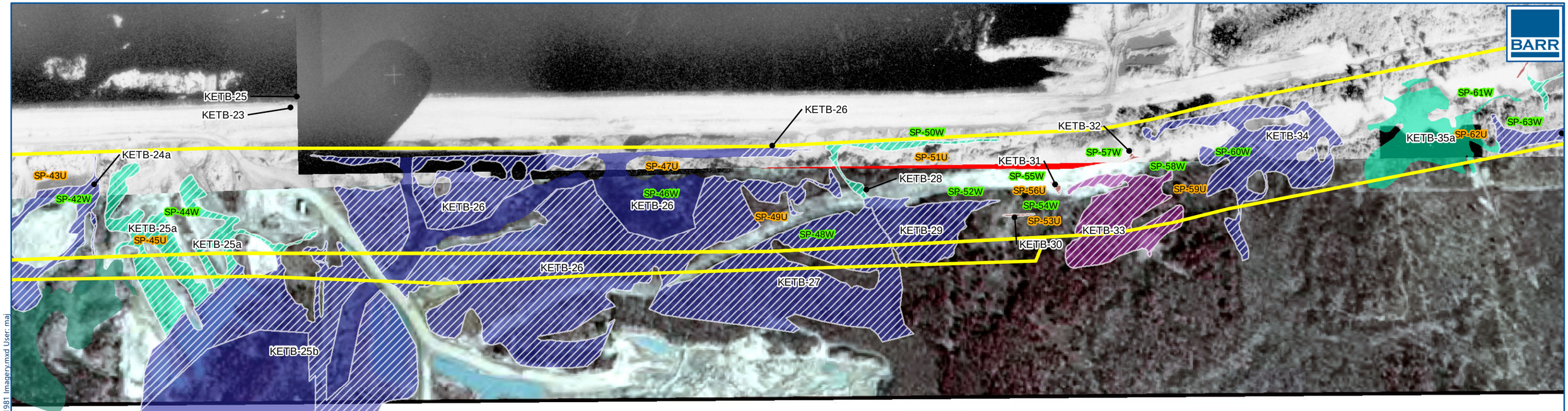
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Feet

1981 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D3-4

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Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

N

0 500

Feet

1981 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D3-5

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Green Bay, WI 54311
www.geiconsultants.com

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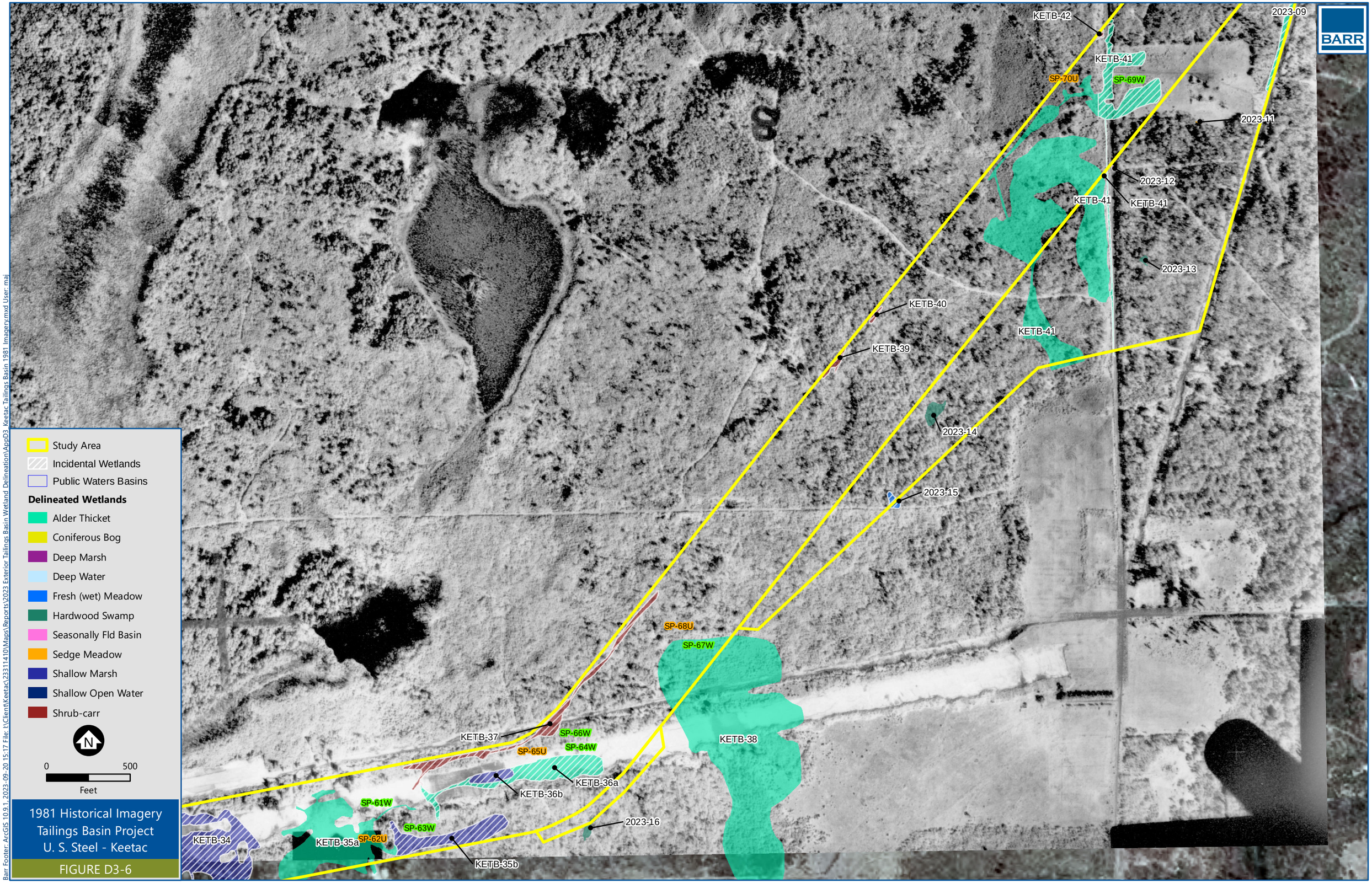
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KETB-48
SP-75W
SP-76U
KETB-47
SP-73W
SP-74U
KETB-46
Wetland 2b
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

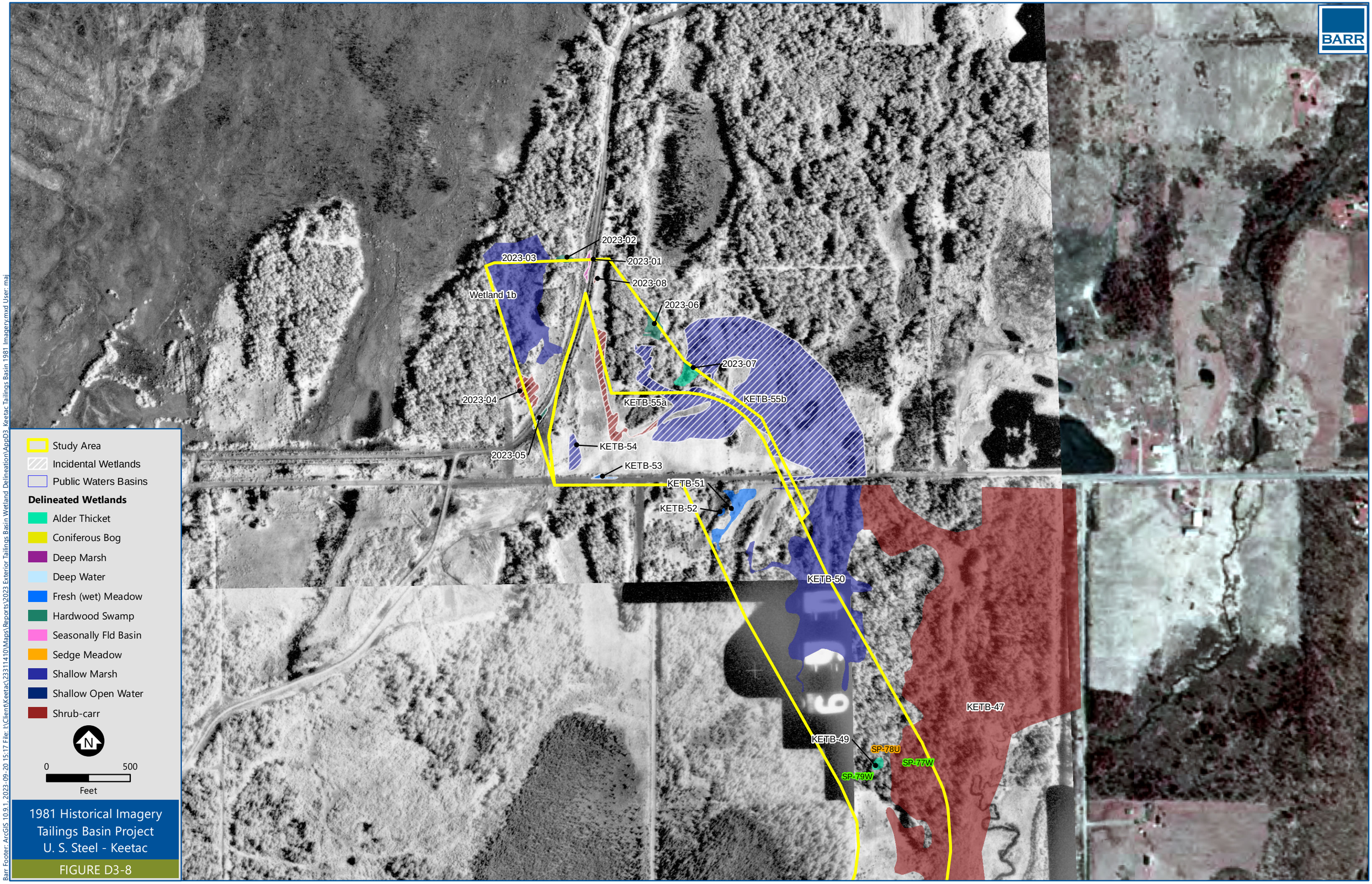
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1981 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D3-7

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Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

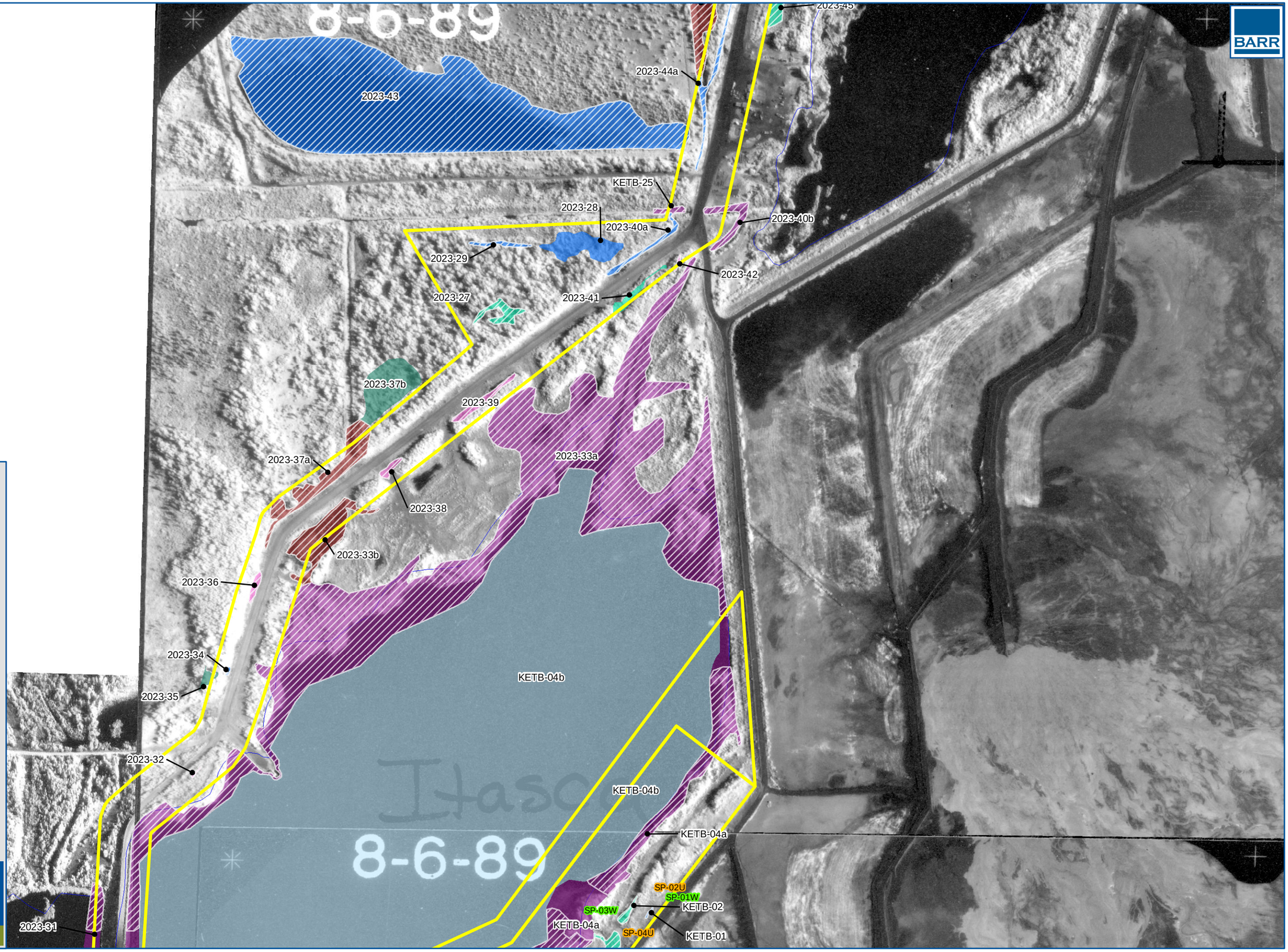
1989 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

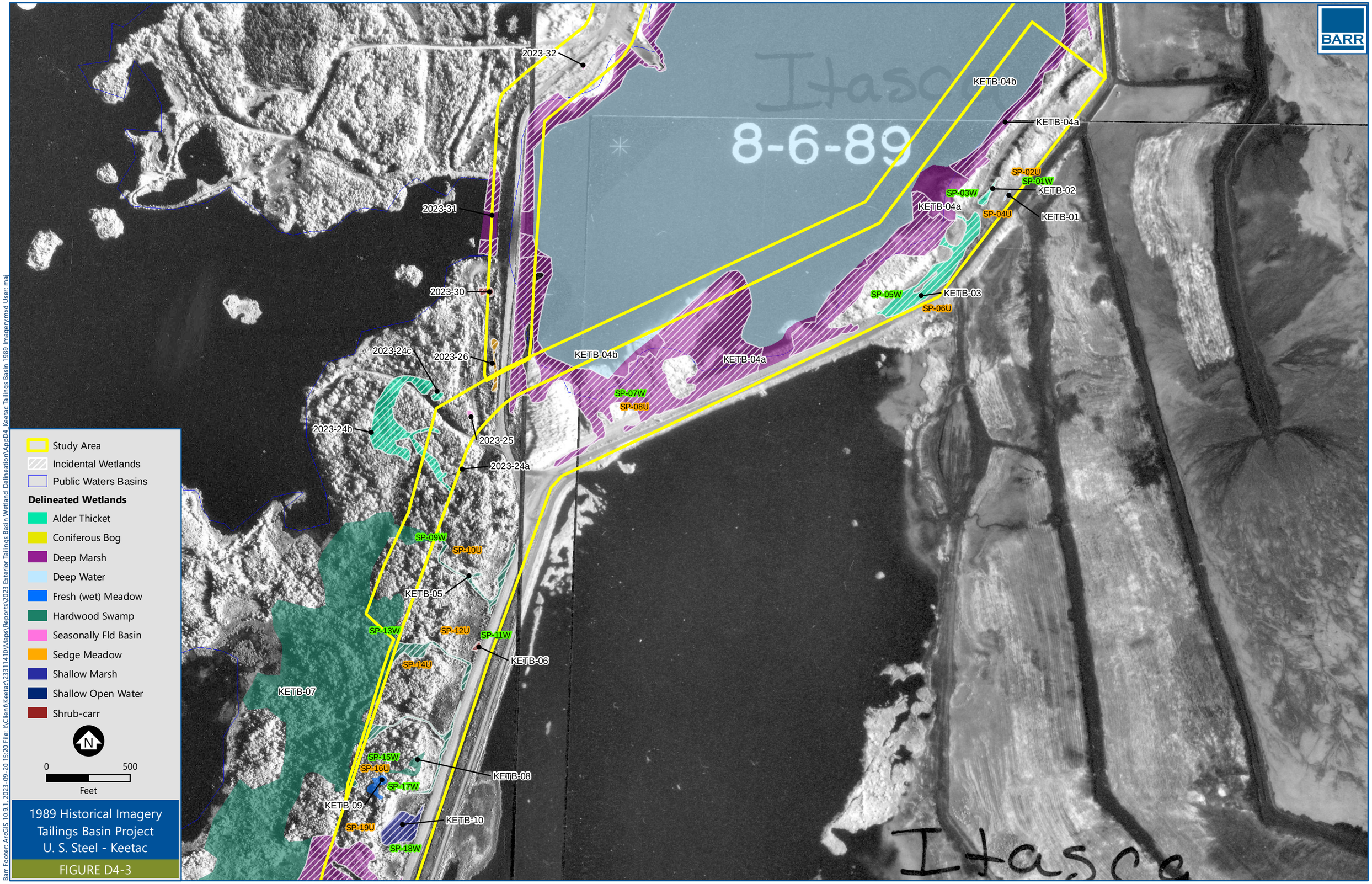
FIGURE D4-1

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2023-50b
2023-49b
2023-50a
2023-48
2023-49c
2023-44c
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2023-50c
2023-49d
2023-49e
2023-46
2023-47
2023-44b
2023-45
8-6-89
2023-44a
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2023-29
2023-42
2023-27
2023-41

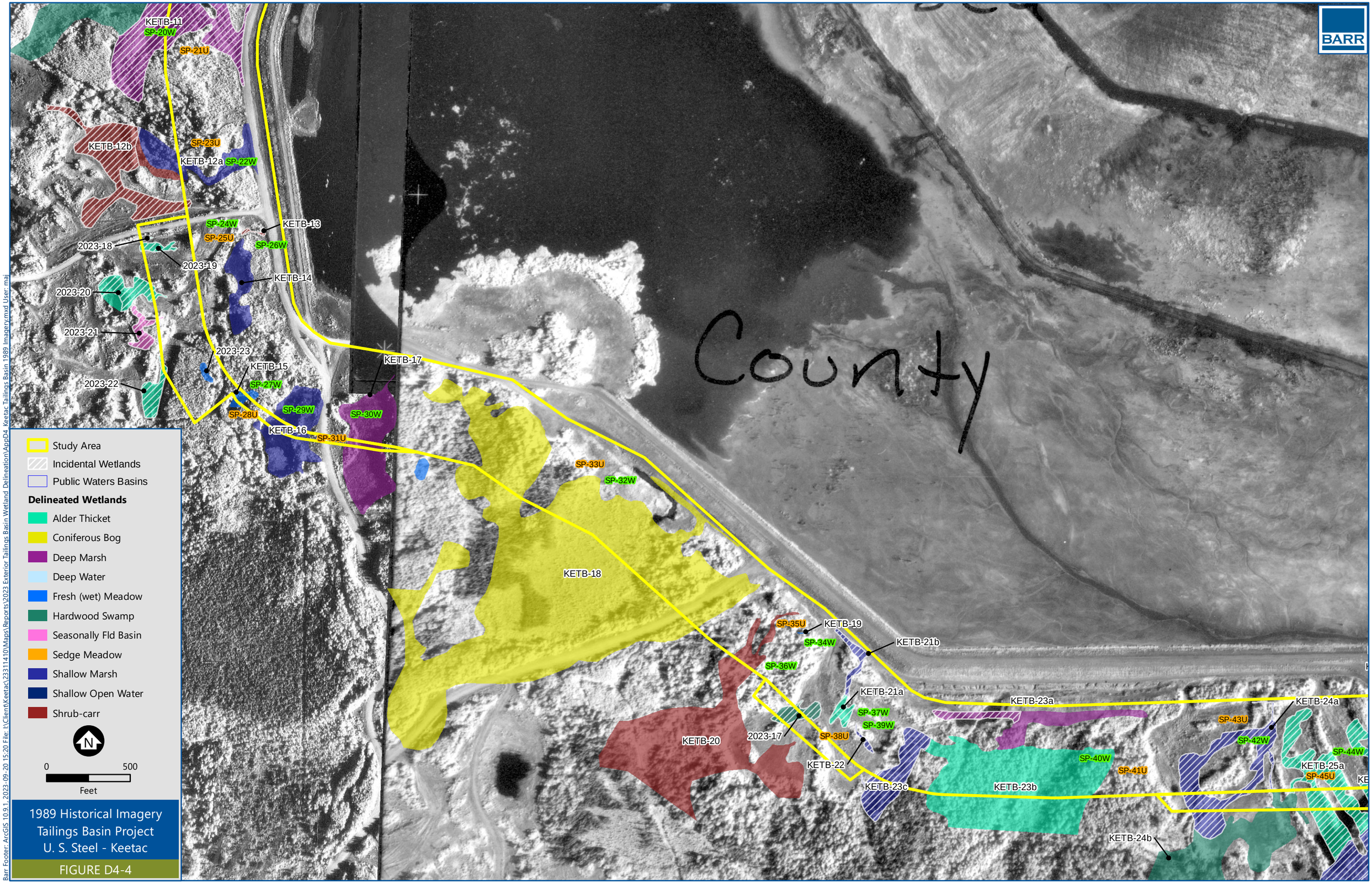
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8-6-89
2023-43
2023-44a
2023-45
KETB-25
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41
2023-37b
2023-39
2023-37a
2023-33a
2023-38
2023-33b
2023-36
2023-34
KETB-04b
2023-35
2023-32
KETB-04b
KETB-04a
SP-02U
SP-01W
KETB-02
SP-03W
KETB-04a
SP-04U
KETB-01
2023-31
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
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500
Feet
1989 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D4-2
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SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP-24W
SP-25U
SP-26W
KETB-13
2023-18
2023-19
KETB-14
2023-20
2023-21
2023-23
KETB-15
KETB-17
2023-22
SP-27W
SP-28U
SP-29W
SP-30W
KETB-16
SP-31U
SP-33U
SP-32W
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SP-35U
KETB-19
SP-34W
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KETB-21a
KETB-23a
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SP-37W
SP-39W
SP-43U
SP-42W
SP-44W
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2023-17
SP-38U
KETB-22
SP-40W
SP-41U
KETB-25a
SP-45U
KETB-23c
KETB-23b
KETB-24b
County
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
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500
Feet
1989 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D4-4
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Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:20 File: K:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD4_Keetac_Tailings_Basin_1989_Imagery.mxd User: maj

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SP-63W
SP-62U
SP-50W
SP-51U
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SP-42W
SP-47U
SP-46W
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KETB-31
SP-55W
SP-56U
SP-54W
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KETB-25a
SP-45U
KETB-25a
SP-49U
SP-48W
KETB-29
KETB-26
KETB-27
KETB-25b

- Study Area
- Incidental Wetlands
- Public Waters Basins

Delineated Wetlands

- Alder Thicket
- Coniferous Bog
- Deep Marsh
- Deep Water
- Fresh (wet) Meadow
- Hardwood Swamp
- Seasonally Fld Basin
- Sedge Meadow
- Shallow Marsh
- Shallow Open Water
- Shrub-carr

N

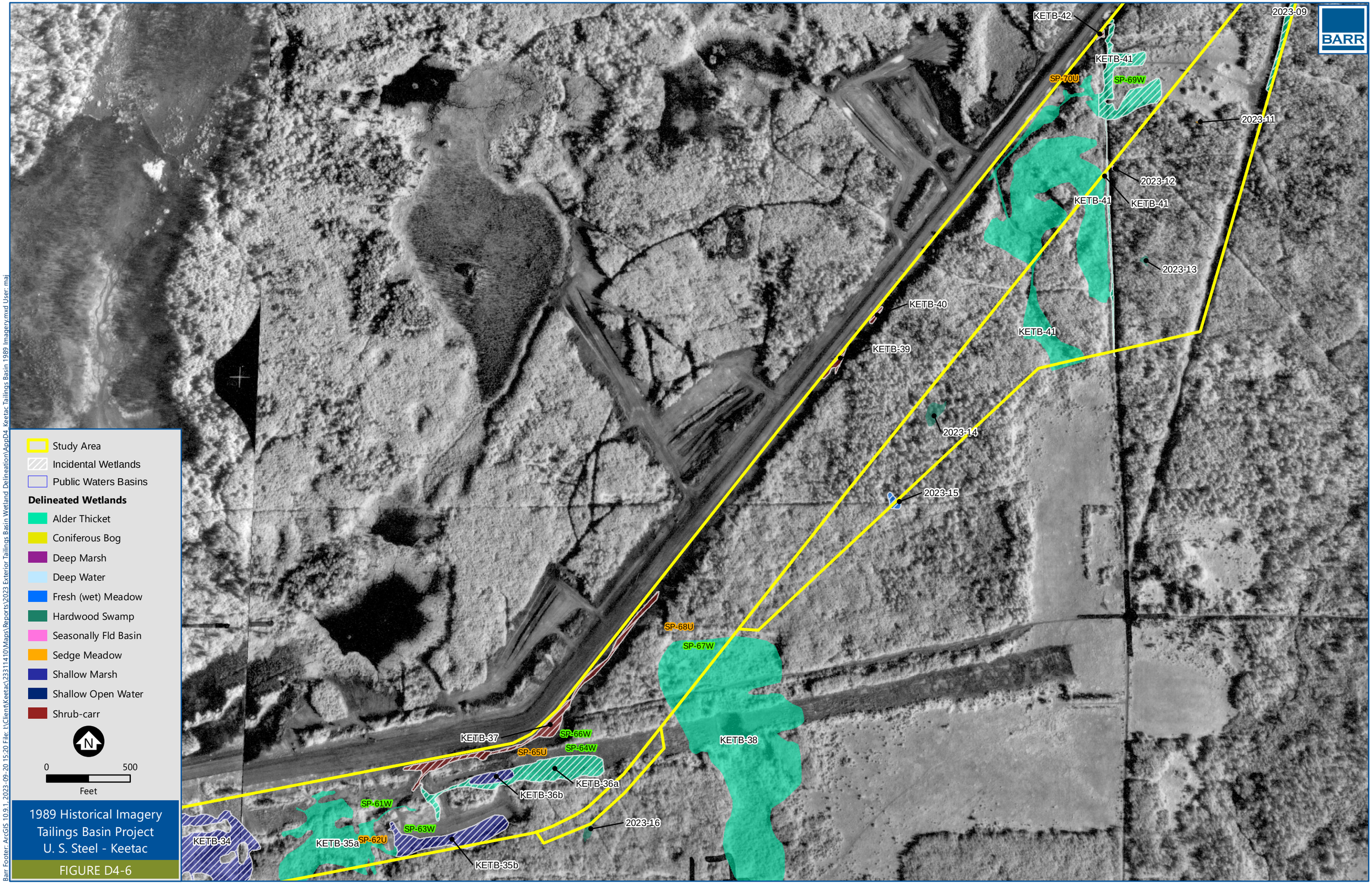
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1989 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D4-5

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Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:20 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD4_Keetac_Tailings Basin 1989 Imagery.mxd User: maj

KETB-48
SP-75W
SP-76U
KETB-47
SP-73W
SP-74U
KETB-46
Wetland 2b
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

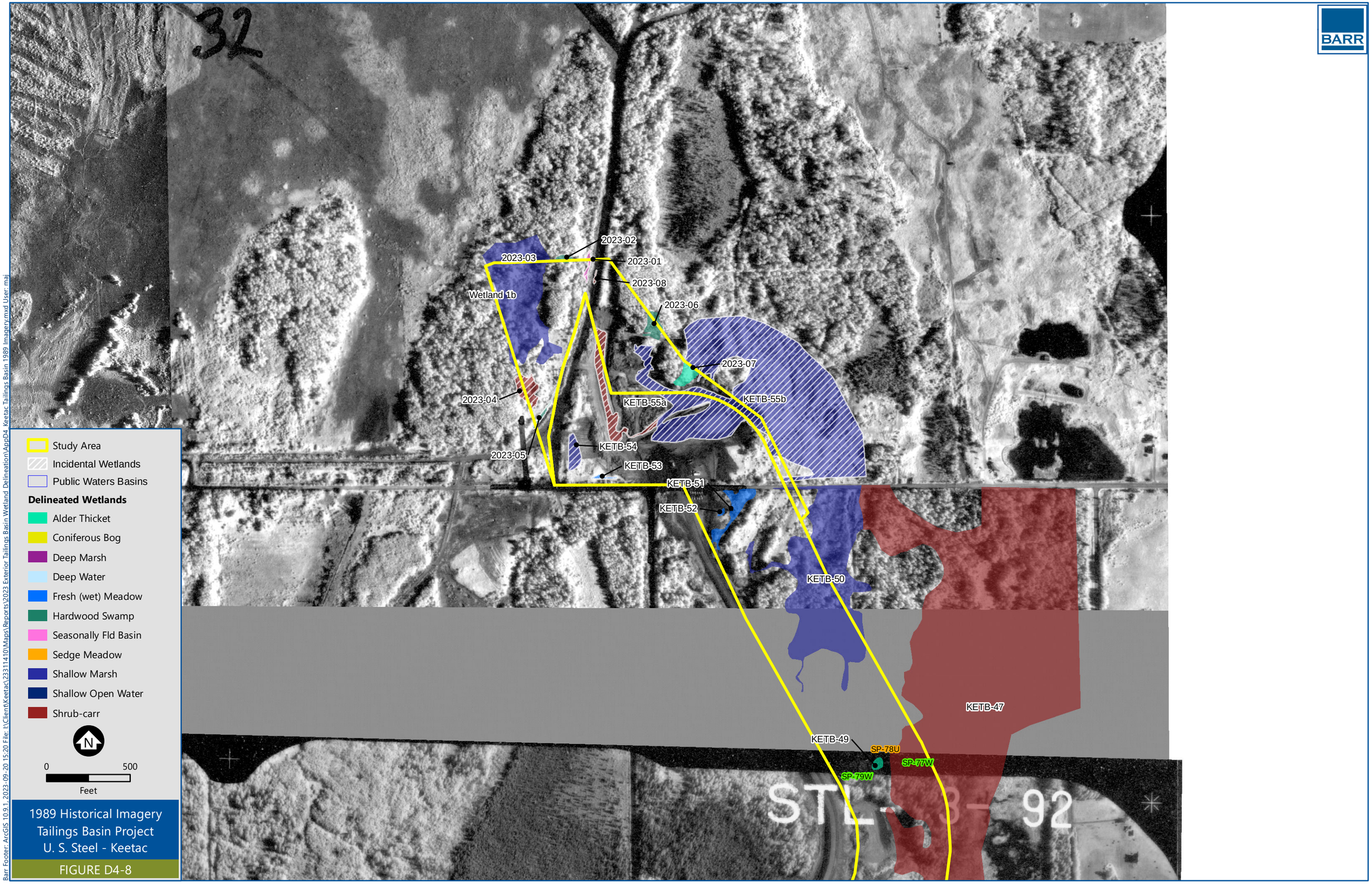
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1989 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D4-7

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Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:20 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD4_Keetac_Tailings Basin 1989 Imagery.mxd User: maj


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2023-03
2023-01
2023-08
Wetland 1b
2023-06
2023-07
2023-04
KETB-55a
KETB-55b
KETB-54
2023-05
KETB-53
KETB-51
KETB-52
KETB-50
KETB-47
KETB-49
SP-78U
SP-77W
SP-79W
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
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500
Feet
1989 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D4-8
Barr Footer: ArcGIS 10.9.1, 2023-09-20 15:20 File: L:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD4_Keetac_Tailings Basin 1989 Imagery.mxd User: maj

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2023-50b
2023-49b
2023-50a
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2023-49c
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2023-50d
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2023-49e
2023-46
2023-47
2023-44b
2023-45
2023-44a
2023-43
KETB-25
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

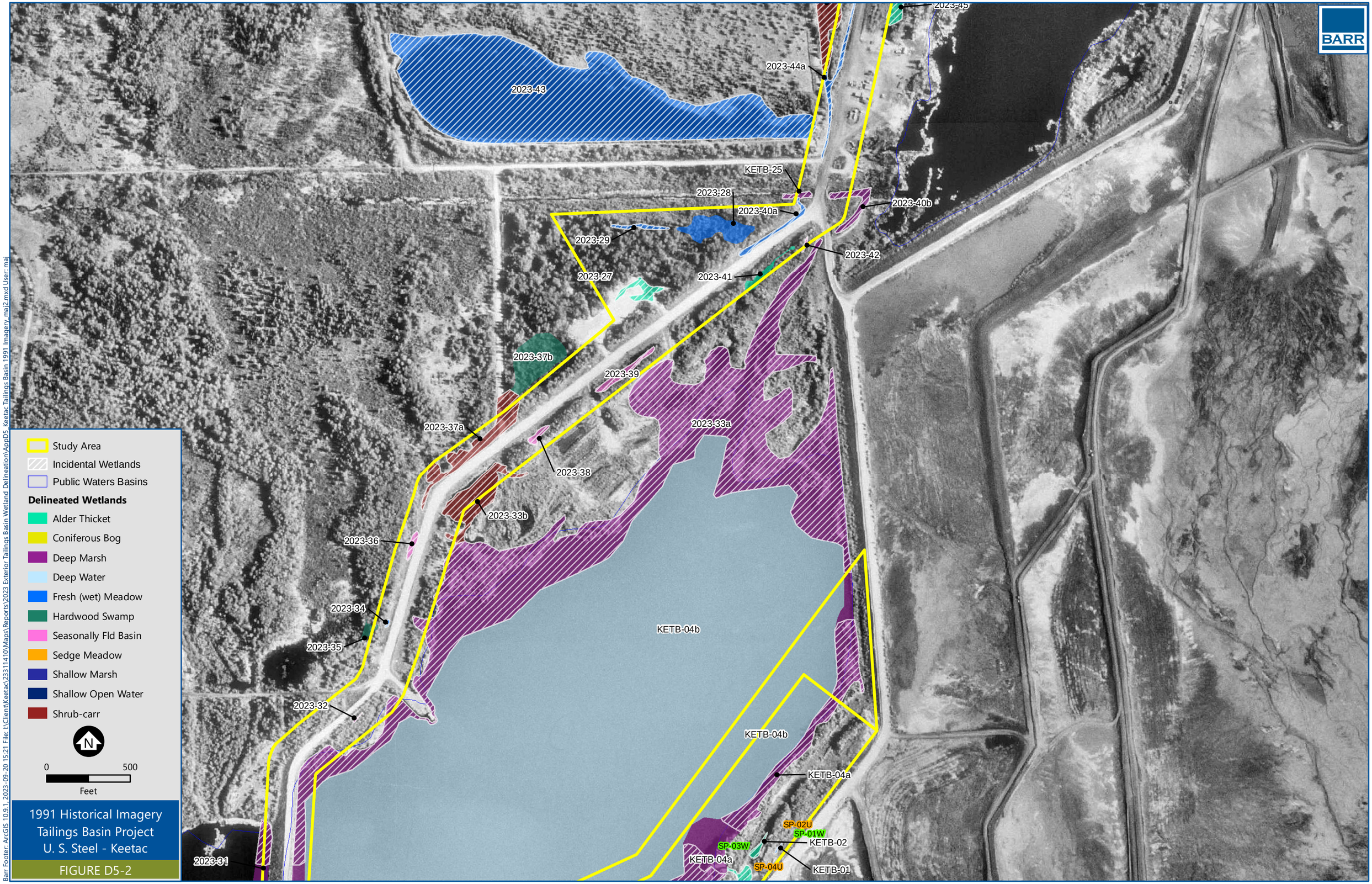
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Feet

1991 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D5-1

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KETB-04a
SP-02U
SP-01W
KETB-02
SP-03W
KETB-04a
SP-04U
KETB-01
SP-05W
KETB-03
SP-06U
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SP-08U
SP-09W
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SP-12U
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SP-14U
KETB-07
SP-15W
SP-16U
KETB-08
SP-17W
KETB-09
KETB-10
SP-19U
SP-18W

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

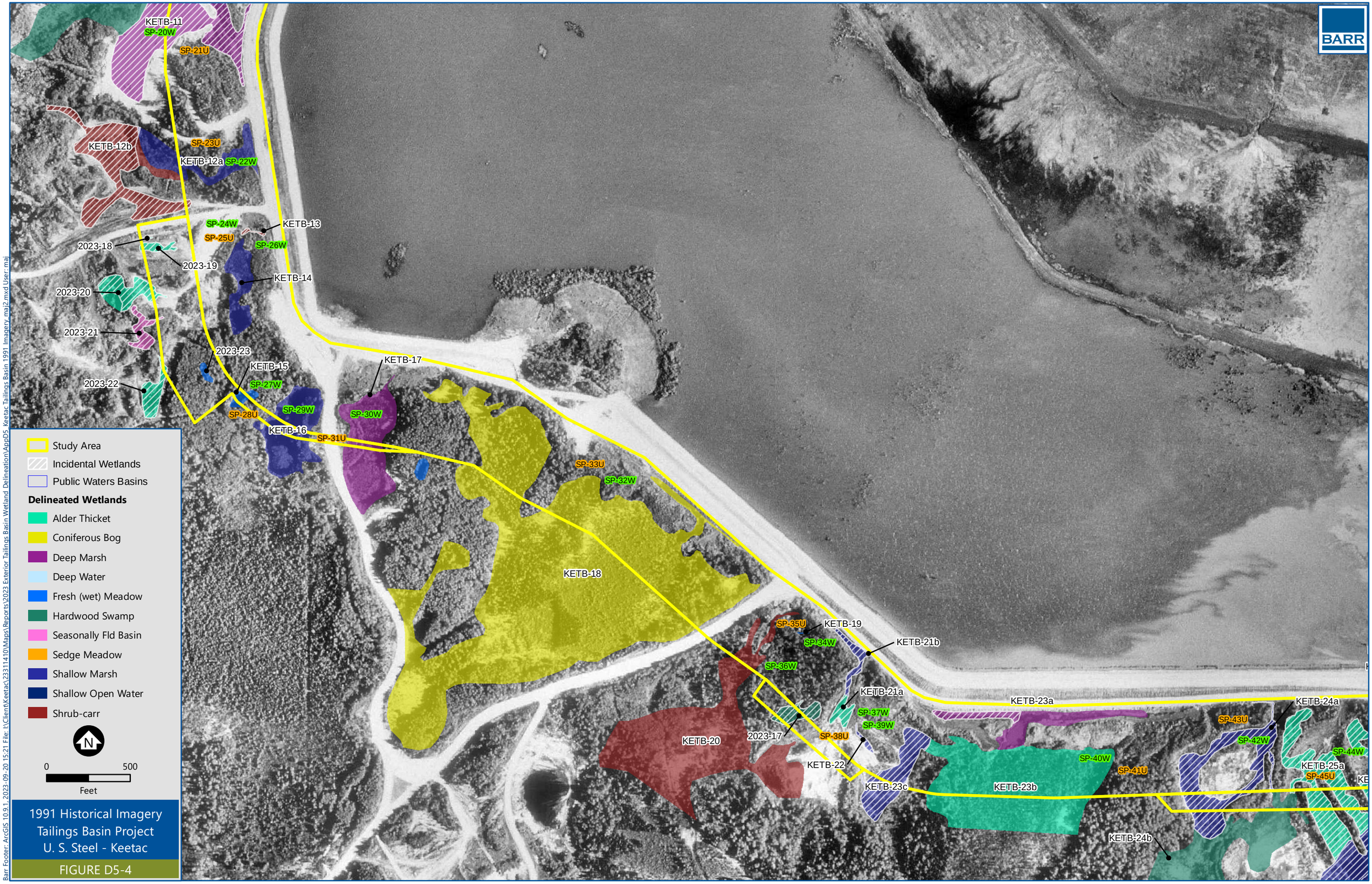
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1991 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D5-3

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KETB-25
KETB-23
KETB-24a
SP-43U
SP-42W
SP-44W
KETB-25a
SP-45U
KETB-25a
KETB-25b
KETB-26
SP-47U
SP-46W
KETB-26
KETB-26
SP-49U
SP-48W
KETB-27
KETB-26
SP-50W
SP-51U
KETB-28
SP-52W
KETB-29
KETB-31
SP-55W
SP-56U
SP-54W
SP-53U
KETB-30
KETB-32
SP-57W
SP-58W
KETB-33
SP-59U
SP-60W
KETB-34
SP-61W
SP-63W
KETB-35a
SP-62U

BARR

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

1991 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D5-5

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KETB-48
SP-75W
SP-76U
KETB-47
SP-73W
KETB-46
SP-74U
Wetland 2b
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

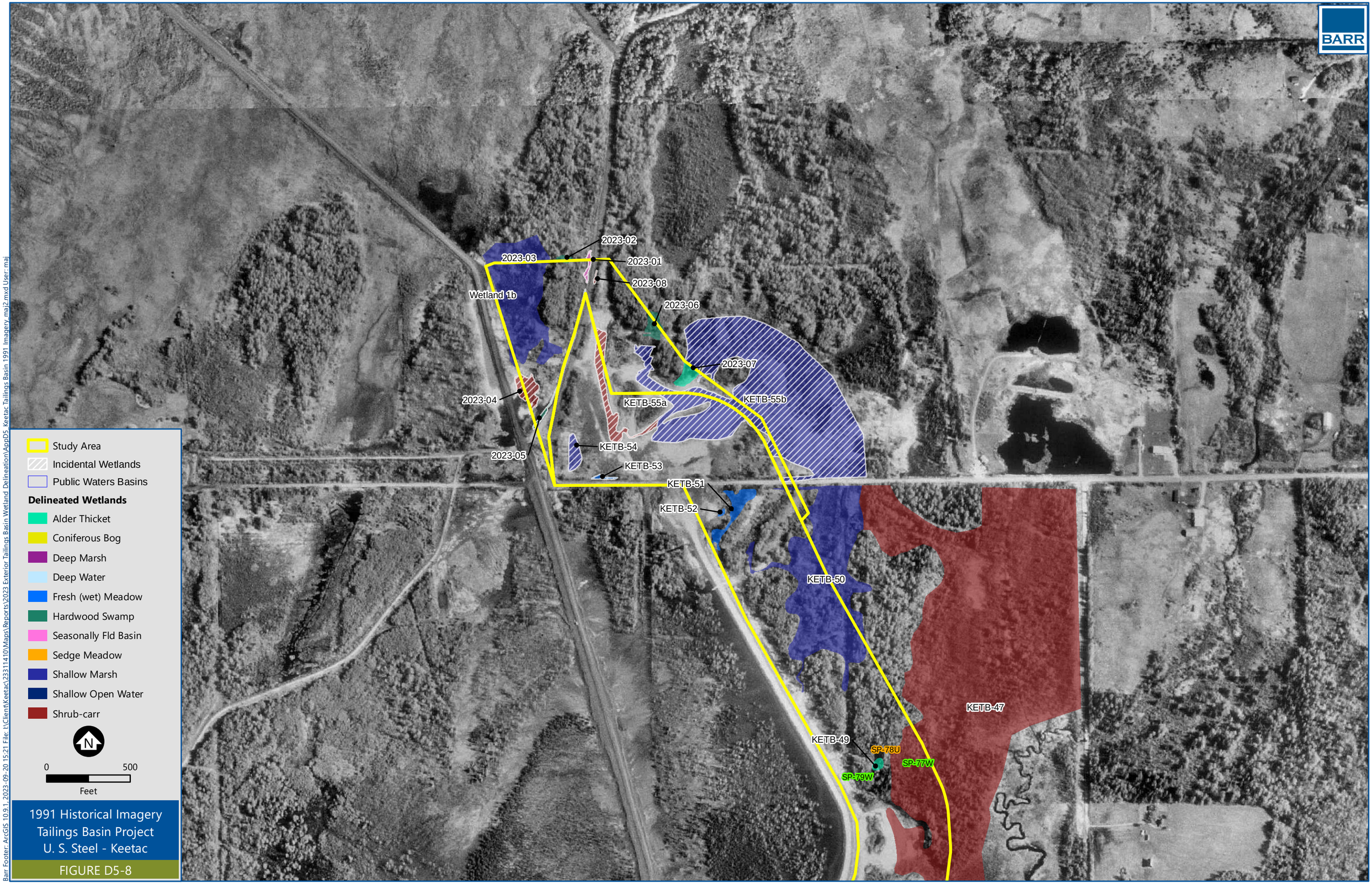
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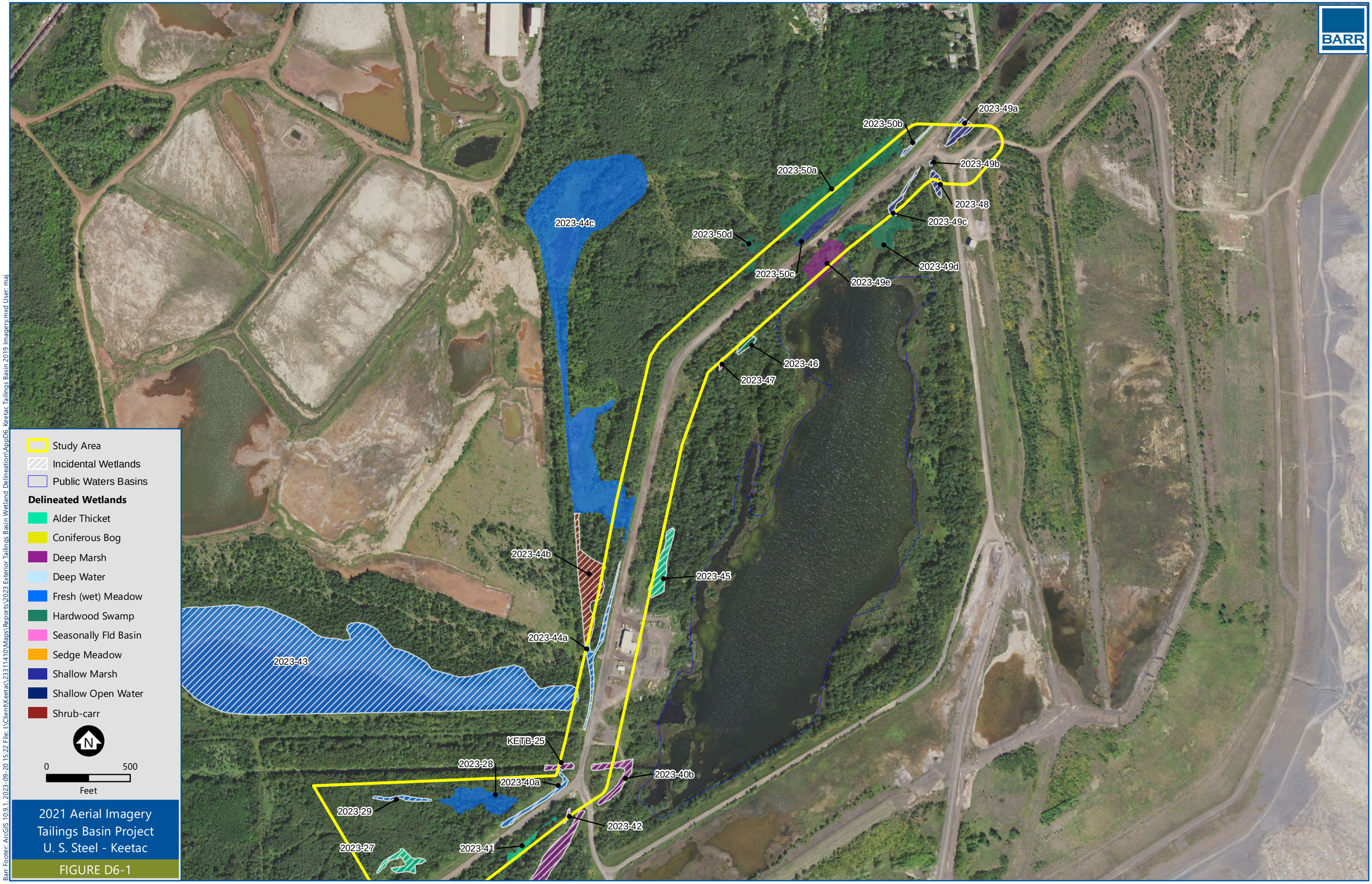
1991 Historical Imagery
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D5-7

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Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

1952 USGS Quadrangle
Tailings Basin Project
U. S. Steel - Keetac

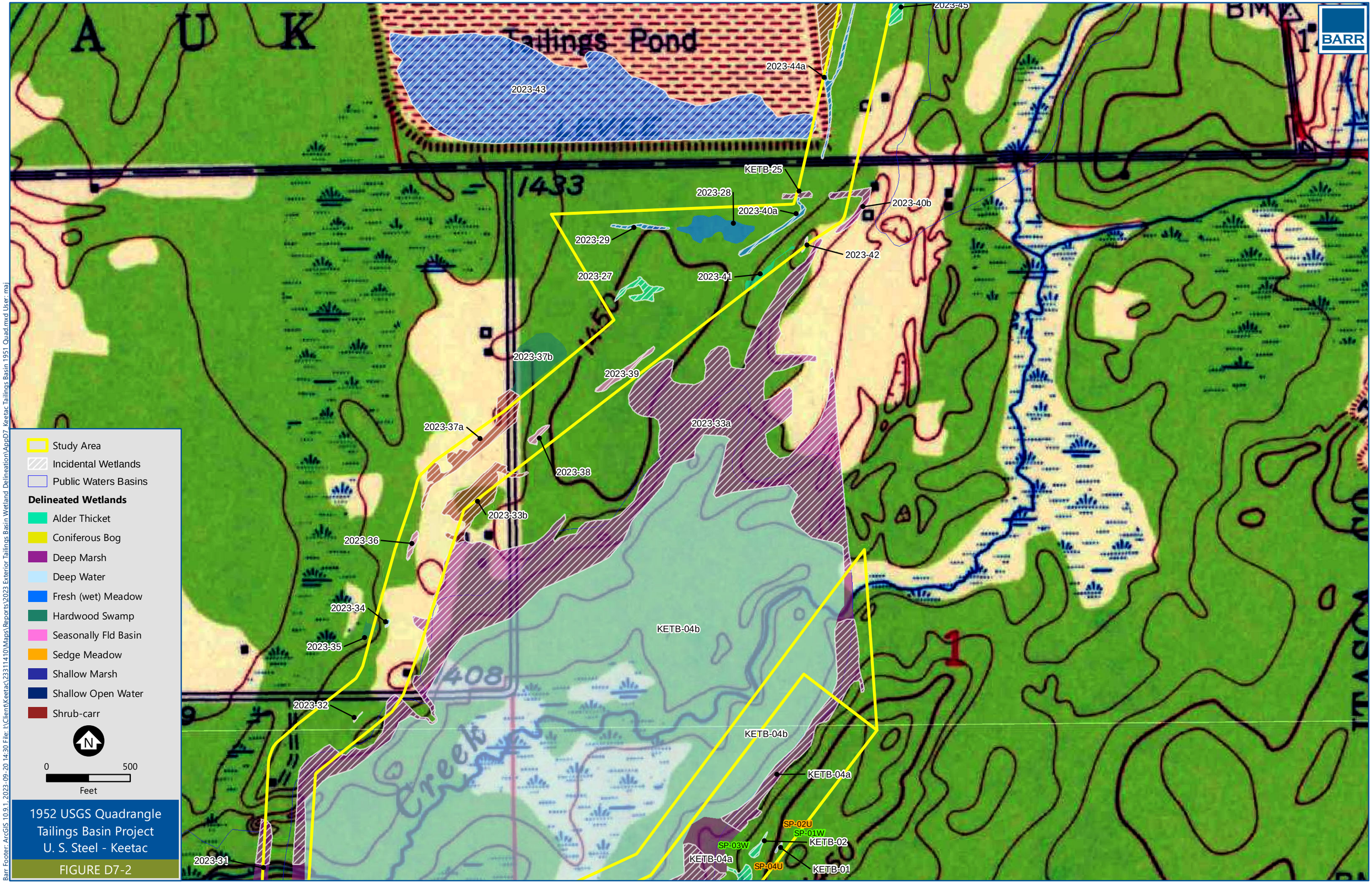
FIGURE D7-1

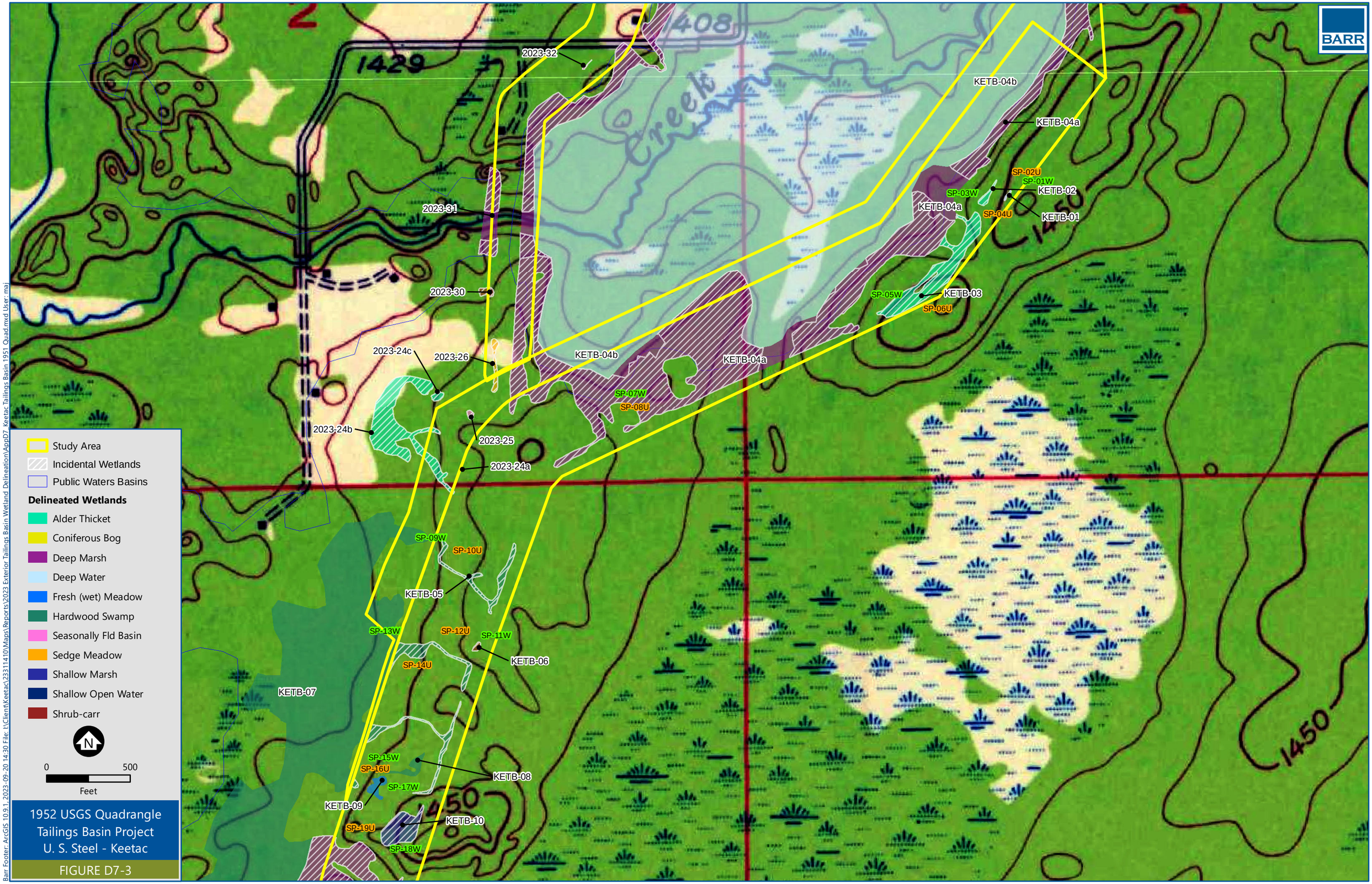
2023-49a
2023-50b
2023-49b
2023-50a
2023-48
2023-49c
2023-44c
2023-50d
2023-50c
2023-49d
2023-49e
2023-46
2023-47
2023-44b
2023-45
2023-44a
2023-43
KETB-25
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41

Tailings Pond
Tailings Pond
LEVEE
LEVEE
36
36
1450
1450
1455
1458
1433
1423
BM
CO
CO

BARR

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Tailings Pond
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2023-44a
2023-45
KETB-25
2023-28
2023-40a
2023-40b
2023-29
2023-42
2023-27
2023-41
2023-37b
2023-39
2023-37a
2023-33a
2023-38
2023-33b
2023-36
2023-34
2023-35
KETB-04b
2023-32
KETB-04b
KETB-04a
SP-02U
SP-01W
SP-03W
KETB-02
KETB-04a
SP-04U
KETB-01
2023-31
1433
1408
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
1952 USGS Quadrangle
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D7-2
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SP-20W
SP-21U
KETB-12b
SP-23U
KETB-12a
SP-22W
SP-24W
KETB-13
SP-25U
SP-26W
2023-18
2023-19
KETB-14
2023-20
2023-21
2023-23
KETB-15
KETB-17
2023-22
SP-27W
SP-28U
SP-29W
SP-30W
KETB-16
SP-31U
SP-33U
SP-32W
KETB-18
SP-35U
KETB-19
SP-34W
KETB-21b
SP-36W
KETB-21a
KETB-23a
KETB-24a
SP-37W
SP-39W
SP-43U
2023-17
SP-38U
SP-42W
KETB-20
SP-40W
SP-44W
KETB-22
KETB-25a
SP-41U
SP-45U
KETB-23c
KETB-23b
KETB-24b
1450
1428
1420
12

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

N

0 500
Feet

1952 USGS Quadrangle
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D7-4

Barr Footer: ArcGIS 10.9.1, 2023-09-20 14:30 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD7_Keetac_Tailings Basin 1951 Quad.mxd User: maj

KETB-25
KETB-23
KETB-26
KETB-24a
SP-43U
SP-42W
SP-44W
KETB-25a
SP-45U
KETB-25a
KETB-26
SP-47U
SP-46W
KETB-26
SP-49U
SP-48W
KETB-26
KETB-27
KETB-29
SP-50W
SP-51U
KETB-28
SP-52W
KETB-31
SP-55W
SP-56U
SP-54W
SP-53U
KETB-30
KETB-32
SP-57W
KETB-33
SP-58W
SP-59U
SP-60W
KETB-34
SP-61W
KETB-35a
SP-62U
SP-63W
KETB-25b
18
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1437
S
4

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

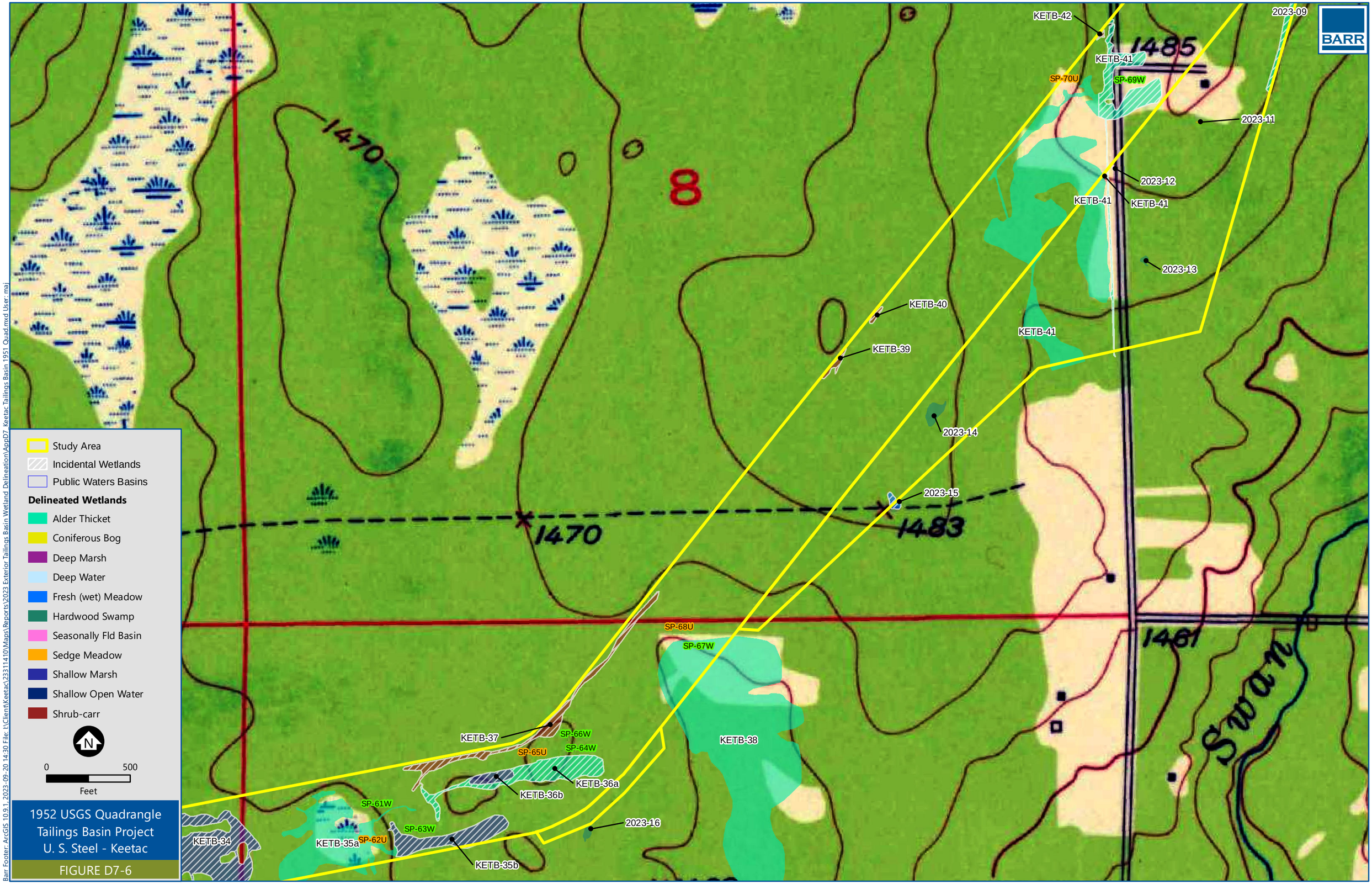
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1952 USGS Quadrangle
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D7-5

Barr Footer: ArcGIS 10.9.1, 2023-09-20 14:30 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD7_Keetac Tailings Basin 1951 Quad.mxd User: maj



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KETB-48
SP-75W
SP-76U
KETB-47
KETB-46
SP-73W
SP-74U
Wetland 2b
KETB-45
KETB-44
2023-10
SP-72U
SP-71W
KETB-43

Study Area
Incidental Wetlands
Public Waters Basins

Delineated Wetlands

Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr

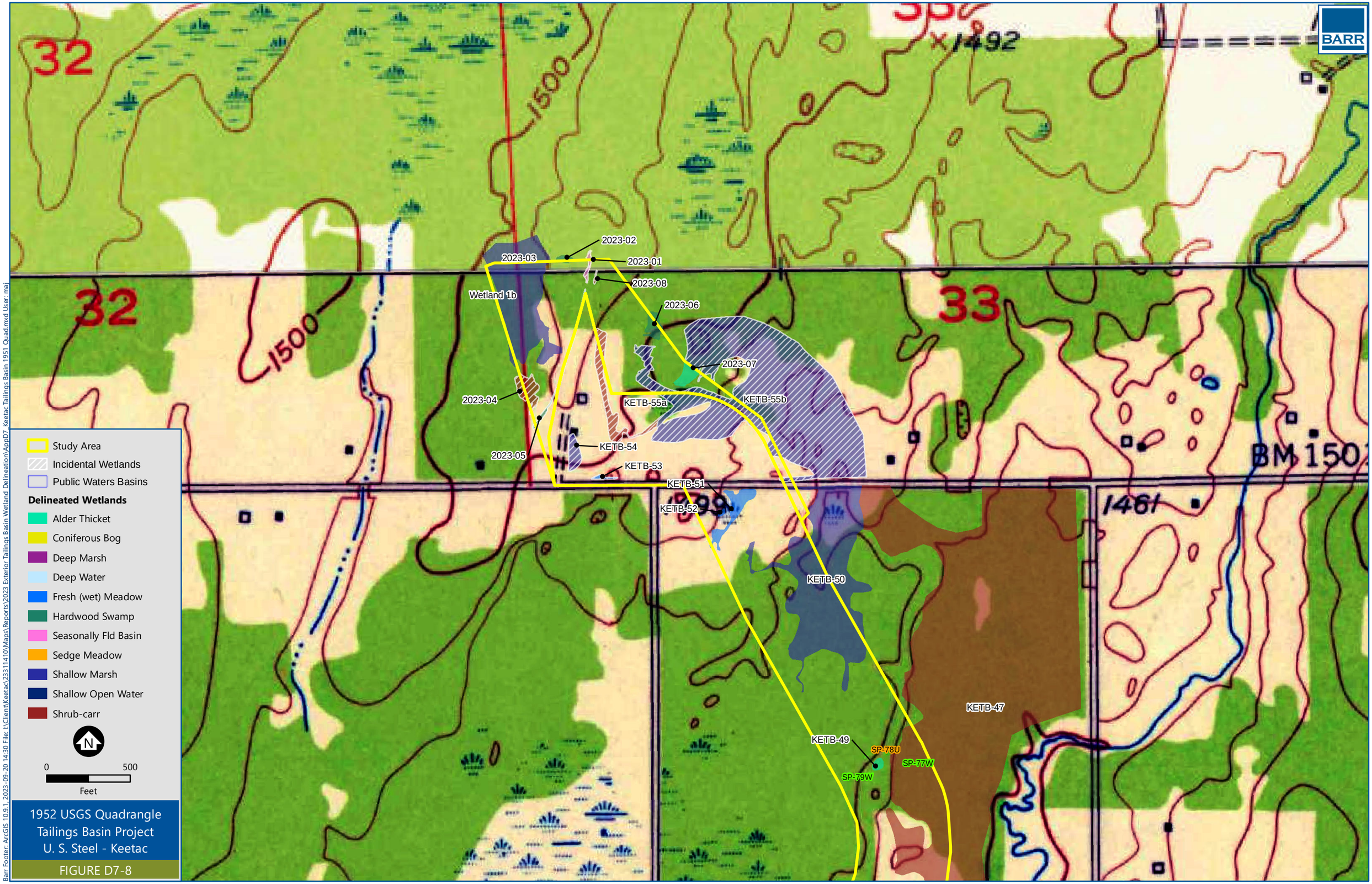
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1952 USGS Quadrangle
Tailings Basin Project
U. S. Steel - Keetac

FIGURE D7-7

Barr Footer: ArcGIS 10.9.1, 2023-09-20 14:30 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD7_Keetac Tailings Basin 1951 Quad.mxd User: maj


32
32
33
1500
1500
1492
1461
BM 150
2023-01
2023-02
2023-03
2023-04
2023-05
2023-06
2023-07
2023-08
Wetland 1b
KETB-55a
KETB-55b
KETB-54
KETB-53
KETB-51
KETB-52
KETB-50
KETB-47
KETB-49
SP-78U
SP-77W
SP-79W
Study Area
Incidental Wetlands
Public Waters Basins
Delineated Wetlands
Alder Thicket
Coniferous Bog
Deep Marsh
Deep Water
Fresh (wet) Meadow
Hardwood Swamp
Seasonally Fld Basin
Sedge Meadow
Shallow Marsh
Shallow Open Water
Shrub-carr
N
0
500
Feet
1952 USGS Quadrangle
Tailings Basin Project
U. S. Steel - Keetac
FIGURE D7-8
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Barr Footer: ArcGIS 10.9.1, 2023-09-20 14:30 File: I:\Client\Keetac\23311410\Maps\Reports\2023 Exterior Tailings Basin Wetland Delineation\AppD7_Keetac_Tailings Basin 1951 Quad.mxd User: maj

Appendix E

Minnesota Joint Application Form

Joint Application Form for Activities Affecting Water Resources in Minnesota

This joint application form is the accepted means for initiating review of proposals that may affect a water resource (wetland, tributary, lake, etc.) in the State of Minnesota under state and federal regulatory programs. Applicants for Minnesota Department of Natural Resources (DNR) Public Waters permits **MUST** use the MPARS online permitting system for submitting applications to the DNR. Applicants can use the information entered into MPARS to substitute for completing parts of this joint application form (see the paragraph on MPARS at the end of the joint application form instructions for additional information). This form is only applicable to the water resource aspects of proposed projects under state and federal regulatory programs; other local applications and approvals may be required. Depending on the nature of the project and the location and type of water resources impacted, multiple authorizations may be required as different regulatory programs have different types of jurisdiction over different types of resources.

Regulatory Review Structure

Federal

The St. Paul District of the U.S. Army Corps of Engineers (Corps) is the federal agency that regulates discharges of dredged or fill material into waters of the United States (wetlands, tributaries, lakes, etc.) under Section 404 of the Clean Water Act (CWA) and regulates work in navigable waters under Section 10 of the Rivers and Harbors Act. Applications are assigned to Corps project managers who are responsible for implementing the Corps regulatory program within a particular geographic area.

State

There are three state regulatory programs that regulate activities affecting water resources. The Wetland Conservation Act (WCA) regulates most activities affecting wetlands. It is administered by local government units (LGUs) which can be counties, townships, cities, watershed districts, watershed management organizations or state agencies (on state-owned land). The Minnesota DNR Division of Ecological and Water Resources issues permits for work in specially-designated public waters via the Public Waters Work Permit Program (DNR Public Waters Permits). The Minnesota Pollution Control Agency (MPCA) under Section 401 of the Clean Water Act certifies that discharges of dredged or fill material authorized by a federal permit or license comply with state water quality standards. One or more of these regulatory programs may be applicable to any one project.

Required Information

Prior to submitting an application, applicants are **strongly encouraged** to seek input from the Corps Project Manager and LGU staff to identify regulatory issues and required application materials for their proposed project. Project proponents can request a pre-application consultation with the Corps and LGU to discuss their proposed project by providing the information required in Sections **1** through 5 of this joint application form to facilitate a meaningful discussion about their project. Many LGUs provide a venue (such as regularly scheduled technical evaluation panel meetings) for potential applicants to discuss their projects with multiple agencies prior to submitting an application. Contact information is provided below.

The following bullets outline the information generally required for several common types of determinations/authorizations.

- For delineation approvals and/or jurisdictional determinations, submit Parts 1, 2 and 5, and Attachment A.
- For activities involving CWA/WCA exemptions, WCA no-loss determinations, and activities not requiring mitigation, submit Parts 1 through 5, and Attachment B.
- For activities requiring compensatory mitigation/replacement plan, submit Parts 1 thru 5, and Attachments C and D.
- For local road authority activities that qualify for the state's local road wetland replacement program, submit Parts 1 through 5, and Attachments C, D (if applicable), and E to both the Corps and the LGU.

Submission Instructions

Send the completed joint application form and all required attachments to:

U.S Army Corps of Engineers. Applications may be sent directly to the appropriate Corps Office. For a current listing of areas of responsibilities and contact information, visit the St. Paul District's website at: http://www.mvp.usace.army.mil/Missions/Regulatory.aspx and select "Minnesota" from the contact Information box. Alternatively, applications may be sent directly to the St. Paul District Headquarters and the Corps will forward them to the appropriate field office.

Section 401 Water Quality Certification: Applicants do not need to submit the joint application form to the MPCA unless specifically requested. The MPCA will request a copy of the completed joint application form directly from an applicant when they determine an individual 401 water quality certification is required for a proposed project.

Wetland Conservation Act Local Government Unit: Send to the appropriate Local Government Unit. If necessary, contact your county Soil and Water Conservation District (SWCD) office or visit the Board of Water and Soil Resources (BWSR) web site (www.bwsr.state.mn.us) to determine the appropriate LGU.

DNR Public Waters Permitting: In 2014 the DNR will begin using the Minnesota DNR Permitting and Reporting System (MPARS) for submission of Public Waters permit applications (https://webapps11.dnr.state.mn.us/mpars/public/authentication/login). Applicants for Public Waters permits **MUST** use the MPARS online permitting system for submitting applications to the DNR. To avoid duplication and to streamline the application process among the various resource agencies, applicants can use the information entered into MPARS to substitute for completing parts of this joint application form. The MPARS print/save function will provide the applicant with a copy of the Public Waters permit application which, at a minimum, will satisfy Parts one and two of this joint application. For certain types of activities, the MPARS application may also provide all of the necessary information required under Parts three and four of the joint application. However, it is the responsibility of the Applicant to make sure that the joint application contains all of the required information, including identification of all aquatic resources impacted by the project (see Part four of the joint application). After confirming that the MPARS application contains all of the required information in Parts one and two the Applicant may attach a copy to the joint application and fill in any missing information in the remainder of the joint application.

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: U. S. Steel – Keetac c/o Lukas Klemke
Mailing Address: PO Box 217, Keewatin, MN 55753
Phone: (218) 749-7363
E-mail Address: LLKlemke@uss.com

Authorized Contact (do not complete if same as above): Bethany Jones
Mailing Address: PO Box 217, Keewatin, MN 55753
Phone: (218) 778-8672
E-mail Address: BYJones@uss.com

Agent Name:
Mailing Address:
Phone:
E-mail Address:

PART TWO: Site Location Information

County: Itasca/ St. Louis **City/Township:** Keewatin, MN
Parcel ID and/or Address: Various
Legal Description (Section, Township, Range): Portions of Sections 1, 2, 11, 12, 13, and 14, Township 56 North, Range 22 West; Portions of Sections 4, 8, 9, 17, and 18, Township 56 North, Range 21 West; Portions of Section 36, Township 57 North, Range 22 West; and Portions of Sections 31, 33, Township 57 North, Range 21 West.
Lat/Long (decimal degrees): 47.33692 North, 93.05036 West; 47.3670 North, 93.0870 West; and 47.3590 North, 93.0170 West.
Attach a map showing the location of the site in relation to local streets, roads, highways. (see Figure 1)
Approximate size of site (acres) or if a linear project, length (feet): 2021 Study Area - 500 acres; 2023 Study Area – 230 acres.

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART FIVE: Applicant Signature

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: _____ Date: 9/20/23

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

Attachment A
Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

☒ **Wetland Type Confirmation**

☒ **Delineation Concurrence**. Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

☐ **Preliminary Jurisdictional Determination**. A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

☒ **Approved Jurisdictional Determination**. An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).
http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx