APPENDIX A. INTERGOVERNMENTAL COORDINATION, PUBLIC AND AGENCY PARTICIPATION

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Mailing List

Floyd Azure, Chairperson Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Montana PO Box 1027 Poplar, MT 59255

Reggie Wassana, Governor Cheyenne and Arapaho Tribes 700 Black Kettle Blvd Concho, OK 73022

Harold Frazier, Chairperson Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota PO Box 590 Eagle Butte, SD 57625

Harlan Baker, Chairperson Chippewa Cree Indians of the Rocky Boy's Reservation, Montana 96 Clinic Road North Box Elder, MT 59521

Peter Lengkeek, Chairperson Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota PO Box 50 Fort Thompson, SD 57339-0050

Frank White Clay, Chairperson Crow Nation PO Box 159 Crow Agency, MT 59022-0159

Anthony Reider, President Flandreau Santee Sioux Tribe of South Dakota PO Box 283 Flandreau, SD 57028

Jeffrey "Jeff" Stiffarm, President Fort Belknap Indian Community of the Fort Belknap Reservation of Montana 656 Agency Main St Harlem, MT 59526

Clyde Estes, Chairperson Lower Brule Sioux Tribe of the Lower Brule Reservation, South Dakota 187 Oyate Circle Lower Brule, SD 57548 Robert Larsen, President Lower Sioux Indian Community Council 39527 Highway 1 Morton, MN 56270

Cathy Chavers, Chairperson Bois Forte Band of Chippewa Indians 5344 Lakeshore Drive PO Box 16 Nett Lake, MN 55772

Serena Wetherelt, President Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana PO Box 128 Lame Deer, MT 59043

Kevin Killer, President Oglala Sioux Tribe PO Box 2070 107 West Main Street Pine Ridge, SD 57770

Darrell Seki, Chairperson Red Lake Band of Chippewa Indians, Minnesota 15484 Migizi Drive Red Lake, MN 56671

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Roger Trudell, President Santee Sioux Nation, Nebraska 425 Frazier Ave N. Suite 2 Niobrara, NE 68760

Keith B. Anderson, Chairperson Shakopee Mdewakanton Sioux Community of Minnesota 2330 Sioux Trail NW Prior Lake, MN 55372

Delbert Hopkins, Jr., Chairperson Sisseton-Wahpeton Oyate of the Lake Traversed Reservation, South Dakota PO Box 509 12254 BIA HWY 711 Agency Village, SD 57262-0509 Douglas Yankton, Sr., Chairperson Spirit Lake Tribe, North Dakota PO Box 359 Fort Totten, ND 58335-0359

Janet Alkire, Chairperson Standing Rock Sioux Tribe PO Box D Fort Yates, ND 58538-0522

Mark Fox, Chairperson Three Affiliated Tribes of the Fort Berthold Reservation, North Dakota 404 Frontage Road New Town, ND 58763-9402

Jamie Azure, Chairperson Turtle Mountain Band of Chippewa Indians of North Dakota PO Box 900 4180 Highway 281 Belcourt, ND 58316

Kevin Jensvold, Chairperson Upper Sioux Indian Community 5722 Travers Lane Granite Falls, MN 56241

Robert Flying Hawk, Chairperson Yankton Sioux Tribe of South Dakota PO Box 1153 Wagner, SD 57380

Kevin Dupuis, Chairperson Fond du Lac Band of Lake Superior Chippewa 1720 Big Lake Road Cloquet, MN 55720

Robert Deschamp, Chairperson Grand Portage Band of Lake Superior Chippewa PO Box 428 Grand Portage, MN 55605

Faron Jackson, Chairperson Leech Lake Band of Chippewa Indians 190 Sailstar Drive NW Cass Lake, MN 56633

Melanie Benjamin, Chief Executive Mille Lacs Band of Ojibwe 43408 Oodena Dr Onamia, MN 56359 Michael Fairbanks, Chairperson White Earth Ojibwe 35500 Eagle View Rd Ogema, MN 56569

Dyan Youpee, THPO Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Montana PO Box 1027 Poplar, MT 59255

Max Bear, THPO Cheyenne and Arapaho Tribes 700 Black Kettle Blvd Concho, OK 73022

Steve Vance, THPO Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota CRST Preservation Office PO Box 590 Eagle Butte, SD 57625

Jonathan Windy Boy, THPO Chippewa Cree Indians of the Rocky Boy's Reservation, Montana 9740 Upper Box Elder Road PO Box 230 Box Elder, MT 59521

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Aaron Brien, THPO Crow Tribe of Montana PO Box 159 Crow Agency, MT 59022

Garrie Kills a Hundred, THPO Flandreau Santee Sioux Tribe of South Dakota PO Box 283 Flandreau, SD 57028

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Cheyanne St. John, THPO Lower Sioux Indian Community Council 39527 Reservation Highway #1 Morton, MN 56270

Jaylen Strong, THPO Bois Forte Band of Chippewa Indians 1500 Bois Forte Rd Tower, MN 55790

Teanna Limpy, THPO Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana PO Box 128 Lame Deer, MT 59043

Thomas Brings, THPO Oglala Sioux Tribe PO Box 2070 107 W. Main Street Pine Ridge, SD 57770

Kade Ferris, THPO Red Lake Band of Chippewa Indians, Minnesota 15484 Migizi Drive Red Lake, MN 56671

Ione Quigley, THPO Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota PO Box 809 Rosebud, SD 57570

Misty Frasier, THPO Santee Sioux Nation, Nebraska 425 Frazier Ave N. #2 Niobara, NE 68760

Leonard Wabasha, THPO Shakopee Mdewakanton Sioux Community of Minnesota 2330 Sioux Trail NW Prior Lake, MN 55372 Dianne Desrosiers, THPO Sisseton-Wahpeton Oyate of the Lake Traversed Reservation, South Dakota PO Box 907 205 Oak St E, Suite 121 Sisseton, SD 57262

Kenneth Graywater Jr., THPO Spirit Lake Tribe, North Dakota PO Box 189 Fort Totten, ND 58335

Jon Eagle, THPO Standing Rock Sioux Tribe of North and South Dakota PO Box D Fort Yates, ND 58538

Allen Demeray, THPO Three Affiliated Tribes of the Fort Berthold Reservation, North Dakota MHA Complex 1 Minne-Tohe Drive New Town, ND 58763

Jeffrey Desjarlais, THPO Turtle Mountain Band of Chippewa Indians of North Dakota PO Box 900 4180 Highway 281 Belcourt, ND 58316

Samantha Odegard, THPO Upper Sioux Indian Community PO Box 147 Granite Falls, MN 56241

Galena Drapeau, THPO Yankton Sioux Tribe of South Dakota Box 1153 Wagner, SD 57380

Evan Schroeder, THPO Fond du Lac Band of Lake Superior Chippewa 1720 Big Lake Rd Cloquet, MN 55720

Rob Hull, THPO Grand Portage Band of Lake Superior Chippewa PO Box 428 Grand Portage, MN 55605 Gina Lemon, THPO Leech Lake Band of Chippewa Indians Leech Lake Historic Preservation Office 115 6th St, NW, Suite E Cass Lake, MN 56633

Terry Kemper, THPO Mille Lacs Band of Ojibwe 43408 Oodena Dr Onamia, MN 56359

Jaime Arsenault, THPO White Earth Ojibwe PO Box 418 White Earth, MN 56591

Jeb Williams, Director North Dakota Game and Fish Department 100 North Bismarck Expressway Bismarck, ND 58501

North Dakota Department of Commerce -Division of Community Services Century Center, 1600 East Century Avenue, Suite 2 PO Box 2057 Bismarck, ND 58503

Deb Thomas Deputy Regional Administrator USEPA Region 8 1595 Wynkoop Street Denver, CO 80202-1129

Tribal Historic Preservation Officer Indian Affairs Commission 600 East Boulevard Avenue Bismarck, ND 58505-0300

Andrew Stahl State Health Officer North Dakota Department of Health 600 East Boulevard Avenue Bismarck, ND 58505-0200

U.S. Department of Agriculture - Natural Resources Conservation Service 4775 Technology Circle #1B Grand Forks, ND 58203-5635

U.S. Army Corps of Engineers - North Dakota Regulatory Office 2219 University Drive Bismarck, ND 58504 North Dakota State Water Commission 900 East Boulevard Ave, Dept 770 Bismarck, ND 58505-0850

Bill Peterson, SHPO State Historical Society of North Dakota State Historical Society of North Dakota 612 East Boulevard Ave Bismarck, ND 58505

Jessica Johnson U.S. Fish and Wildlife - North Dakota Field Office 3425 Miriam Avenue Bismarck, ND 58501



DEPARTMENT OF THE AIR FORCE HEADQUARTERS 319TH RECONNAISSANCE WING (ACC) GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

27 November 2023

319 CES/CD525 Tuskegee Airmen Blvd.Grand Forks AFB, ND 58205-6434

Jeb Williams Director North Dakota Game and Fish Department 100 North Bismarck Expressway Bismarck ND 58501

Dear Mr. Williams

The United States (US) Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts associated with development at GrandSKY Business Park. GrandSKY Business Park is located in an enhanced use lease (EUL) parcel on the southwestern portion of Grand Forks Air Force Base (GFAFB), near Grand Forks, North Dakota, along US Highway 2. All development under the Proposed Action would occur within the 217-acre GrandSKY Business Park (**Attachment 1**).

Proposed Action

Grand Forks County proposes a full build-out and development of GrandSKY to accommodate existing and future demand for aviation mixed-use, light industrial, administrative, and commercial facilities. A full build-out of this property would include increased pavements, in addition to the existing paved taxiway, apron, and existing buildings, depending on prospective tenant needs. The Proposed Action would develop approximately 8,600,000 ft² of impervious surfaces across eight functional land use categories within the GrandSKY Business Park. This EA proposes to evaluate, where applicable, development, construction, and operation of the GrandSKY Business Park at GFAFB.

Purpose and Need

The purpose of the Proposed Action in this EA is to support mission objectives and accommodate the growing tenant desire to reside within the business park for uncrewed aircraft system (UAS)-related actions. The need for the Proposed Action is to support the DAF's strategic goal of optimizing the value of its existing real property assets at GFAFB. The Proposed Action is also needed to promote continued economic development within Grand Forks County by providing adequate space for increased commercial interest in UAS manufacturing, training, and development within proximity to an airfield.

Environmental Assessment

The EA will assess the potential environmental consequences of the Proposed Action and No Action Alternative. Potential impacts identified for evaluation in the EA include effects to noise; public health and safety; air quality/climate change; biological, water, soils, and geological resources; land use and visual resources; cultural resources; environmental justice and protection of children; socioeconomics; hazardous materials and wastes, toxic substances, and contaminated sites; and infrastructure, including transportation and utilities. The EA will also examine the cumulative effects when combined with past, present, and reasonably foreseeable environmental trends and planned actions at GrandSKY and GFAFB. In support of this process, we request your input in identifying general or specific issues or areas of concern you believe should be addressed in the EA.

We intend to notify your agency when the Draft EA is completed and welcome comments and input at that time as well. Please inform us if someone else within your agency other than you should receive the Draft EA. So that we remain on schedule to complete the environmental impact analysis process in a timely manner, please provide your response no later than 30 days from receipt of this correspondence. Please send your response via postal mail or email (preferred) to:

ATTN: Robert Greene

ADDRESS: 525 Tuskegee Airmen Blvd Phone: 701-747-4664 Email: robert.greene.13@us.af

The DAF appreciates your interest in and support of its military mission at GFAFB. We thank you in advance for your assistance and look forward to your response.

Sincerely

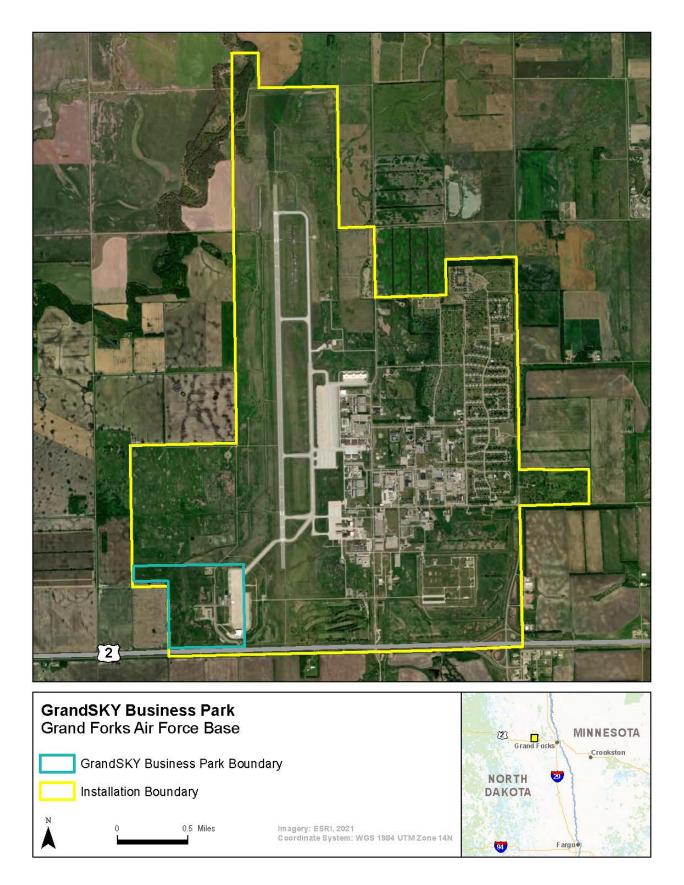
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LANCE E. LANDON, GS-13, DAF Deputy Base Civil Engineer

Attachment:

1. Map of Project Area (GrandSKY Business Park), October 2023

Attachment 1 – Map of Project Area (GrandSKY Business Park)





DEPARTMENT OF THE AIR FORCE HEADQUARTERS 319TH RECONNAISSANCE WING (ACC) GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

27 November 2023

319 CES/CDLance Landon525 Tuskegee Airmen BlvdGrand Forks AFB ND 58205-6434

Robert Flying Hawk Chairperson Yankton Sioux Tribe PO Box 1153 Wagner SD 57380-1153

Dear Chairperson Flying Hawk

Grand Forks Air Force Base (GFAFB) is proposing development actions within the GrandSKY Business Park, a 217-acre Enhanced Use Lease (EUL) area on GFAFB property in Grand Forks County, North Dakota. The development is needed to accommodate existing and future demand related to uncrewed aircraft system (UAS)-related actions, and to promote continued economic development within Grand Forks County by providing adequate space for increased commercial interest in UAS manufacturing, training, and development within proximity to an airfield.

GFAFB has determined the proposed development constitutes an undertaking as defined in 36 CFR §800.16(y). The frequency and type of UAS used will remain unchanged from the original design totals consulted with you in 2013. The Area of Potential Effect (APE) constitutes the 217 acres within the EUL (Atch 1).

The APE was previously inventoried for cultural resources in 1996 by Parsons Engineering Science; none were identified. As a result of the 2013 EUL tribal consultation, GFAFB signed a Memorandum of Understanding with the Cheyenne River Sioux Tribe, the Standing Rock Sioux Tribe, the Spirit Lake Tribe, and the Sisseton-Wahpeton Oyate regarding survey of the APE for Traditional Cultural Properties (TCPs). The MOU survey was conducted in May 2014 by Good Schliesman & Associates to include field personnel Kent N. Good, Jeff Hesla and Brad Cloud; no historic properties or TCPs were identified. Although the MOU remains in effect from the date executed by all parties until the end of the 10-year construction period (15 April 2014–15 April 2024) or any authorized extension of the construction period, the stipulations have been met and GFAFB does not anticipate amending or extending past the expiration date.

Should unexpected discovery of human remains, associated funerary objects, or archaeological materials occur during construction, GFAFB, Grand Forks County, and its subleasees would stop construction in the immediate area of the discovery and notify the State Historic Preservation Office, Advisory Council on Historic Preservation, and federally recognized tribes affiliated with GFAFB within 48 hours of discovery in compliance with 36 CFR §800.13.

The United States Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts associated with development at GrandSKY Business Park. Potential impacts identified for evaluation in the EA include effects to noise; public health and safety; air quality/climate change; biological, water, soils, and geological resources; land use and visual resources; cultural resources; environmental justice and protection of children; socioeconomic; hazardous materials and wastes, toxic substances, and contaminated sites; and infrastructure, including transportation and utilities. The EA will also examine cumulative effects when combined with past, present, and reasonably foreseeable environmental trends and planned actions at GrandSKY and GFAFB. The draft EA will be sent to your office for review and comment.

In consideration of the above and attached information, GFAFB determines the proposed undertaking will have no effect to historic properties. We request your concurrence in this determination as specified in 36 CFR §800.4(d)(1).

If you have any questions, please contact Ms. Kristen Rundquist, 319 CES/CEIE, kristen.rundquist@us.af.mil. Thank you in advance for your assistance in this effort and we look forward to hearing from you.

Sincerely

LANDON.LANCE., Digitally signed by LANDON.LANCE.ERIC.14586350 ERIC.1458635028 28 Date: 2023.11.20 17:45:19 -06'00'

LANCE E. LANDON, GS-13, DAF Deputy Base Civil Engineer

Attachments:

1. GrandSKY Business Park Area of Potential Effect

2. Distribution List

cc: Colten Archambeau, Tribal Historic Preservation Officer



DEPARTMENT OF THE AIR FORCE HEADQUARTERS 319TH RECONNAISSANCE WING (ACC) GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

27 November 2023

319 CES/CDMr. Lance Landon525 Tuskegee Airmen BlvdGrand Forks AFB ND 58205-6434

Dr. Bill Peterson State Historic Preservation Officer State Historical Society of North Dakota North Dakota Heritage Center 612 East Boulevard Ave Bismarck ND 58505

Dear Dr. Peterson

Grand Forks Air Force Base (GFAFB) is proposing development actions within the GrandSKY Business Park, a 217-acre Enhanced Use Lease (EUL) area on GFAFB property in Grand Forks County, North Dakota. The development is needed to accommodate existing and future demand related to uncrewed aircraft system (UAS)-related actions, and to promote continued economic development within Grand Forks County by providing adequate space for increased commercial interest in UAS manufacturing, training, and development within proximity to an airfield. GFAFB previously consulted with your office and culturally-affiliated Native American tribes in 2013 on the initial development of the 217-acre GrandSKY EUL; your office concurred with the determination of no effect to historic properties on 1 Nov 2013.

GFAFB has determined the proposed development constitutes an undertaking as defined in 36 CFR §800.16(y). The frequency and type of UAS used will remain unchanged from the original design totals consulted with you in 2013. The Area of Potential Effect (APE) constitutes the 217 acres within the EUL (Atch 1).

The APE was previously inventoried for cultural resources in 1996 by Parsons Engineering Science; none were identified. As a result of the 2013 EUL tribal consultation, GFAFB signed a Memorandum of Understanding with the Cheyenne River Sioux Tribe, the Standing Rock Sioux Tribe, the Spirit Lake Tribe, and the Sisseton-Wahpeton Oyate regarding survey of the APE for TCPs. The MOU survey was conducted in May 2014 by Good Schliesman & Associates to include field personnel Kent N. Good, Jeff Hesla and Brad Cloud; no historic properties or Traditional Cultural Properties were identified.

In consideration of the above and attached information, GFAFB determines the proposed undertaking will have no effect to historic properties. We request your concurrence in this determination as specified in 36 CFR §800.4(d)(1).

If you have any questions, please contact Ms. Kristen Rundquist, 319 CES/CEIE, kristen.rundquist@us.af.mil. Thank you in advance for your assistance in this effort and we look forward to hearing from you.

Sincerely

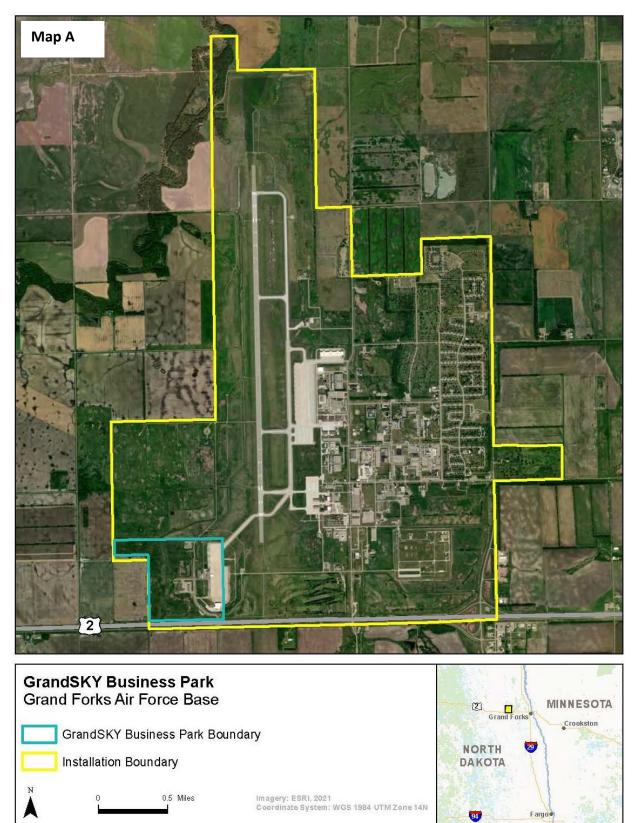
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LANCE E. LANDON, GS-13, DAF Deputy Base Civil Engineer

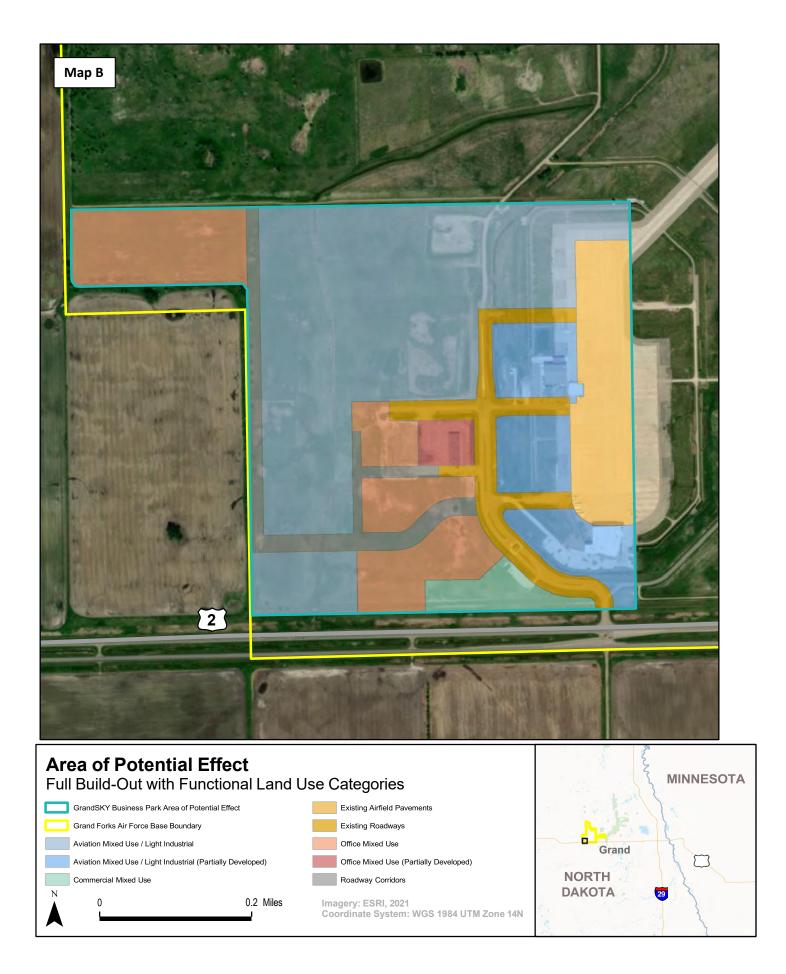
Attachments:

1. GrandSKY Business Park Area of Potential Effect

2. Distribution List



Attachment 1: Area of Potential Effects (Maps A and B)



Attachment 2: Distribution List

North Dakota State Historic Preservation Officer Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation Bois Forte Band of Chippewa Indians of Minnesota Chippewa Tribe Cheyenne and Arapaho Tribes Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota Chippewa Cree Indians of the Rocky Boy's Reservation, Montana Crow Creek Sioux Tribe of the Crow Creek Reservation. South Dakota Crow Tribe of Montana Flandreau Santee Sioux Tribe of South Dakota Fond du Lac Band of Lake Superior Chippewa of Minnesota Chippewa Tribe Fort Belknap Indian Community of the Fort Belknap Reservation of Montana Grand Portage Band of Lake Superior Chippewa Leech Lake Band of Chippewa Indians Lower Brule Sioux Tribe of the Lower Brule Reservation, South Dakota Lower Sioux Indian Community Council Mille Lacs Band of Ojibwe of Minnesota Chippewa Tribe of Minnesota Chippewa Tribe Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana **Oglala Sioux Tribe** Red Lake Band of Chippewa Indians, Minnesota Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota Santee Sioux Nation, Nebraska Shakopee Mdewakanton Sioux Community of Minnesota Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota Spirit Lake Tribe, North Dakota Standing Rock Sioux Tribe of North and South Dakota Three Affiliated Tribes of the Fort Berthold Reservation, North Dakota Turtle Mountain Band of Chippewa Indians of North Dakota Upper Sioux Indian Community White Earth Ojibwe of Minnesota Chippewa Tribe Yankton Sioux Tribe of South Dakota



December 5, 2023

Lance Landon U.S. Air Force 319CES/CD 525 Tuskegee Airmen Blvd Grand Forks AFB, ND 58206

ND SHPO Ref.: 24-9009, GrandSKY Business Park in portions of [T152N R53W Section 34] Grand Forks County, North Dakota

Dear Mr. Landon,

We have reviewed ND SHPO Ref.: 24-9009, GrandSKY Business Park in portions of [T152N R53W Section 34] Grand Forks County, North Dakota. It is our understanding that the proposed project is facility development related to UAS. We concur with a determination of "No Effect" for this project provided it takes place in the location and manner described in the documentation.

Thank you for the opportunity to review this project. If you have any questions please contact Lorna Meidinger, Lead Historic Preservation Specialist at (701) 328-2089, e-mail lbmeidinger@nd.gov

Sincerely,

for William D. Peterson PhD State Historic Preservation Officer (North Dakota)

cc: Kristen Rundquist

North Dakota Heritage Center & State Museum 612 East Boulevard Avenue Bismarck, ND 58505-0830

701.328.2666 histsoc@nd.gov

history.nd.gov statemuseum.nd.gov



United States Department of the Interior

FISH AND WILDLIFE SERVICE North Dakota Ecological Services Field Office 3425 Miriam Avenue Bismarck, ND 58501-7926 Phone: (701) 250-4481 Fax: (701) 355-8513



In Reply Refer To: November 27, 2023 Project Code: 2024-0019635 Project Name: Enhanced Use Lease Development at GrandSKY Business Park

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Section 7 of the Endangered Species Act

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list. The Act requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project and associated actions "may affect" listed species or critical habitat. If Federal agencies or their non-federal representatives determine their project and associated actions will have "no effect" on listed species, their habitats, or designated critical habitat, consultation is not required. However, if a "no effect" is determined, we recommend that you maintain a written record in support of your conclusion. Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act Additionally, while not all are listed as threatened or endangered, eagles and migratory birds

have protections under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). The BGEPA prohibits take which is defined as, "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb" (50 CFR 22.3). Disturb is defined in regulations as, "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.". The MBTA makes it unlawful without a waiver to pursue, hunt, take, capture, kill, or sell birds listed as migratory birds, including eagles. The statute does not discriminate between live or dead birds and also grants full protection to any bird parts including feathers, eggs, and nests.

Service Property Interests

As part of the National Wildlife Refuge System, the Service administers fee title Refuge and Waterfowl Production Areas, as well as wetland and grassland easements, throughout North Dakota. For exact locations of Service interest lands, please contact the appropriate Wetland Management Districts (WMD) for guidance regarding FWS easements. Northwest ND WMD Complex: Kyle Flanery, (701) 768-2548

Eastern ND WMD Complex: Dave Azure, (701) 285-3341

Central ND WMD Complex (also covers south and west): Todd Luke, (701) 442-5474

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

North Dakota Ecological Services Field Office

3425 Miriam Avenue Bismarck, ND 58501-7926 (701) 250-4481

PROJECT SUMMARY

Project Code:2024-0019635Project Name:Enhanced Use Lease Development at GrandSKY Business ParkProject Type:Mixed-Use ConstructionProject Description:The Proposed Action would develop approximately 8,600,000 ft2 of
impervious surfaces across eight functional land use categories within the
GrandSKY Business Park. As described in Section 1.3, GrandSKY has
experienced an increase in commercial interest for UAS-related tenants
with need of proximity to the GFAFB airfield. The GFAFB airfield is
required as increased tenant density seeks access to an expanded runway
for UAS flights, aircraft hangar space, and airfield operations.

Project Location:

The approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/@47.93711175,-97.41265803412267,14z</u>



Counties: Grand Forks County, North Dakota

ENDANGERED SPECIES ACT SPECIES

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

INSECTS

NAME

Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/9743</u>

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

STATUS

Candidate

WETLANDS

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of</u> <u>Engineers District</u>.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C

RIVERINE

- R4SBAx
- R4SBCx

IPAC USER CONTACT INFORMATION

Agency:	Private Entity
Name:	Nicholas Sutton
Address:	350 Hills St
Address Line 2:	Suite 112
City:	Richland
State:	WA
Zip:	99354
Email	nsutton@easbio.com
Phone:	6789382429

APPENDIX B. TRIBAL MEMORANDUM OF UNDERSTANDING

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MEMORANDUM OF UNDERSTANDING

AMONG

THE 319TH AIR BASE WING, GRAND FORKS AIR FORCE BASE,

THE CHEYENNE RIVER SIOUX TRIBE,

THE STANDING ROCK SIOUX TRIBE,

THE SPIRIT LAKE TRIBE,

AND

THE SISSETON-WAHPETON OYATE

REGARDING THE CONSTRUCTION OF AN AVIATION AND MIXED-USE BUSINESS PARK AT GRAND FORKS AFB

WHEREAS, the United States Air Force, represented by 319TH Air Base Wing (319 ABW) operates and maintains Grand Forks AFB (GFAFB) and has the authority under 10 U.S.C. § 2667 to lease property that is not presently needed for public use; and

WHEREAS, Grand Forks County (GFC) has submitted a proposal to lease 217 acres of GFAFB to develop that area as an Aviation and Mixed-Use Business Park; and

WHEREAS, 319 ABW is responsible for identifying and managing historic properties at GFAFB and identifying and considering effects of any undertakings to historic properties pursuant to Section 106 of the National Historic Preservation Act (NHPA) (16 USC § 470f) and its implementing regulation, 36 CFR Part 800; and

WHEREAS, 319 ABW has defined the undertaking's area of potential effect (APE) as the 217 acres shown on the map in Attachment A; and the APE was inventoried as part of the *Grand Forks AFB Cultural Resources Survey, Class III Intensive Archaeological Inventory,* September 1996, which found no evidence of Native American remains or properties of religious and cultural significance on GFAFB; and during the inventory; and the Three Affiliated Tribes of the Fort Berthold Reservation, the Spirit Lake Tribe (Fort Totten Reservation), the Standing Rock Sioux Tribe, and the Turtle Mountain Band of Chippewa Indians were contacted, but these tribes did not identify any properties of religious and cultural significance on Grand Forks AFB; and

WHEREAS, the Cheyenne River Sioux Tribe, Standing Rock Sioux Tribe, Spirit Lake Tribe, and Sisseton-Wahpeton Oyate (Tribes) have requested an opportunity to survey the 217 acre site as weather conditions permit; and

WHEREAS, 319 ABW has fulfilled its obligations under NHPA Section 106 by concluding consultation with the North Dakota State Historic Preservation Office (SHPO) who concurred by letter dated 1 Nov 2013 that no historic properties would be affected; and

NOW, THEREFORE, 319 ABW, the Cheyenne River Sioux Tribe, the Standing Rock Sioux Tribe, the Spirit Lake Tribe, the Sisseton-Wahpeton Oyate, and any tribes that may later be added pursuant to Stipulation V.B below, agree that the undertaking shall be implemented in accordance with the following stipulations.

STIPULATIONS

I. PRE-CONSTRUCTION ACTIVITIES

A. Identifying Traditional Cultural Properties of Religious and Cultural Significance.

i. 319 ABW will provide access to the APE and allow the Tribes to conduct their own Traditional Cultural Property (TCP) survey prior to 15 May 2014. This survey gives the Tribes an opportunity to identify any properties of religious and cultural significance to them that may be present in the APE.

ii. The TCP survey will be conducted by Tribal representatives. The Tribes will designate their representatives, or determine who will conduct the survey on their behalf. The 319 ABW will assist the Tribe by providing personnel to map TCP features and boundaries as identified by Tribal representatives. 319 ABW personnel will enter the geographic data into a GIS system capable of rendering maps, but will not include descriptions of the TCPs, only their locations. Digital maps may be reviewed by the Tribes and 319 ABW on laptop computers equipped with appropriate software, if available. Printed maps will be produced for quality assurance and quality control purposes upon request by and for use by Tribal representatives. It will be the responsibility of the Tribes to document descriptions of observed TCPs in field notes, photographs, and/or sketches or by other means selected by the Tribes.

iii. If TCP locations are identified, the Tribal representatives will notify Tribal Elders at least one day prior to the last day of the survey, so that the Tribal Elders, if participating, can travel to the 217 acre site (or portion thereof) to participate in the survey. The Tribal representatives may revisit the locations of TCPs, if any, with the Tribal Elders as desired.

iv. 319 ABW will, upon completion of the survey, provide to the Tribes one CD or DVD containing the digital files for all mapped TCPs and buffers, if any. 319 ABW may retain data in its GIS system for project planning purposes (i.e., to provide a basis for

avoiding impacts to TCPs through micrositing) and share this information with Grand Forks County and its sublessees. The Tribes will identify what data on the CD or DVD, if any, they desire 319 ABW to withhold from public release. Such data will not be shared with the public, and is exempt from release under the Freedom of Information Act under exemption 3 and National Historic Preservation Act Section 304 (16 U.S.C. § 470w-3).

B. Evaluating Eligibility of TCPs for the National Register.

i. 319 ABW shall consider the information developed by the TCP survey, as well as any supplemental information provided by the Tribes, and shall apply 36 CFR § 60.4 criteria to determine whether any sites identified by the Tribes are eligible for listing on the National Register of Historic Places (NRHP). 319 ABW acknowledges and will take into account the special expertise of the Tribes for the identification and NRHP-eligibility assessment of TCPs that may possess religious and cultural significance to them.

ii. Any TCPs that 319 ABW, the Tribes, and SHPO agree meet 36 CFR § 60.4 criteria shall be considered eligible for the NRHP.

iii. If 319 ABW and the SHPO do not agree on an eligibility determination, or if the ACHP or the Secretary of the Interior so request, 319 ABW shall obtain a determination of eligibility from the Keeper of the NRHP pursuant to 36 CFR § 800.4(c)(2). If practicable, 319 ABW will instruct GFC to avoid start of construction at any site for which the Keeper's determination is pending, but the parties agree that construction may start if necessary to meet project schedules.

C. Avoiding and Mitigating Adverse Effects on NRHP-Eligible Properties.

i. 319 ABW shall determine whether the undertaking will have an adverse effect for each site found eligible for the National Register pursuant to Stipulation I.B above. 319 ABW will advise the Tribes of the determination. If any Tribe disagrees with the determination, it may within 30 days request the ACHP to review the finding.

ii. 319 ABW, in consultation with the SHPO and Tribes, shall ensure that adverse effects to properties determined to be eligible for listing in the NRHP shall be avoided whenever prudent and practicable.

iii. If it is not practicable to avoid adversely affecting a TCP that is eligible for listing on the NRHP, 319 ABW shall consult with the SHPO and Tribes to identify measures to resolve adverse effects pursuant to 36 CFR § 800.6 including, if necessary, the development of a data recovery plan for treatment of TCPs affected by the undertaking.

D. Information received after start of construction. The parties expect that the Tribes will be able to complete a TCP survey on the 217 acre parcel no later than 15 May 2014. 319

ABW will consider all available information, including that in a TCP survey or provided by the Tribes, when making decisions on eligibility, avoidance, and mitigation in accordance with paragraphs B and C above. Nevertheless, the parties agree that 319 ABW is not required to alter construction plans and schedules as a consequence of information received after start of construction (except for information relating to the unexpected discovery of archaeological materials, human remains, or associated funerary objects as described in Stipulation II.A below). When information is received after start of construction, 319 ABW will consult with the Tribes to explore ways to minimize impacts that will not impact construction plans and schedules.

II. CONSTRUCTION RELATED ACTIVITIES

A. Unexpected Discovery of Human Remains or Associated Funerary Objects. 319 ABW has no information indicating human remains or associated funerary objects are present in the APE. However, if such materials are discovered during construction, 319 ABW, GFC, and its sublessees shall stop construction in the immediate area of the discovery and notify the North Dakota State Department of Health and Consolidated Laboratories, Grand Forks County Sheriff's Office and the SHPO. Remains will be treated with respect to the deceased, and shall be protected, upon discovery, from further construction activities pending consultation to resolve treatment of such remains.

i. All human remains are to be considered Native American, until such time they are determined otherwise. If human remains are discovered, 319 ABW will notify the Tribes and other Federally recognized tribes affiliated with Grand Forks AFB. In accordance with Section 3(d)(1) of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. § 3002(d)(1)), construction may resume 30 days after the tribes certify that they have received notification.

ii. Whenever possible, Native American human remains and funerary objects will be preserved in place. When human remains and associated funerary objects cannot remain in place, disposition will comply with NAGPRA, 25 U.S.C. 3001 et seq., and implementing regulations at 43 CFR Part 10.

B. Unexpected Discovery of Archaeological Materials. If archaeological materials are discovered during construction, 319 ABW shall, pursuant to 36 CFR §800.13(b), make reasonable efforts to avoid, minimize, or mitigate adverse effects to such materials if found on a site that is eligible for the National Register. 319 ABW shall notify the SHPO, ACHP, the Tribes, and other Federally recognized tribes affiliated with Grand Forks AFB within 48 hours of the discovery.

III. CONFIDENTIALITY. 319 ABW acknowledges the need for confidentiality for certain tribal spiritual and cultural information. Pursuant to 36 CFR §§ 800.2(c)(2)(ii)(E), information provided by the Tribes or their members and identified as culturally sensitive will be kept confidential and be protected from public disclosure to the extent permitted by state and Federal law.

IV. DURATION

This MOU shall be in effect from the date executed by all parties until the end of the 10 year construction period, or any authorized extension of the construction period. Prior to such time, 319 ABW may consult with the other parties to reconsider the terms of the MOU and amend it in accordance with Stipulation V below.

V. AMENDMENTS

A. This MOU may be amended when such an amendment is agreed to in writing by all parties. The amendment will be effective on the date of the last signature and shall be appended to this MOU as an attachment.

B. Additional tribes may be added as parties to this MOU without amendment if 319 ABW notifies all existing parties in writing of the proposal and there is no objection from any existing party within thirty (30) days of 319 ABW's written notice. If no response is received within thirty (30) days of mailing, 319 ABW may assume concurrence with the addition of the tribe(s) to this MOU.

VI. WITHDRAWAL

If any party to this MOU determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation V, above. If within thirty (30) days (or another time period agreed to by the parties) an amendment cannot be reached, that party may withdraw from the MOU upon written notification to the other parties. The MOU will remain in effect among the remaining parties.

PARTIES:

319TH AIR BASE WING, GRAND FORKS AIR FORCE BASE

Bv:

Date: 7 AR/4

PAUL E. BAUMAN, Colonel, USAF Commander

CHEYENNE RIVER SIOUX TRIBE

By: My 2 Ou no Vie Churm Date: 4/10/4 for KEVIN KECKLER, Chairman

SISSETON-WAHPETON OYATE

By: <u>Relat</u> Date: <u>4-4-14</u> ROBERT SHEPHERD, Chairman

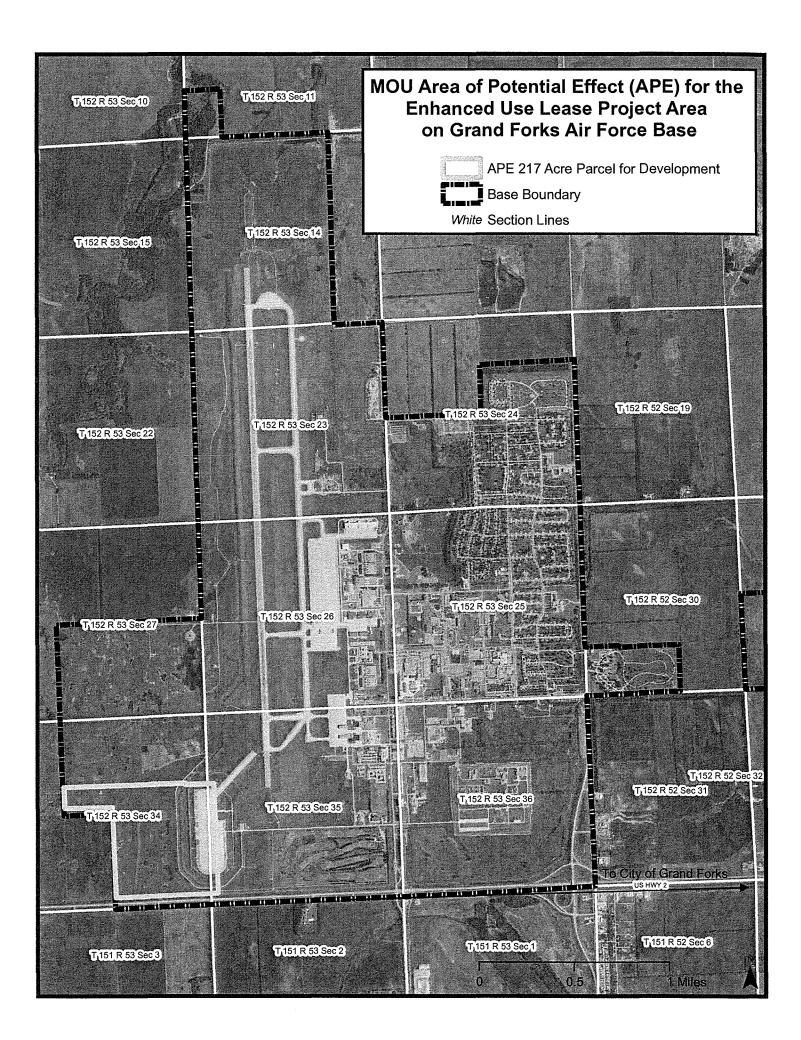
SPIRIT LAKE TRIBE	
\cap	
417	4-15-14
By: A Am	Date: / / / / /
ERICH LONGIE, Tribal Historic Preservati	ion Officer

.

STANDING ROCK SIOUX TRIBE

2 By: ______ DAVE ARCHAMBAULT II, Chairman

_____Date: <u>4/3/14</u>



APPENDIX C. PUBLIC NOTICES

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UND music groups to present free concerts Tuesday, Thursday on campus The concerts will feature the UND Wind Ensemble, UND University Band and the Greater Grand Forks City Band

BY PAMELA KNUDSON Grand Forks Herald

GRAND FORKS – UND music groups will present free concerts on Tuesday and Thursday, Nov. 28 and 30, on campus.

The UND Wind Ensemble will present a concert at 7:30 p.m. Tuesday, Nov. 28. at the Chester Fritz Auditorium. The concert will feature two major symphonies for bands: H. Owen Reed's classic

"LaFiesta Mexicana,' written in 1949, and "Give Us This Day," by contemporary composer David Maslanka

A graduate student in music, Emily Chasowy, will lead the ensemble in Jack Stamp's "Gavorkna Fanfare" to open the concert. Also on the program is "Radiant Joy," composed by Steven Bryant.

On Thursday, Nov. 30, the UND University Band and special guests, the Greater Grand Forks City Band, will present a concert, "Sounds of the Season! A Holiday Concert,"

beginning at 7:30 p.m. at the UND Memorial Union Ballroom.

The concert will feature ensembles performing unique settings of holiday favorites, said James Popejov, professor of music and director of bands at UND.

The performance by the Greater Grand Forks City Band, under the direction of Janelle Huber, will include "Blue Christmas," "Little Drummer Boy," "O Holy Night," and Gustav Holst's "In the

Bleak Midwinter."

Popejoy will conduct the University Band's performance of "Jingle Bells March," "Fantasy on a Bell Carol" and Alfred Reed's classic setting of "Greensleeves," along with other songs.

Chasowy will lead the band in "Fantasy on Deck the Hall," Popejoy said.

The two ensembles will combine to close the program with performances of "Christmas 'Pop' Singalong," and Leroy Anderson's timeless "Sleigh

effect."

"I would say percentage-wise - relative to the number of properties available north versus south - I would say inventory is equal," he said. "There's more total properties for sale in the south end, but it's a bigger area.'

Not everyone is happy with the uptick in short-

In a previous Herald story, longtime homeowners in areas where houses are being turned into

rentals complained that

these houses aren't available for purchase by young families, and that college-aged renters can be disrespectful

Ride," he said.

music.

Both concerts will also

UND music department's

For more information

about these concerts, call

be livestreamed on the

website, www.und.edu/

Opp also said he is noticing homes remaining on the market longer than in previous months.

When it comes to the decision to buy versus rent, Hills Boyle and Stringer said to remember three key factors: equity, predictability and

the UND Bands office at (701) 777-2815.

Contributed / UND Music Department

Knudson is a features reporter at the Herald. Call her at (701) 780-1107, (800) 477-6572 ext.1107 or email pknudson@gfherald.com.

HOUSING **CONTINUED** from A1

population is a major contributor to Grand Forks' higher-than-average renter-occupied rate.

"We're definitely a college town, so I would say you're going to see a higher percentage here versus other cities," he said. "The university still remains one of the higher areas for rentals – any college student is looking to get as close to the university as they can."

In addition to a large population of student renters. Brooks said rising home prices and interest rates have created a seller's market, which is incentivizing some homeowners to return to renting.

"As we've seen interest rates climb, there has been a trend of renting other units throughout town," he said. "I have heard a trend of some empty-nesters selling their single-family home as prices have become more favorable for them, and are deciding to rent so they don't have to do the maintenance. Maybe they don't want to move to a stacked-style apartment building, but they're renting a townhome or single-family home where somebody else does the

maintenance." Brooks' observations

purchasing, especially for first time homeowners,' Hills Boyle said. "We're seeing those rates are really good with some of the programs that (North Dakota Housing Finance Agency) offers.

Though interest rates are seeing a recent decline, Brooks also said a lack of affordable homes has kept some would-be home-buyers on the sidelines.

"I think there are people out there that are definitely looking," he said. 'Monthly payments are definitely going up on a lot of homes, and that does obviously affect affordability. It's tough to find a home for under \$150,000, or even \$200,000, which most people would consider affordable.'

For Gonser, the condo he's chosen fits within his wants for a home, but he does think the process would have been easier with a home that fit better into his price range.

"I think it might have been a little bit easier just because then I knew I would've been able to preapprove, because the one I got was pretty much right at the top of my budget," he said. "It was kind of a little bit like, 'Do I want to? Because I'm not sure if I can fully afford it.' But, fortunately, I was approved for it."

While he's comfortable with the decision to

get any higher." he said. 'I think my interest rate is double what it was from my current house, so I could see a lot of people might not be willing to give up their current interest rate, even if that means they have to stay with a home that they're not necessarily enthused about."

Meanwhile, the number of homes on the market is increasing, mainly due to reduced demand as a result of high interest rates, said Mike Opp, owner of Grand Forksbased Oxford Realty.

"The supply of homes is climbing – better than it has been in the past six months," he said.

However, there are some residents who are holding onto the houses they live in. Hills Boyle said many homeowners redid their finances during COVID, when interest rates were low, and aren't keen on giving up that rate to move to a new house.

Opp has seen a trend of some homeowners turning their properties into short-term rentals. something he considers positive for the market.

"It's a good thing for affordable housing, because renting is more affordable," he said. "I would say it adds finance and liquidity to the market, which probably stabilizes price. Any time

neighbors.

toward anything," Hills Boyle said. "Whereas if you own, each payment, assuming that your home is appreciating, you get a little bit more ownership."

For predictability, rent can increase at any time, while interest rates can't change for a homeowner. Enjoyability also matters, as a homeowner has more privacy and control over their home and can make



James Popejoy, professor of music and director of

bands at UND, conducts the UND University Band.

term rentals, though. it their own. enjoyability. "When you rent, your money really isn't going

NOTICE OF EARLY PUBLIC REVIEW OF PROPOSED ACTIVITIES WITHIN FLOODPLAINS -UNITED STATES DEPARTMENT OF THE AIR FORCE

The United States (US) Department of the Air Force (DAF) is inviting early public input on proposed activities at GrandSKY Business Park at Grand Forks Air Force Base (GFAFB), North Dakota, with potential to affect floodplain and wetland resources. To comply with the National Environmental Policy Act (NEPA), the DAF is preparing an Environmental Assessment (EA) evaluate, where applicable, development, to construction, and operation at the GrandSKY Business Park at GFAFB.

The proposed development actions and improvements under consideration include new construction, which would include filling of wetlands. Because of this, the DAF is seeking early public input on practical alternatives to avoid or minimize adverse effects on this natural resource. The DAF will consider public input as practicable in the forthcoming Draft EA.

appear to be backed by economic data. According to the Federal Reserve Bank of St. Louis – one of 12 regional reserve banks making up the U.S. Federal Reserve system the average interest rate on a 30-vear fixed mortgage in August 2023 was 7.18%, up from 5.66% a year prior and the highest figure since December 2001. This also represents a marked increase from a 50-vear low of 2.66% in December 2020.

Rates have decreased in the last month and a half, said Emily Hills Boyle and Eric Stringer, both of whom are mortgage lenders from Grand Forks' Gate City Bank. The rate dropped from 8% to 7% from mid-October to November, and was down to 6.5% to 6.75% as of Tuesday, Nov. 21.

"I think that it's still a good time to look at



move, he thinks other people might not be.

"I feel like there could be a lot of people trying to get a house before they

there's more money in a market, the market works better. If investors are going under, that's going to have the opposite

MEETING ANNOUNCEMENT

Grand Forks & GFAFB School Boards Joint Meeting Monday, November 27, 2023 6:00pm @ Mark Sanford Education Center 2400 47th Avenue South, Grand Forks The Notice of Meeting/agenda is found at: www.gfschools.org > District > School Board or at www.gfschools.org/Page/26



The DAF plans to use the NEPA process to comply with Orders (EO) 11988, Floodplain Executive Management; 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input; and 11990, Protection of Wetlands.

Accordingly, the DAF seeks your input on potential effects on floodplains and wetlands that could result from the proposed development actions at GrandSKY Business Park. Public comments received in response to this notice, as well as those received throughout the NEPA process, will assist the DAF in complying with its obligations under the EOs noted above.

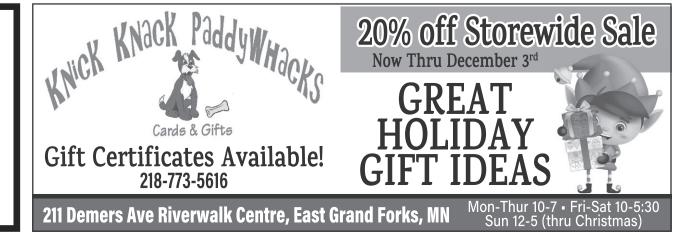
Please address written comments to the Grand Forks County Administrator, ATTN: GrandSKY EA, PO Box 5726, Grand Forks North Dakota 58201, or via email (preferred) to: thomas.ford@gfcounty.org.

SHARE YOUR MILESTONES!

Weddings, engagements, milestone birthdays, anniversaries, births, all other special events and achievements are published each Saturday in the Grand Forks Herald's MILESTONES.

To place an announcement, go to grandforksherald.com. Click on the MENU link on the left side of the page. Scroll down to COMMUNITY, then click on the MILESTONES.

Deadline: Wednesday 4pm for the following Saturday publication. Questions - call: 701-241-5509 or email: info@modulist.news



Metalsmith creates annual 'heirloom' Christmas ornaments

BY KEVIN WALLEVAND WDAY

GRAND FORKS — On Monday, Nov. 27, longtime businessman, metalsmith and designer Dave Badman was inside Badman Design in downtown Grand Forks, soldering two copper and brass halves together for another of his famous heirloom ornaments.

"I'm soldering the top to the ornament," Badman said Monday while he was working. "I had somebody else complete the ornament and I'm just putting the top on it right now."

Badman creates 200 each year. All are dated and many customers anticipate seeing each year's design.

"There's a population that waits for this, and I will not let anybody see it during production," Badman added.

Badman came to Grand Forks years ago when his father was stationed at Grand Forks Air Force Base. When everyone else moved, he stayed and went to the University of North Dakota, where as an art student, his work caught the eye of a professor who told him to pursue a career as a jeweler.

"I was wrong, but my response was, 'Jewelry is for women' and she (the teacher) fought me on it," Badman said. Since the late 1990s, <image>

Badman Design in Grand Forks has a loyal following that patiently waits every year for the annual unveiling of its handmade copper and brass Christmas ornaments.

Badman has been creating all kinds of things, but his heirloom ornaments made of copper, brass and nickel sell out nearly every year. All 200 are handmade. Each year the design is different and many are custom-

made for families. "We call it an heirloom ornament because, since we've been doing it for so many years, it is being passed down from generation (to generation). Many of the original people purchasing

them are no longer wanting to collect and they're giving to their children, or even their grandchildren," Badman said. The handmade metal ornaments cost anywhere between \$90 and \$150. Badman also creates 145 sets of three flat Christmas ornaments. He and metalsmith Hayes Muiderman will not only solder the spheres together, but put the polish on them. The duo prepares them for a

special spot for them to hang on a tree, beginning or continuing a family tradition somewhere. For more information, visit badman.com.

PROJECT CONTINUED from A1

of millions of dollars in future flood protection projects just by making some planning changes and improvements.

"(Once we have the models), I want to stress test them with 10% or 15% more precipitation than we receive now," Grasser said. "Since the Army Corps of Engineers did the original study, we've seen increased precipitation amounts, according to the National Weather Service."

Weather Service." According to the city, 2008 was the last time a comprehensive study was done for south-end drainage. After overland flooding in 2022, the city took a renewed look at the drainage issues on the southern end of Grand Forks. The goal is to update the models and development plans for the watersheds, flood protection systems, and risks along the southern end of Grand Forks. The planning project focuses on the South End Drainway

and English Coulee watersheds now and into the future.

The English Coulee Watershed encompasses most of the city west of Washington Street and into central Grand Forks County. The South End Drainway watershed encompasses the area between 32nd Avenue South, the levee, Merrifield Road and Interstate 29. Both are being evaluated for flood protection and stormwater mitigation in the projection. Potentially, Legal Drain No. 4, which parallels Merrifield Road, will be added into flood risk calculations during the

course of this project. "Fortunately and unforlikely continue into 2024 if the council gives the amendments its full approval. Current findings recommend adding additional water storage capacity for the South End Drainway as its watershed's upper reaches are near capacity for summer rain events.

"It's already answered many tough questions," Grasser said about water drainage issues in the city.

The eventual master plan will guide Grand Forks' expected expansion on the south and west sides of the city. The plan also helps lessen the burden on Grand Forks properties. Because of the flood protection sysservice and have mini and convenience bars in their establishments. It was previously struck from city code, but the city received a request from the Olive Ann Hotel as it wanted to offer such amenities.

• Recommended a budget for the Community Development Block Grant and Community Services Grant for 2024. Funds are sponsored by the U.S. Department of Housing and Urban Development to support community development through capital and operational grants.

• Had council members, along with the city auditor, city attorney and Mayor Brandon Bochenski canvass election results from the Nov. 14 special election, regarding extending a sales tax. The canvass resulted in only one changed ballot, adding one vote to the final "yes" tally. The official final vote is 2,359 "yes" votes and 1,190 "no" votes.

NOTICE OF EARLY PUBLIC REVIEW OF PROPOSED ACTIVITIES WITHIN FLOODPLAINS – UNITED STATES DEPARTMENT OF THE AIR FORCE

The United States (US) Department of the Air Force

tunately, we didn't get any great gushers this summer," Shawn Gaddie of AE2S said. The city is using AE2S as the engineering consultant firm for the project. "In 2023, a big part was gathering data and computer modeling (and) also looking at build-out and intensity of development and (future) amounts of impervious surface." Data collection will

tems, most Grand Forks properties don't have to carry mandatory flood insurance like other properties in flood zones. Plans like this help the city maintain federal requirements so residents can save money on insurance. In other news, the

council: • Approved an ordina

• Approved an ordinance change to allow hotels to serve alcohol with room



(DAF) is inviting early public input on proposed activities at GrandSKY Business Park at Grand Forks Air Force Base (GFAFB), North Dakota, with potential to affect floodplain and wetland resources. To comply with the *National Environmental Policy Act* (NEPA), the DAF is preparing an Environmental Assessment (EA) to evaluate, where applicable, development, construction, and operation at the GrandSKY Business Park at GFAFB.

The proposed development actions and improvements under consideration include new construction, which would include filling of wetlands. Because of this, the DAF is seeking early public input on practical alternatives to avoid or minimize adverse effects on this natural resource. The DAF will consider public input as practicable in the forthcoming Draft EA.

The DAF plans to use the NEPA process to comply with Executive Orders (EO) 11988, *Floodplain Management*; 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*; and 11990, *Protection of Wetlands*.

Accordingly, the DAF seeks your input on potential effects on floodplains and wetlands that could result from the proposed development actions at GrandSKY Business Park. Public comments received in response to this notice, as well as those received throughout the NEPA process, will assist the DAF in complying with its obligations under the EOs noted above.

Please address written comments to the Grand Forks County Administrator, ATTN: GrandSKY EA, PO Box 5726, Grand Forks North Dakota 58201, or via email (preferred) to:

thomas.ford@gfcounty.org.

APPENDIX D. AIR QUALITY ANALYSIS

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1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide. This report provides a summary of the ACAM analysis.

a. Action Location:

Base:GRAND FORKS AFBState:North DakotaCounty(s):Grand ForksRegulatory Area(s):NOT IN A REGULATORY AREA

- **b. Action Title:** Enhanced Use Lease Development at GrandSKY Business Park, Grand Forks Air Force Base, North Dakota
- c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

The Proposed Action would develop approximately 8,600,000 ft2 of impervious surfaces across eight functional land use categories within the GrandSKY Business Park.

f. Point of Contact:

onit of contacts	
Name:	Ryan Sauter
Title:	Senior Scientist
Organization:	EAS
Email:	ryan.sauter@easbio.com
Phone Number:	651.341.9955

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the GCR are:

	applicable
Х	not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more

NAAQS. For further detail on insignificance indicators, refer to Level II, Air Quality Quantitative Assessment, Insignificance Indicators.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

Analysis Summary:

2024				
Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR		
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	AREA			
VOC	4.437	250	No	
NOx	3.840	250	No	
CO	5.185	250	No	
SOx	0.010	250	No	
PM 10	31.835	250	No	
PM 2.5	0.166	250	No	
Pb	0.000	25	No	
NH3	0.015	250	No	

2025

Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR	
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	AREA		
VOC	4.754	250	No
NOx	5.535	250	No
СО	10.449	250	No
SOx	0.023	250	No
PM 10	31.962	250	No
PM 2.5	0.294	250	No
Pb	0.000	25	No
NH3	0.040	250	No

2026

2020				
Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR		
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	Y AREA			
VOC	5.068	250	No	
NOx	7.326	250	No	
СО	15.568	250	No	
SOx	0.036	250	No	
PM 10	32.095	250	No	
PM 2.5	0.427	250	No	
Pb	0.000	25	No	
NH3	0.064	250	No	

2027				
Pollutant	Action Emissions INSIGNIFICANCE INDICATOR			
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	AREA			
VOC	5.373	250	No	
NOx	9.147	250	No	
СО	20.519	250	No	
SOx	0.049	250	No	
PM 10	32.231	250	No	
PM 2.5	0.563	250	No	
Pb	0.000	25	No	
NH3	0.088	250	No	

2028

Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR	
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	Y AREA		
VOC	5.675	250	No
NOx	10.992	250	No
СО	25.393	250	No
SOx	0.062	250	No
PM 10	32.368	250	No
PM 2.5	0.700	250	No
Pb	0.000	25	No
NH3	0.111	250	No

2029

Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR		
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	AREA			
VOC	5.978	250	No	
NOx	12.837	250	No	
СО	30.260	250	No	
SOx	0.075	250	No	
PM 10	32.507	250	No	
PM 2.5	0.838	250	No	
Pb	0.000	25	No	
NH3	0.135	250	No	

2030

	2000			
Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR		
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	AREA			
VOC	6.282	250	No	
NOx	14.716	250	No	
СО	35.138	250	No	
SOx	0.088	250	No	
PM 10	32.648	250	No	
PM 2.5	0.979	250	No	
Pb	0.000	25	No	
NH3	0.159	250	No	

2031				
Pollutant	Action Emissions INSIGNIFICANCE INDICATOR			
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	AREA			
VOC	6.587	250	No	
NOx	16.590	250	No	
СО	40.005	250	No	
SOx	0.101	250	No	
PM 10	32.790	250	No	
PM 2.5	1.120	250	No	
Pb	0.000	25	No	
NH3	0.183	250	No	

2032

Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR	
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	Y AREA		
VOC	6.890	250	No
NOx	18.460	250	No
СО	44.847	250	No
SOx	0.114	250	No
PM 10	32.929	250	No
PM 2.5	1.259	250	No
Pb	0.000	25	No
NH3	0.206	250	No

2033

2000			
Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR	
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY	Y AREA		
VOC	7.196	250	No
NOx	20.349	250	No
СО	49.704	250	No
SOx	0.127	250	No
PM 10	33.069	250	No
PM 2.5	1.398	250	No
Pb	0.000	25	No
NH3	0.230	250	No

2034 - (Steady State)

Pollutant	Action Emissions	INSIGNIFICANCE INDICATOR		
	(ton/yr)	Indicator (ton/yr)	Exceedance (Yes or No)	
NOT IN A REGULATORY	AREA			
VOC	3.179	250	No	
NOx	19.577	250	No	
СО	49.912	250	No	
SOx	0.130	250	No	
PM 10	1.447	250	No	
PM 2.5	1.439	250	No	
Pb	0.000	25	No	
NH3	0.240	250	No	

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to an exceedance of one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

Ryan Sauter, Senior Scientist

Nov 29 2023

Name, Title

Date

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to estimate GHG emissions and assess the theoretical Social Cost of Greenhouse Gases (SC GHG) associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide. This report provides a summary of GHG emissions and SC GHG analysis.

a. Action Location:

Base:GRAND FORKS AFBState:North DakotaCounty(s):Grand ForksRegulatory Area(s):NOT IN A REGULATORY AREA

- **b. Action Title:** Enhanced Use Lease Development at GrandSKY Business Park, Grand Forks Air Force Base, North Dakota
- c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

The Proposed Action would develop approximately 8,600,000 ft2 of impervious surfaces across eight functional land use categories within the GrandSKY Business Park.

f. Point of Contact:

Name:	Ryan Sauter
Title:	Senior Scientist
Organization:	EAS
Email:	ryan.sauter@easbio.com
Phone Number:	651.341.9955

2. Analysis: Total combined direct and indirect GHG emissions associated with the action were estimated through ACAM on a calendar-year basis from the action start through the expected life cycle of the action. The life cycle for Air Force actions with "steady state" emissions (SS, net gain/loss in emission stabilized and the action is fully implemented) is assumed to be 10 years beyond the SS emissions year or 20 years beyond SS emissions year for aircraft operations related actions.

GHG Emissions Analysis Summary:

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO2), methane (CH4), and nitrous oxide (NO2). These three GHGs represent more than 97 percent of all U.S. GHG emissions. Emissions of GHGs are typically quantified and regulated in units of CO2 equivalents (CO2e). The CO2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO2. All GHG emissions estimates were derived from various emission sources using the methods, algorithms, emission factors, and GWPs from the most current Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Transitory Sources.

The Air Force has adopted the Prevention of Significant Deterioration (PSD) threshold for GHG of 75,000 ton per year (ton/yr) of CO2e (or 68,039 metric ton per year, mton/yr) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (de minimis, too trivial or minor to merit consideration). Actions with a net change in GHG (CO2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action poses a significant impact. For further detail on insignificance indicators see Level II, Air Quality Quantitative Assessment, Insignificance Indicators (April 2023).

The following table summarizes the action-related GHG emissions on a calendar-year basis through the projected life cycle of the action.

	Action-Related Annual GHG Emissions (mton/yr)						
YEAR	CO2	CH4	N2O	CO2e	Threshold	Exceedance	
2024	1,443	0.04411068	0.01867903	1,446	68,039	No	
2025	3,718	0.09961545	0.060493	3,726	68,039	No	
2026	5,987	0.15390188	0.10208105	5,998	68,039	No	
2027	8,250	0.20695348	0.1435102	8,265	68,039	No	
2028	10,513	0.25951417	0.18485854	10,532	68,039	No	
2029	12,776	0.31207143	0.22620594	12,798	68,039	No	
2030	15,040	0.36463323	0.26755452	15,065	68,039	No	
2031	17,303	0.41719503	0.3089031	17,332	68,039	No	
2032	19,566	0.46975683	0.35025168	19,599	68,039	No	
2033	21,830	0.52231863	0.39160026	21,866	68,039	No	
2034 [SS Year]	22,669	0.53229891	0.41450052	22,706	68,039	No	
2035	22,669	0.53229891	0.41450052	22,706	68,039	No	
2036	22,669	0.53229891	0.41450052	22,706	68,039	No	
2037	22,669	0.53229891	0.41450052	22,706	68,039	No	
2038	22,669	0.53229891	0.41450052	22,706	68,039	No	
2039	22,669	0.53229891	0.41450052	22,706	68,039	No	
2040	22,669	0.53229891	0.41450052	22,706	68,039	No	
2041	22,669	0.53229891	0.41450052	22,706	68,039	No	
2042	22,669	0.53229891	0.41450052	22,706	68,039	No	
2043	22,669	0.53229891	0.41450052	22,706	68,039	No	
2044	22,669	0.53229891	0.41450052	22,706	68,039	No	

The following U.S. and State's GHG emissions estimates (next two tables) are based on a five-year average (2016 through 2020) of individual state-reported GHG emissions (Reference: State Climate Summaries 2022, NOAA National Centers for Environmental Information, National Oceanic and Atmospheric Administration. https://statesummaries.ncics.org/downloads/).

	State's Annual GHG Emissions (mton/yr)						
YEAR	CO2	CH4	N2O	CO2e			
2024	65,566,755	277,200	45,032	65,888,988			
2025	65,566,755	277,200	45,032	65,888,988			
2026	65,566,755	277,200	45,032	65,888,988			
2027	65,566,755	277,200	45,032	65,888,988			
2028	65,566,755	277,200	45,032	65,888,988			
2029	65,566,755	277,200	45,032	65,888,988			
2030	65,566,755	277,200	45,032	65,888,988			
2031	65,566,755	277,200	45,032	65,888,988			
2032	65,566,755	277,200	45,032	65,888,988			
2033	65,566,755	277,200	45,032	65,888,988			

	State's Annual GHG Emissions (mton/yr)					
YEAR	CO2	CH4	N2O	CO2e		
2034 [SS Year]	65,566,755	277,200	45,032	65,888,988		
2035	65,566,755	277,200	45,032	65,888,988		
2036	65,566,755	277,200	45,032	65,888,988		
2037	65,566,755	277,200	45,032	65,888,988		
2038	65,566,755	277,200	45,032	65,888,988		
2039	65,566,755	277,200	45,032	65,888,988		
2040	65,566,755	277,200	45,032	65,888,988		
2041	65,566,755	277,200	45,032	65,888,988		
2042	65,566,755	277,200	45,032	65,888,988		
2043	65,566,755	277,200	45,032	65,888,988		
2044	65,566,755	277,200	45,032	65,888,988		

	U.S. Annual GHG Emissions (mton/yr)					
YEAR	CO2	CH4	N2O	CO2e		
2024	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2025	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2026	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2027	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2028	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2029	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2030	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2031	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2032	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2033	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2034 [SS Year]	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2035	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2036	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2037	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2038	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2039	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2040	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2041	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2042	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2043	5,136,454,179	25,626,912	1,500,708	5,163,581,798		
2044	5,136,454,179	25,626,912	1,500,708	5,163,581,798		

GHG Relative Significance Assessment:

A Relative Significance Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (yGba.e., global, national, and regional) and the degree (intensity) of the proposed action's effects. The Relative Significance Assessment provides real-world context and allows for a reasoned choice against alternatives through a relative comparison analysis. The analysis weighs each alternative's annual net change in GHG emissions proportionally against (or relative to) global, national, and regional emissions.

The action's surroundings, circumstances, environment, and background (context associated with an action) provide the setting for evaluating the GHG intensity (impact significance). From an air quality perspective, context of an action is the local area's ambient air quality relative to meeting the NAAQSs, expressed as attainment, nonattainment, or maintenance areas (this designation is considered the attainment status). GHGs are non-hazardous to health at normal ambient concentrations and, at a cumulative global scale, action-related GHG emissions can only potentially cause warming of the climatic system. Therefore, the action-related GHGs generally have an insignificant impact to local air quality.

However, the affected area (context) of GHG/climate change is global. Therefore, the intensity or degree of the proposed action's GHG/climate change effects are gauged through the quantity of GHG associated with the action as compared to a baseline of the state, U.S., and global GHG inventories. Each action (or alternative) has significance, based on their annual net change in GHG emissions, in relation to or proportionally to the global, national, and regional annual GHG emissions.

To provide real-world context to the GHG and climate change effects on a global scale, an action's net change in GHG emissions is compared relative to the state (where action will occur) and U.S. annual emissions. The following table provides a relative comparison of an action's net change in GHG emissions vs. state and U.S. projected GHG emissions for the same time period.

Total GHG Relative Significance (mton)							
CO2 CH4 N2O CO2e							
2024-2044	State Total	1,376,901,860	5,821,205	945,676	1,383,668,742		
2024-2044	U.S. Total	107,865,537,759	538,165,145	31,514,860	108,435,217,765		
2024-2044	Action	365,783	8.705359	6.613643	366,395		
Percent of State	e Totals	0.02656565%	0.00014955%	0.00069936%	0.02647994%		
Percent of U.S.	Totals	0.00033911%	0.00000162%	0.00002099%	0.00033789%		

Climate Change Assessment (as SC GHG):

On a global scale, the potential climate change effects of an action are indirectly addressed and put into context through providing the theoretical SC GHG associated with an action. The SC GHG is an administrative and theoretical tool intended to provide additional context to a GHG's potential impacts through approximating the long-term monetary damage that may result from GHG emissions affect on climate change. It is important to note that the SC GHG is a monetary quantification, in 2020 U.S. dollars, of the theoretical economic damages that could result from emitting GHGs into the atmosphere.

The SC GHG estimates are derived using the methodology and discount factors in the "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990," released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC GHGs) in February 2021.

The speciated IWG Annual SC GHG Emission associated with an action (or alternative) are first estimated as annual unit cost (cost per metric ton, \$/mton). Results of the annual IWG Annual SC GHG Emission Assessments are tabulated in the IWG Annual SC GHG Cost per Metric Ton Table below:

IWO	IWG Annual SC GHG Cost per Metric Ton (\$/mton [In 2020 \$])					
YEAR	CO2	CH4	N2O			
2024	\$82.00	\$2,200.00	\$29,000.00			
2025	\$83.00	\$2,200.00	\$30,000.00			
2026	\$84.00	\$2,300.00	\$30,000.00			
2027	\$86.00	\$2,300.00	\$31,000.00			
2028	\$87.00	\$2,400.00	\$32,000.00			
2029	\$88.00	\$2,500.00	\$32,000.00			
2030	\$89.00	\$2,500.00	\$33,000.00			
2031	\$91.00	\$2,600.00	\$33,000.00			
2032	\$92.00	\$2,600.00	\$34,000.00			
2033	\$94.00	\$2,700.00	\$35,000.00			

IWG SC GHG Discount Factor: 2.5%

IWO	IWG Annual SC GHG Cost per Metric Ton (\$/mton [In 2020 \$])					
YEAR	CO2	CH4	N2O			
2034 [SS Year]	\$95.00	\$2,800.00	\$35,000.00			
2035	\$96.00	\$2,800.00	\$36,000.00			
2036	\$98.00	\$2,900.00	\$36,000.00			
2037	\$99.00	\$3,000.00	\$37,000.00			
2038	\$100.00	\$3,000.00	\$38,000.00			
2039	\$102.00	\$3,100.00	\$38,000.00			
2040	\$103.00	\$3,100.00	\$39,000.00			
2041	\$104.00	\$3,200.00	\$39,000.00			
2042	\$106.00	\$3,300.00	\$40,000.00			
2043	\$107.00	\$3,300.00	\$41,000.00			
2044	\$108.00	\$3,400.00	\$41,000.00			

Action-related SC GHG were estimated by calendar-year for the projected action's lifecycle. Annual estimates were found by multiplying the annual emission for a given year by the corresponding IWG Annual SC GHG Emission value (see table above).

	Action-Related Annual SC GHG (\$K/yr [In 2020 \$])						
YEAR	CO2	CH4	N2O	GHG			
2024	\$118.33	\$0.10	\$0.54	\$118.97			
2025	\$308.62	\$0.22	\$1.81	\$310.65			
2026	\$502.93	\$0.35	\$3.06	\$506.35			
2027	\$709.49	\$0.48	\$4.45	\$714.42			
2028	\$914.65	\$0.62	\$5.92	\$921.19			
2029	\$1,124.32	\$0.78	\$7.24	\$1,132.34			
2030	\$1,338.53	\$0.91	\$8.83	\$1,348.27			
2031	\$1,574.57	\$1.08	\$10.19	\$1,585.85			
2032	\$1,800.09	\$1.22	\$11.91	\$1,813.22			
2033	\$2,051.97	\$1.41	\$13.71	\$2,067.09			
2034 [SS Year]	\$2,153.53	\$1.49	\$14.51	\$2,169.53			
2035	\$2,176.20	\$1.49	\$14.92	\$2,192.61			
2036	\$2,221.54	\$1.54	\$14.92	\$2,238.00			
2037	\$2,244.21	\$1.60	\$15.34	\$2,261.14			
2038	\$2,266.88	\$1.60	\$15.75	\$2,284.22			
2039	\$2,312.21	\$1.65	\$15.75	\$2,329.61			
2040	\$2,334.88	\$1.65	\$16.17	\$2,352.70			
2041	\$2,357.55	\$1.70	\$16.17	\$2,375.42			
2042	\$2,402.89	\$1.76	\$16.58	\$2,421.22			
2043	\$2,425.56	\$1.76	\$16.99	\$2,444.31			
2044	\$2,448.23	\$1.81	\$16.99	\$2,467.03			

The following two tables summarize the U.S. and State's Annual SC GHG by calendar-year. The U.S. and State's Annual SC GHG are in 2020 dollars and were estimated by each year for the projected action lifecycle. Annual SC GHG estimates were found by multiplying the U.S. and State's annual five-year average GHG emissions for a given year by the corresponding IWG Annual SC GHG Cost per Metric Ton value.

	State's Annual SC GHG (\$K/yr [In 2020 \$])						
YEAR	CO2	CH4	N2O	GHG			
2024	\$5,376,473.93	\$609,840.49	\$1,305,934.19	\$7,292,248.61			
2025	\$5,442,040.69	\$609,840.49	\$1,350,966.40	\$7,402,847.58			
2026	\$5,507,607.44	\$637,560.52	\$1,350,966.40	\$7,496,134.36			
2027	\$5,638,740.95	\$637,560.52	\$1,395,998.61	\$7,672,300.08			
2028	\$5,704,307.71	\$665,280.54	\$1,441,030.83	\$7,810,619.07			
2029	\$5,769,874.46	\$693,000.56	\$1,441,030.83	\$7,903,905.85			
2030	\$5,835,441.22	\$693,000.56	\$1,486,063.04	\$8,014,504.82			
2031	\$5,966,574.73	\$720,720.58	\$1,486,063.04	\$8,173,358.35			
2032	\$6,032,141.48	\$720,720.58	\$1,531,095.25	\$8,283,957.32			
2033	\$6,163,274.99	\$748,440.61	\$1,576,127.47	\$8,487,843.07			
2034 [SS Year]	\$6,228,841.75	\$776,160.63	\$1,576,127.47	\$8,581,129.84			
2035	\$6,294,408.50	\$776,160.63	\$1,621,159.68	\$8,691,728.81			
2036	\$6,425,542.02	\$803,880.65	\$1,621,159.68	\$8,850,582.34			
2037	\$6,491,108.77	\$831,600.67	\$1,666,191.89	\$8,988,901.34			
2038	\$6,556,675.53	\$831,600.67	\$1,711,224.11	\$9,099,500.30			
2039	\$6,687,809.04	\$859,320.70	\$1,711,224.11	\$9,258,353.84			
2040	\$6,753,375.79	\$859,320.70	\$1,756,256.32	\$9,368,952.81			
2041	\$6,818,942.55	\$887,040.72	\$1,756,256.32	\$9,462,239.58			
2042	\$6,950,076.06	\$914,760.74	\$1,801,288.53	\$9,666,125.33			
2043	\$7,015,642.81	\$914,760.74	\$1,846,320.75	\$9,776,724.30			
2044	\$7,081,209.57	\$942,480.76	\$1,846,320.75	\$9,870,011.08			

	U.S. Annual SC GHG (\$K/yr [In 2020 \$])					
YEAR	CO2	CH4	N2O	GHG		
2024	\$421,189,242.68	\$56,379,205.70	\$43,520,521.44	\$521,088,969.82		
2025	\$426,325,696.86	\$56,379,205.70	\$45,021,229.08	\$527,726,131.63		
2026	\$431,462,151.04	\$58,941,896.86	\$45,021,229.08	\$535,425,276.98		
2027	\$441,735,059.39	\$58,941,896.86	\$46,521,936.72	\$547,198,892.97		
2028	\$446,871,513.57	\$61,504,588.03	\$48,022,644.35	\$556,398,745.96		
2029	\$452,007,967.75	\$64,067,279.20	\$48,022,644.35	\$564,097,891.30		
2030	\$457,144,421.93	\$64,067,279.20	\$49,523,351.99	\$570,735,053.12		
2031	\$467,417,330.29	\$66,629,970.37	\$49,523,351.99	\$583,570,652.65		
2032	\$472,553,784.47	\$66,629,970.37	\$51,024,059.62	\$590,207,814.46		
2033	\$482,826,692.83	\$69,192,661.54	\$52,524,767.26	\$604,544,121.62		
2034 [SS Year]	\$487,963,147.01	\$71,755,352.70	\$52,524,767.26	\$612,243,266.97		
2035	\$493,099,601.18	\$71,755,352.70	\$54,025,474.90	\$618,880,428.78		
2036	\$503,372,509.54	\$74,318,043.87	\$54,025,474.90	\$631,716,028.31		
2037	\$508,508,963.72	\$76,880,735.04	\$55,526,182.53	\$640,915,881.29		
2038	\$513,645,417.90	\$76,880,735.04	\$57,026,890.17	\$647,553,043.11		
2039	\$523,918,326.26	\$79,443,426.21	\$57,026,890.17	\$660,388,642.63		
2040	\$529,054,780.44	\$79,443,426.21	\$58,527,597.80	\$667,025,804.45		
2041	\$534,191,234.62	\$82,006,117.38	\$58,527,597.80	\$674,724,949.80		
2042	\$544,464,142.97	\$84,568,808.54	\$60,028,305.44	\$689,061,256.96		
2043	\$549,600,597.15	\$84,568,808.54	\$61,529,013.08	\$695,698,418.77		
2044	\$554,737,051.33	\$87,131,499.71	\$61,529,013.08	\$703,397,564.12		

Relative Comparison of SC GHG:

To provide additional real-world context to the potential climate change impact associate with an action, a Relative Comparison of SC GHG Assessment is also performed. While the SC GHG estimates capture an indirect approximation of global climate damages, the Relative Comparison of SC GHG Assessment provides a better perspective from a regional and global scale.

The Relative Comparison of SC GHG Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (yGba.e., global, national, and regional) and the SC GHG as the degree (intensity) of the proposed action's effects. The Relative Comparison Assessment provides real-world context and allows for a reasoned choice among alternatives through a relative contrast analysis which weighs each alternative's SC GHG proportionally against (or relative to) existing global, national, and regional SC GHG. The below table provides a relative comparison between an action's SC GHG vs. state and U.S. projected SC GHG for the same time period:

Total SC-GHG (\$K [In 2020 \$])						
		CO2	CH4	N2O	GHG	
2024-	State Total	\$130,740,109.98	\$16,133,053.05	\$33,278,805.63	\$180,151,968.66	
2044						
2024-	U.S. Total	\$10,242,089,632.93	\$1,491,486,259.78	\$1,109,022,943.00	\$12,842,598,835.71	
2044						
2024-	Action	\$35,787.19	\$25.22	\$241.75	\$36,054.16	
2044						
Percent of State Totals		0.02737277%	0.00015634%	0.00072644%	0.02001319%	
Percent of U.S. Totals		0.00034941%	0.00000169%	0.00002180%	0.00028074%	

From a global context, the action alternative's total SC GHG percentage of total global SC GHG for the same time period is: 0.00003762%.*

* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

Ryan Sauter, Senior Scientist	Nov 29 2023
Name, Title	Date

APPENDIX E. WETLANDS MITIGATION PLAN

FINAL MITIGATION PLAN

1 INTRODUCTION

This mitigation plan was prepared to support the Environmental Assessment for Development of an Enhanced Use Lease (EUL) at the Grand Sky Business Park on Grand Forks Air Force Base (GFAFB) and proposed Finding of No Significant Impact (FONSI), and proposed Finding of No Practicable Alternative (FONPA) for the Proposed Action. The development plans used to assess the potential impacts of the Proposed Action are preliminary and may be modified. Before any changes can be made to the requirements in this Mitigation Plan, Grand Forks County will present the plans to the base Civil Engineer for review. For unavoidable impacts on jurisdictional wetlands, the County will apply for a Clean Water Act (CWA) Section 404 permit from the United States Army Corps of Engineers (USACE). Unavoidable impacts on non-jurisdictional wetlands will be mitigated in coordination with the Air Force.

1.1 Wetlands in the Project Area

Wetlands on GFAFB occur frequently in drainage ways, low-lying depressions, and potholes. Previous wetland assessments conducted at GFAFB include the following:

- 1999 Wetland identification and delineation
- 2004 Site-wide wetland assessment and summary
- 2005 Site-specific wetland delineation of the new proposed fire station area
- 2006 Select wetland delineation
- 2007 Wetlands characterization project
- 2011 Wetland inventory and assessment
- 2012 Two project/site-specific wetland delineations conducted
- 2021 Project-specific wetland delineation

Due to the presence of potential wetland features, a wetland delineation was conducted for the entire project area, consisting of the entire EUL area. The Wetland Delineation Report was submitted to USACE with a request to verify results and determine whether the features identified in the report as wetlands or other waters of the United States would fall under USACE jurisdiction and be subject to a CWA 404 permit for any the discharge of dredged or fill material into waters of the United States.

Wetland delineation field surveys were conducted on the 217-acre project area in September 2023. The 2023 wetland delineation survey used updated geographic information system software, aerial imagery, and fieldwork across the 217-acre parcel and identified 38 wetlands totaling approximately 25 acres, to be confirmed by a final USACE jurisdictional determination. However, exact estimates are not known at this time. Based on the functional land use approach of this project, and pending USACE's final jurisdictional wetland determination, it would be anticipated that up to 25 acres of jurisdictional wetlands would be filled under the Proposed Action.

1.2 Regulatory Requirement

Executive Order (EO) 11990, Protection of Wetlands, (May 24, 1977) directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands. In accordance with Air Force Manual (AFMAN) 32-7003, a FONPA must be included within the FONSI stating why there are no practicable alternatives to development within or affecting wetland areas. It is Department of Air Force (DAF) policy to avoid constructing new facilities within areas containing wetlands, where practicable (AFMAN 32-7003, Section 3.17). Proposed actions that could impact wetlands, even if the affected area is not within a jurisdictional wetland boundary, require an environmental impact analysis in accordance with the National Environmental Policy Act (NEPA) and the DAF Environmental Impact Analysis Process (32 Code of Federal Regulations [CFR] Part 989). The Proposed Action must include all practicable measures to minimize harm to wetlands.

Mitigation is required for potential project impacts on wetlands because there is no practicable alternative for the proposed EUL development project. Due to the location of several project components within existing wetland boundaries, the project cannot avoid directly impacting wetlands. As part of the USACE permitting process, compensatory mitigation would be provided for the unavoidable loss of jurisdictional wetlands to ensure the project would not result in a net loss of wetlands.

Design documents showing the extent of impacts to wetlands are not complete, therefore, the acreage of wetlands that would be potentially affected has not been determined, but would not exceed the 25 acres delineated in the project area. Based upon the expected impacts to wetlands, it is expected that a Section 404 CWA permit would be required prior to ground-disturbing activities. The acquisition of the Section 404 permit would be part of the design and construction process. Mitigation for wetlands impacts would be required.

This Mitigation Plan has been completed in accordance with USACE and Environmental Protection Agency's (EPA) Compensatory Mitigation Final Rule, 73 FR 19594, entitled *Compensatory Mitigation for Losses of Aquatic Resources* (USACE and EPA, 2008), which established a preference hierarchy for compensatory mitigation options.

1.3 Environmental Protection Measures for Wetlands or Other Waters of the United States

Because the project would potentially affect wetlands or other waters of the United States, a sequence of actions has been followed to offset effects, known as the mitigation sequence, to guide mitigation decisions and determine the type and level of mitigation required under the CWA Section 404. The sequence of steps is to avoid, minimize, and compensate, as appropriate. Because effects on wetlands cannot be avoided, they will be minimized. Following minimization, the remaining unavoidable impacts will be compensated. Compensation can include wetland restoration, creation, enhancement, or preservation.

2 MITIGATION

Mitigation consists of three factors: avoidance, minimization, and compensation. The purpose of compensatory mitigation is to offset unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

2.1 Avoidance

The proposed project includes additional development within the EUL area at GFAFB where wetlands are known to exist, therefore, complete avoidance of wetlands is not possible. Wetlands will be avoided as feasible during project design. Complete avoidance is not desirable, as the base is currently not in compliance with Air Force Instruction (AFI) 91-202, *The US Air Force Mishap Prevention Program*, and AFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*. The base has identified a need to reduce hazards associated with wetlands, which attract birds and other wildlife, in the vicinity of the airfield to establish a safer BASH environment. The filling of wetlands within the EUL would meet this need by reducing the amount of habitat for wildlife in the vicinity of the airfield and supporting compliance with the associated AFIs.

2.2 Minimization

Because impacts cannot be completely avoided, reduction of effects is evaluated based on the type and extent of the impact on wetlands or waters of the United States. Indirect effects could occur on wetlands or other waters of the United States that are in proximity to proposed project activities. Implementing the following construction and natural resources controls, where appropriate, would minimize potential indirect effects on wetlands or other waters of the United States that are adjacent to proposed activities.

2.2.1 Construction Controls

- Wetlands or other waters of the United States would be clearly flagged prior to the commencement of construction activities. This would prevent construction workers from entering these wetlands and potentially placing fill material within the wetlands or trampling wetland vegetation.
- Construction activities would be phased, if logically possible, so that smaller areas of land are disturbed at one period of time. This would result in less soil being exposed at one time and would reduce the potential for erosion and deposition of sediment into wetlands or other waters of the United States.
- Water quality-control features such as sedimentation basins and detention or retention ponds, if part of the design, would be installed as applicable prior to initiation of construction activities. Temporary basins and silt traps would be constructed as necessary to contain sediment and runoff on the construction area. Hay bales and silt fences would be used to minimize transport of sediments from the project area.
- All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in the installation's Spill Prevention, Control, and Countermeasure Plan would be followed to quickly contain and clean up a spill.

- An erosion and sediment control plan, typically part of the Stormwater Pollution Prevention Plan (SWPPP), would be developed prior to initiation of construction activities, as required under the National Pollution Discharge Elimination System requirements, and adhered to during development.
- Erosion-control structures, if required in the SWPPP, would be installed downgradient of the construction site in sloped areas adjacent to wetlands and other water bodies. The structures would be regularly maintained and removed once vegetation has been reestablished. All stormwater controls will be approved through the installation Stormwater Program Manager.
- Site grading would be conducted in a manner that would direct stormwater runoff generated from construction activities away from nearby wetlands or other waters of the United States. Best management practices such as installation of silt fencing along wetland buffers would aid in prevention of siltation if natural site hydrology directs stormwater runoff to the wetlands.
- Crossing wetlands would be avoided to the extent possible. When crossing wetlands is unavoidable, access paths would be placed along high ground with appropriate mats, docks, or boardwalks as applicable, rather than filling a wetland to simply cover it. Stormwater runoff originating from the construction site should be diverted and sedimentation controls implemented to avoid discharging into the wetland.
- When wetland crossings cannot be avoided, the use of heavy machinery in wetlands would be minimized by installing construction barriers at the edge of the proposed disturbance area.
- Construction activities would be restricted to drier periods during the year, if possible. Minimum flows for the Turtle River occur in January and February.
- Construction debris would not be disposed of in wetlands. Debris and waste would be disposed of in accordance with all local, state, and federal laws.

2.2.2 Natural Resources Controls

A SWPPP would be developed and implemented to prevent surface water degradation of wetlands within close proximity of project sites. The following measures are expected to be part of the plan.

- Prevent erosion of exposed soil surfaces and trapping sediments being transported.
- Control stream bank and stream bed disturbances to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. Coordinate use of pesticides or herbicides with those accepted for use by GFAFB on the installation.
- Fill placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds. Debris and solid waste will be properly removed and impacted areas restored as nearly as possible to the original condition.
- Removal of vegetation would be minimized. In areas where excavation is not proposed but vegetation removal is necessary, vegetation would be cut at ground level, leaving roots

intact. Disturbed areas would be seeded, sodded, or planted with indigenous material as soon as possible after construction activities are completed, as appropriate.

• The spread of noxious weeds would be controlled by avoiding activities in or adjacent to heavily infested areas, removing seed sources and propagules from the site prior to conducting activities or limiting operations to non-seed producing seasons. Following activities that expose the soil, mitigation can be achieved by covering the area with weed-seed-free mulch or by seeding the area with native species. Soil would be covered to reduce the germination of weed seeds, maintain soil moisture, and minimize erosion.

2.3 Compensatory Mitigation

Following avoidance and minimization, the remaining unavoidable impacts would be compensated. Compensation can include wetland restoration, creation, enhancement, or preservation, and is expected to be provided at a ratio of 1:1. Compensation can be provided via any of the following options:

- Permittee-responsible Mitigation.
- Mitigation Bank credits, which are typically completed in advance of permitted impacts.
- In-lieu Fee Program credits (often involving large, more ecologically valuable compensatory mitigation projects as compared to permittee-responsible mitigation).

Compensatory mitigation would be accomplished mainly off base because wetland creation, restoration, or preservation would conflict with GFAFB's desire to reduce the BASH risk. USACE maintains a Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) website that tracks available in-lieu fee programs by state (USACE, 2023). As of the date of this report, several of these programs have credits available. The compensatory mitigation will be coordinated with and approved by the USACE.

3 DESIGN AND PERMITTING PHASE

Design documents will avoid wetlands if possible. When direct wetland effects cannot be avoided, correspondence with regulatory and resource agencies regarding mitigation will commence, and a permit application will be submitted. Additional specifications would be developed as appropriate. The final specifications could include specific minimization techniques and the development of management plans for stormwater runoff, vegetation, and grading.

References

- U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency (EPA). 2008. *Compensatory Mitigation for Losses of Aquatic Resources*. USACE 33 CFR Parts 325 and 332 and EPA 40 CFR Part 230. 10 April 2008.
- USACE. 2023. Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) search results for Grand Forks County, North Dakota. Accessed on 17 October 2023 at https://ribits.ops.usace.army.mil/ords/f?p=107:2:667292370864::NO.

Final

Grand Sky Business Park Wetland Delineation Report

Grand Forks Air Force Base, North Dakota

January 2024





Prepared for: 319th Reconnaissance Wing Grand Forks Air Force Base, North Dakota

> Prepared by: Versar, Inc. 1025 Vermont Ave. NW Suite 500 Washington, DC 20005

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Final

GRAND SKY BUSINESS PARK WETLAND DELINEATION REPORT

Grand Forks Air Force Base, North Dakota

January 2024

Prepared for: 319th Reconnaissance Wing Grand Forks Air Force Base, North Dakota

> Prepared by: Versar, Inc. 1025 Vermont Ave. NW Suite 500 Washington, DC 20005

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EXECUTIVE SUMMARY

SR CAMPUS, LLC contracted Versar, Inc. (Versar) to conduct a wetland delineation for a 217-acre project area (Wetland Delineation Project Area; [Project Area]) consisting of land located within the Grand Sky Business Park on Grand Forks Air Force Base (GFAFB), located 14 miles west of Grand Forks, North Dakota. This delineation report is an integral part of an Environmental Assessment analyzing an Enhanced Use Lease at GFAFB. The proposed area of development will be used to support aerial systems and/or remotely piloted aircraft related to intelligence, surveillance, and reconnaissance activities, consisting of mixed-use facilities such as aviation-related light-industrial uses, hangars, classroom and training facilities, administrative offices, and data centers.

Versar conducted an offsite assessment and onsite field assessment to delineate wetlands The offsite assessment included gathering, organizing, and reviewing all relevant existing data including geographic information system (GIS) data, available reports, and trustworthy web resources. It also included time series analysis using the Antecedent Precipitation Tool and corresponding aerial photography to inform the field investigation.

Versar conducted field investigations between September 23 and 28, 2023, to delineate wetlands following the methods outlined in the 1987 U.S. Army Corps of Engineers *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region Version 2.0.* Two field teams, each composed of a wetland scientist and a field technician, completed the investigation over 6 consecutive days. The survey teams evaluated wetlands, documented conditions and wetland indicators, and recorded boundaries using the geographic positioning system (GPS). Versar completed data forms and took site photographs to document site conditions at representative wetland and non-wetland boundary locations. The GPS-collected data and field observations were used to determine wetland location and area and develop maps in the GIS.

This wetland investigation identified the extent of 38 separate wetland polygons comprising 24.57 acres of wetlands. Palustrine emergent wetlands accounted for 100 percent of the delineated wetlands. This report provides the documentation to inform an Environmental Assessment and support necessary regulator coordination for the EUL at GFAFB.

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degree(s) Fahrenheit
APT	Antecedent Precipitation Tool
CWA	Clean Water Act
DAF	Department of the Air Force
DoD	Department of Defense
DoDI	Department of Defense Instruction
EO	Executive Order
EUL	Enhanced Use Lease
FEMA	Federal Emergency Management Agency
GFAFB	Grand Forks Air Force Base
GIS	geographic information system
GPS	global positioning system
Lidar	light detection and ranging
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
PDSI	Palmer Drought Severity Index
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
WOTUS	Waters of the United States

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1.0 INTRODUCTION

1.1 BACKGROUND

Versar, Inc. (Versar) was contracted by SR CAMPUS, LLC to conduct a wetland delineation for a 217-acre project area (Wetland Delineation Project Area; [Project Area]) consisting of land located within the Grand Sky Business Park on Grand Forks Air Force Base (GFAFB), located 14 miles west of Grand Forks, North Dakota. The Grand Sky Business Park is in the southwestern portion of GFAFB. The Project Area is designated as the Grand Sky Business Park Enhanced Use Lease (EUL) (**Figure 1-1**).

This delineation report is part of an Environmental Assessment analyzing an EUL at GFAFB. The proposed area of development will be used to support aerial systems and/or remotely piloted aircraft related to intelligence, surveillance, and reconnaissance activities, consisting of mixed-use facilities such as aviation-related light-industrial uses, hangars, classroom and training facilities, administrative offices, and data centers.

This report describes the methods and results of investigations conducted for this project and includes all documentation necessary to support a request for a preliminary jurisdictional determination from U.S. Army Corps of Engineers (USACE) by the Department of the Air Force (DAF).

1.2 WETLAND POLICY

1.2.1 The Clean Water Act

The Federal Water Pollution Control Act (33 United States Code § 1251 et seq.), commonly known as the Clean Water Act (CWA), is the primary federal authority regulating activities that impact waters of the United States (WOTUS), including wetlands. Section 404 of the CWA authorizes USACE to issue permits for the discharge of dredged or fill material into WOTUS, including wetlands. The selection and use of disposal sites must be conducted in accordance with Section 404(b)(1), *Guidelines for Specification of Disposal Sites for Dredged or Fill Material*. The USACE Wetland Delineation Manual describes wetlands as areas that have positive indicators for hydrophytic vegetation, wetland hydrology, and hydric soils, as well as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987).

WOTUS is not defined in the CWA. Since the 1970s, the U.S. Environmental Protection Agency (USEPA) and USACE have defined WOTUS by regulations. Three Supreme Court cases (1985, 2001 and 2006) have addressed the definition of WOTUS, particularly regarding the extent of jurisdiction. After the Rapanos v. United States case in 2006, the agencies developed a set of guidance to implement WOTUS as defined in the four-Justice plurality opinion or that met the significant nexus conditions included in Justice Kennedy's concurring opinion.

During the Obama administration, USEPA and USACE published a joint rule to refine the definition of WOTUS, known as the 2015 Clean Water Rule. Subsequently, the Trump administration repealed and replaced it with the Navigable Waters Protection Rule. In early 2020 during the Biden administration, the agencies halted implementation of the Navigable Waters Protection Rule and interpreted WOTUS consistent with the pre-2015 regulatory regime. In December 2022, USEPA finalized a new regulatory definition, updating protections of the pre-2015 rule. In February of 2023, 24 states sued USEPA and USACE, arguing the 'final rule' was unlawful. In April 2023, three more states joined to block the final WOTUS rule, including North Dakota, bringing the total states to 27. The District of North Dakota ruled in favor of the states, ultimately blocking the USEPA from enforcing the final WOTUS rule. In August 2023, USEPA and USACE issued final conforming rule amendments to the "Revised Definition of 'WOTUS'", conforming to *Sackett v. EPA, No. 21-454*. In North Dakota, USACE and USEPA are interpreting WOTUS consistent with the pre-2015 regulatory regime consistent with the *Sackett* decision until further notice (USEPA 2023).

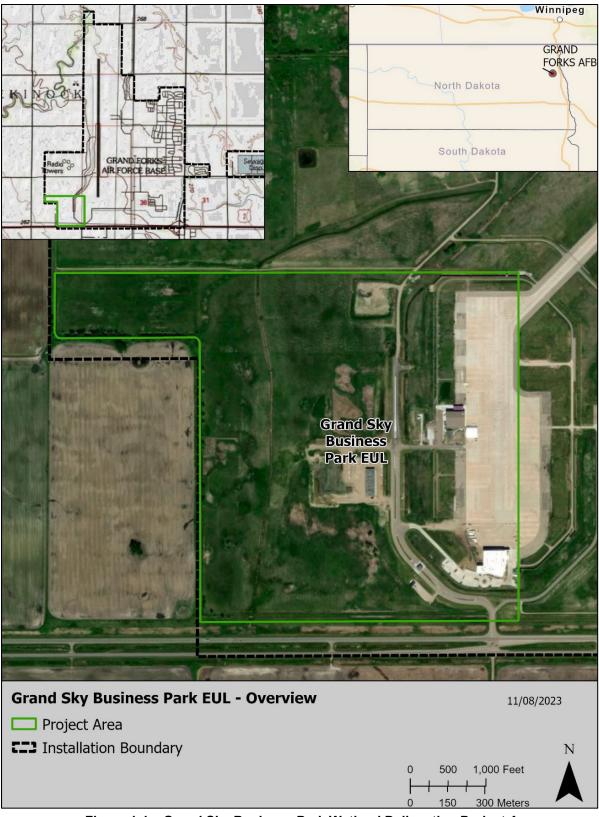


Figure 1-1 Grand Sky Business Park Wetland Delineation Project Area

Based on implementing guidance during the pre-2015 regulatory regime, the following waters are protected by the CWA:

- Traditional navigable waters.
- Interstate waters.
- Wetlands adjacent to either traditional navigable waters or interstate waters.
- Non-navigable tributaries to traditional navigable waters that are relatively permanent, meaning they contain water at least seasonally.
- Wetlands that directly abut relatively permanent waters.

In addition, the following waters are protected by the CWA if a fact-specific analysis determines they have a "significant nexus" to a traditional navigable water or interstate water:

- Tributaries to traditional navigable waters or interstate waters.
- Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters.
- Waters that fall under the "other waters" category of the regulations. The guidance divides these waters into two categories, those that are physically proximate to other jurisdictional waters and those that are not, and discusses how each category should be evaluated.

The following aquatic areas are generally not protected by the CWA:

- Wet areas that are not tributaries or open waters and do not meet the agencies' regulatory definition of "wetlands."
- Waters excluded from coverage under the CWA by existing regulations.

1.3 OTHER POLICY AND GUIDANCE

1.3.1 Executive Order 11990

In accordance with Executive Order (EO) 11990 (Protection of Wetlands, 24 May 1977), federal agencies performing activities located in or affecting wetlands, and or "providing federally undertaken, financed, or assisted construction", must ensure that their activities do not result in a net loss of wetlands. Compliance with EO 11990 necessitates knowledge of the types and locations of wetlands. This wetland delineation was performed to help GFAFB comply with EO 11990 by providing a current inventory of wetland resources in the Project Area. Under the definition provided in the EO, wetland areas should be protected if the wetland supports a prevalence of vegetative life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Even when wetlands are not determined as "jurisdictional" under USACE's regulation definition, these nonjurisdictional wetlands are still protected under EO 11990. The purpose of EO 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, the EO requires federal agencies, in planning their actions to consider alternatives to federal actions impacting wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided.

1.3.2 Department of Defense Instruction 4715.03 Natural Resources Conservation Program

Department of Defense Instruction (DoDI) 4715.03 establishes policy for compliance with applicable federal, state, and local statutory and regulatory requirements, EOs, Presidential memorandums, and other DoD policies for the integrated management of natural resources including lands, air, waters, coastal, and nearshore areas managed or controlled by DoD.

According to the Instruction, the principal purpose of DoD lands, waters, airspace, and coastal resources is to support mission-related activities. Natural resources conservation programs must guarantee DoD continued access to its land, air, and water resources for realistic military training and testing. DoD installations must also demonstrate stewardship of natural resources in their trust by protecting and

enhancing those resources for mission support, biodiversity conservation, and maintenance of ecosystem services. The lands, waters, airspace, and coastal resources must be managed for multiple uses when appropriate, including sustainable yield of all renewable resources, scientific research, education, and recreation.

DoD installations, such as GFAFB, are directed to use a watershed-based approach to manage operations, activities, and lands to avoid or minimize impacts to wetlands, groundwater, and surface waters on or adjacent to installations. With respect to wetlands, DoDI 4715.03 states the following:

- DoD installations shall ensure no net loss of size, function, and value of wetlands, and will preserve the natural and beneficial values of wetlands in carrying out activities in accordance with EO 11990 and the White House Office on Environmental Policy Protecting America's Wetlands: A Fair, Flexible, and Effective Approach, issued 24 August 1993.
- When avoidance of wetlands and other waters of the United States is not practicable, and impacts have been minimized, participation in an approved off-site mitigation bank or in-lieu fee instrument is encouraged as sound conservation planning. Off-site mitigation may provide a preferred alternative to meet watershed protection and ecosystem goals and meet future mission requirements. The enhancement, creation, or restoration of wetlands or streams on DoD property may also be an acceptable means for mitigating mission impacts on wetlands.
- In the event that discharges of pollutants into wetlands or other U.S. waters are necessary, DoD installations must obtain appropriate permits and complete mitigation.

2.0 WETLAND DELINEATION PROJECT AREA

2.1 SITE DESCRIPTION

GFAFB is in Grand Forks County, North Dakota (Latitude 47.959330, Longitude -97.398814) and appears on U.S. Geological Survey 7.5' Quadrangle Arvilla, ND 2020. Grand Forks County lies near the North Dakota-Minnesota state line at the junction of Red Lake River and the Red River of the North. The base is located 14 miles west of the city of Grand Forks and adjacent to the city of Emerado, an incorporated municipality in Grand Forks County. The primary highway access to the base consists of U.S. Highway 2, along the southern boundary of the base, and North Dakota County Road B-3, which borders the base on the east. U.S. Highway 2 can be used to directly access Grand Sky Boulevard and the controlled access gate to the Grand Sky Business Park without going through the GFAFB via the Main Gate.

The 217-acre Project Area is located in the southwestern portion of GFAFB within the Grand Sky Business Park EUL (**Figure 1-1**). The Grand Sky Business Park EUL is defined by the installation boundary fence line to the south, west, and north, and overlaps with the aircraft ramp and hangars to the east. Certain areas within the eastern half of the Grand Sky Business Park have been regraded in the initial phase of development to establish enhanced stormwater management around Grand Sky Boulevard, the gated entrance and one primary building, with the remaining lands to the north, west, and south primarily maintained as open space grasslands.

2.2 GENERAL PHYSIOGRAPHY AND TOPOGRAPHY

GFAFB is located within the Lake Agassiz Plain Level III Ecoregion (Omernik 1987). Glacial Lake Agassiz was the last in a sequence of proglacial lakes to fill the Red River Valley since the beginning of the Pleistocene. It is composed of thick lacustrine sediments underlain by glacial till left behind by glacial movement. The Lake Agassiz Plain is very flat and does not support as many lakes and pothole wetlands as neighboring ecoregions. The tallgrass prairie, which once thrived in this ecoregion, has been replaced by intensive agriculture.

The Project Area is generally level with elevations ranging from 900 to 920 feet above mean sea level (**Figure 2-1**). The Project Area drains from south to north toward the Turtle River. The Turtle River flows west to east-northeast into the Red River of the North, which eventually drains north to Canada.

2.3 WATERSHED AND FLOODPLAIN

GFAFB is in the headwaters of Turtle River watershed (Hydrologic Unit Code 09002030702), which is approximately 198 square miles in area. The Turtle River is 74.9 miles long and flows largely eastward in a highly meandering course through Turtle River State Park and past GFAFB, turns north, flows into the Red River of the North, which ultimately drains to Hudson Bay in Canada.

The Federal Emergency Management Agency (FEMA) defines the 100-year flood plain as an area within which there is a 1 percent chance of inundation by a flood event in a given year, or a flood event in the area once every 100 years. According to the FEMA Flood Insurance Rate Map Number 38035C0525E, Panel 525 (effective December 17, 2010), the Project Area is not within the 100-year flood plain (FEMA 2023). A copy of the Flood Insurance Rate Map is provided in **Attachment A**.

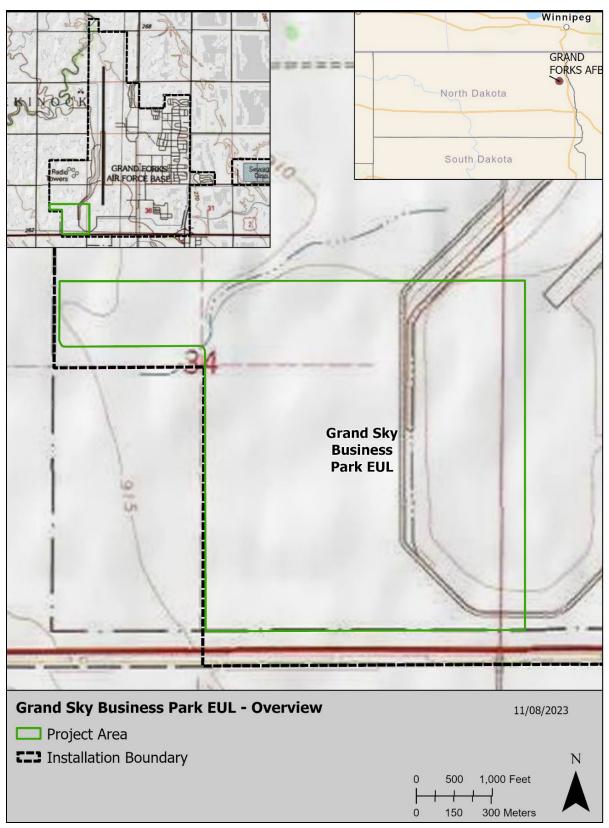


Figure 2-1 Project Area Topography

2.4 CLIMATE

The Northern Plains are characterized by a wide temperature range and frequent, extreme weather changes. The climate is typified by short, humid summers with frequent thunderstorms, and by long, severe winters associated with almost continuous snow cover and ice storms. The spring and fall seasons are generally short transition periods. According to the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Climate Analysis for Wetlands for the Grand Forks International Airport, North Dakota, the average annual temperature for GFAFB is 41 degrees Fahrenheit (°F) and monthly average temperatures vary from 8° F in January to 70° F in July (USDA NRCS 2023a). The mean annual precipitation is 19.6 inches, much of which occurs in the summer months. The growing season encompasses 159 days and extends from April 29 to October 10. These dates correspond to a 50 percent probability that temperatures will not drop to 28°F or lower, which is generally used for regulatory purposes (USDA NRCS 2023a).

2.5 SOILS

Soils data and descriptions were obtained from the USDA NRCS Web Soil Survey (USDA NRCS 2023b, USDA NRCS 2023c) and from geographic information system (GIS) files provided by GFAFB (**Attachment B**). As indicated in **Table 2-1**, approximately 56 acres (26 percent) of the Project Area are underlain by soil units with hydric ratings of partially hydric. The remaining 161 acres (74 percent) have a hydric rating ranging between 10 percent and 15 percent qualifying as predominantly non-hydric (**Table 2-1**; **Figure 2-2**).

I155A	Grimstad fine sandy loam, 0 – 2% slopes	20	10
I157A	Antler, moderately saline-Mustinka silty clay loams, 0 – 2 % slopes	2	
I199A	Antler-Mustinka silt loams, 0 – 2% slopes	54	
I400A	Gilby loam, 0 – 2% slopes	141	15
Predominantly Non	-Hydric (1 to 32%)		

Table 2-1 Soil Series Mapping for Wetland Delineation Project Area

Source: USDA NRCS Web Soil Survey 2020

The USDA NRCS defines the hydric rating as the percentage of a map unit that meets the criteria for hydric soils. Map units are comprised of one or more map unit components or soil types, each of which is rated as hydric soil or nonhydric. Map units that are made up dominantly of hydric soils may have small areas of minor non-hydric components in the higher positions on the landform, and map units that are made up dominantly of non-hydric soils may have small areas of minor hydric components in the higher positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit. The map unit class ratings based on the hydric components present are: Hydric, Predominantly Hydric, Partially Hydric, Predominantly Nonhydric, and Nonhydric (USDA NRCS 2023b).



Figure 2-2 Map of the Soil Series Within the Project Area

Three mapped soil series account for 100 percent of the Project Area. The Official Soil Series Description is provided for each of the major soil series below (USDA NRCS 2023c).

- The Grimstad series consists of very deep, somewhat poorly drained soils that formed in a dominantly sandy mantle of glacial lacustrine or outwash sediments over loamy glacial till or silty glacial lacustrine sediments. These soils are on glacial lake plains and moraines. Permeability is moderate to rapid in the upper part and moderate in the lower part. Slopes range from 0 to 3 percent.
- The Antler series consists of very deep, somewhat poorly drained soils that formed in silty lacustrine sediments over loam or clay loam glacial till. Permeability is moderate or moderately slow in the upper lacustrine sediments and moderately slow or slow in the underlying till. The hydric soil rating is predominantly non-hydric.
- The Gilby series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in loamy lacustrine sediments 20 to 40 inches thick over glacial till. These soils are on lake plains and interbeach areas and have slopes of 0 to 3 percent. The hydric soil rating is predominantly non-hydric.

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3.0 WETLAND DELINEATION METHOD

3.1 PROJECT APPROACH

In preparation for field surveys, an offsite assessment was conducted to gather, organize, and review all relevant existing data. This included geospatial information, available reports, and trustworthy web resources. In addition to the typical mapping resources consulted for wetland delineations, an analysis was conducted using the Antecedent Precipitation Tool (APT) to determine antecedent climatic conditions both for the field investigation and for comparison with aerial photography.

In 2013, a wetland delineation was completed on this same 217-acre Project Area, to support establishment of the Grand Sky Business Park. These results are reflected in the Wetland_A GIS feature noted below. The resources and analyses of the desktop assessment were used to update the existing wetland GIS layer (Wetland_A) to reflect current field conditions as observed in a time series of aerial imagery. This updated GIS mapping layer was used to prioritize field effort in areas with the greatest potential for significant wetland occurrence. Methods and results for the desktop analysis and APT are presented in **Sections 3.2** through **3.4** of this report.

In the second phase, wetland scientists conducted field work at GFAFB following the methods outlined in the 1987 USACE *Wetland Delineation Manual* (USACE 1987); *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region Version 2.0* (USACE 2010) to delineate wetland areas in the field. Detailed methods and results are outlined in **Sections 3.3** and **3.4** of this report.

3.2 OFFSITE ASSESSMENT

Several planning-level and field investigation efforts have been completed at GFAFB spanning the last two decades to allow the base to manage wetland resources and to maintain compliance with applicable laws, regulations, and instructions (see **Section 1-2**). Prior to engaging in field surveys, a comprehensive review of existing data was conducted. Data provided by GFAFB and reviewed included:

- Previously completed wetland investigations including Wetland Inventory & Assessment at GFAFB (North Wind 2011) which incorporated information from wetland reports in 1999 and 2004, a sitespecific wetland delineation of the new proposed fire station area in 2005, an updated selected wetland delineation in 2006, and a wetlands characterization project in 2007. In 2013, a wetland delineation was completed on a 217-acre area, which is now the Grand Sky Business Park. In 2021, a wetland delineation was completed for a 1,291-acre project area consisting of land surrounding the runway on GFAFB with minor overlap of the Grand Sky Business Park EUL area. These results are reflected in the Wetland_A GIS feature noted below.
- The most updated geodatabase feature classes provided by GFAFB in files Grand_forks_afb_23apr2020_cip311.gdb and GrandForksAFB_3_1_1.gdb. The pertinent feature classes are as follows:
- Wetland_A: This feature class contains all wetlands polygons for GFAFB and is referred to as the "existing wetland GIS layer" throughout this report. It includes data fields that can be used to differentiate past on-site investigations and assessments as well as off-site planning-level efforts;
- Installation_A: This feature class contains a polygon of the installation boundary;
- SoilSurveyArea_A: This feature class contains polygons of soils coverage across GFAFB (NRCS SSURGO 2015);
- PavementsBranch_A: This feature class contains the footprint (polygons) of impervious surfaces including roads, runways, taxiways, and other airfield surfaces; and
- Building_A: This feature class contains the footprint (polygons) of buildings.
- The following additional datasets were obtained from public sources and reviewed:

- North Dakota Historical Map and Aerial Photography Dissemination Service (URL: https://aerial.dwr.nd.gov/). Multiple years of available high-quality imagery (true color and CIR) were selected for review.
- North Dakota light detection and ranging (LiDAR) Dissemination MapService (URL: https://lidar.dwr.nd.gov/). LiDAR was acquired with 3.28 feet vertical resolution. The individual LiDAR tiles were merged and processed to create elevation contours at a 1-foot contour interval and a hillshade digital elevation model.
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) Wetlands Mapper (URL: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/); NWI GIS
- FEMA National Flood Hazard Layer Viewer, Map Number 38035C0525, Panel 525 (effective December 17, 2010).
- Google Earth Pro time series of aerial photographs: September 2023; July 2020; September 2015; September 2012; October 2011; December 2010; May 2010; August 2009; April 2007; July 2005; and October 1997.
- Navigable and Non-navigable Waters of the State of North Dakota (2016)
- USACE 2020 National Wetland Plant List Version 3.5 (URL: https://cwbiapp.sec.usace.army.mil/nwpl_static/v34/home/home.html)

3.2.1 Antecedent Precipitation and Time Series Analysis of Aerial Imagery

The APT (Version 2.0) is a publicly available computer software tool developed by USACE to simplify the review of climate data, which supports decision-making related to wetland delineations. The APT software allows for quick comparison of previous (antecedent) or recent rainfall conditions for a given location to the range of normal rainfall conditions that occurred during the preceding 30 years. The APT provides a standardized methodology to evaluate normal precipitation conditions.

The APT can be used to determine if a site is experiencing a dry season, drought conditions, lower than normal antecedent precipitation, or greater than normal antecedent precipitation. Each of these conditions influence wetland delineation investigations. In addition to informing wetland delineations, the APT can also be used to assist in determining whether prior observations (e.g., aerial photography) were made under normal, wet, or dry climatic conditions. The APT also includes related climate data such as the Palmer Drought Severity Index (PDSI). According to the National Oceanic and Atmospheric Administration, PDSI measures the duration and intensity of the long-term drought-inducing circulation patterns. Because long-term drought is cumulative, the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Weather patterns can change quickly; therefore, the PDSI was designed to respond rapidly.

The APT was utilized to achieve two primary objectives: determine the antecedent conditions at GFAFB prior to the on-site wetland investigations and conduct a time series analysis comprised of 8 years of APT data with corresponding aerial photography (2005, 2009, 2012, 2014, 2018, 2020, 2022 and 2023) to allow for improved characterization of features within GIS such as depressional wetlands, which vary in size and aerial signature depending upon climatic conditions.

This time series analysis of aerial imagery was used by wetland scientists to interpret signatures. For example, during a wetter than normal year, there is often a greater extent and more distinct signature of saturated soils and/or inundation that can be observed in aerial photography (**Figure 3-1**, left). Conversely, in drier than normal years wet areas may appear smaller in area and/or the boundaries between upland and wetland may appear less distinct (**Figure 3-1**, right).

The APT output for August 23, 2023, approximately one month prior to the wetland delineation field investigation, indicated that "drier than normal" conditions were present based on the preceding three 30-day periods (**Table 3-1**). Further, the PDSI indicated that the region was in a "severe drought" due to annual rainfall totals that were much lower than normal.

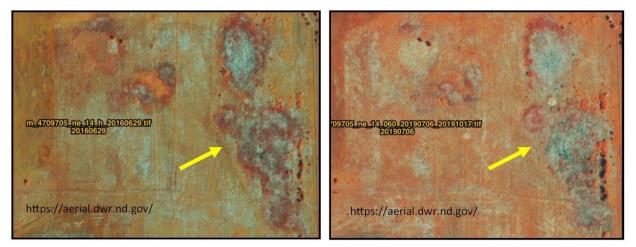


Figure 3-1 Comparison of Aerial Photography for GFAFB Wetland FLN-09 in 2016 (left; wet) and 2019 (right; dry)

Taken together, these results suggested that certain primary hydrology indicators such as inundation or a high-water groundwater table may not be present. Therefore, the wetland scientists focused on other wetland indicators such as algal mats, water-stained leaves, FAC-neutral test for vegetation, and geomorphic position that would be present in the absence of a high groundwater table.

The APT analysis provided a range of conditions for both the rainfall prior to the aerial photograph acquisition dates and for the PDSI (**Table 3-1**). This broad range of conditions facilitated comparison and further evaluation of the existing wetland base layer (Wetland_A). The addition of LiDAR data allowed a more robust comparison to the landform in GIS and aided the later in determining potential surface water connectivity (**Figure 3-2**).

	Aerial Imagery Evaluated			An	tecedent Precipitation To	ool (APT)
Year	Date Taken	Image Source	Type*	APT Date	APT Product	APT PDSI
2023	na	na	na	9/23/2023	Normal (10)	Severe drought
2022	8/23/2022	USDA NAIP	TC; CIR	8/23/2022	Normal (11)	Normal
2020	8/3/2020	USDA NAIP	TC; CIR	8/3/2020	Wetter than normal (16)	Severe wetness
2020	6/13/2020	Maxar	na	6/13/2020	Drier than normal (9)	Severe wetness
2018	9/1/2018	USDA NAIP	TC; CIR	9/1/2018	Normal (10)	Moderate drought
2014	9/7/2014	USDA NAIP	TC; CIR	9/7/2014	Normal (13)	Normal
2012	7/7/2012	USDA NAIP	TC; CIR	7/7/2012	Drier than normal (9)	Moderate drought
2009	8/11/2009	USDA NAIP	TC; CIR	8/11/2009	Drier than normal (8)	Extreme wetness
2005	6/24/2005	USDA NAIP	TC	6/24/2005	Wetter than normal (16)	Extreme wetness

Table 3-1 Aerial Imagery and Corresponding APT Information

Notes:

*TC = true color; CIR = color infrared; na = not available

PDSI = Palmer Drought Severity Index; USDA NAIP = U.S. Department of Agriculture National Agriculture Imagery Program

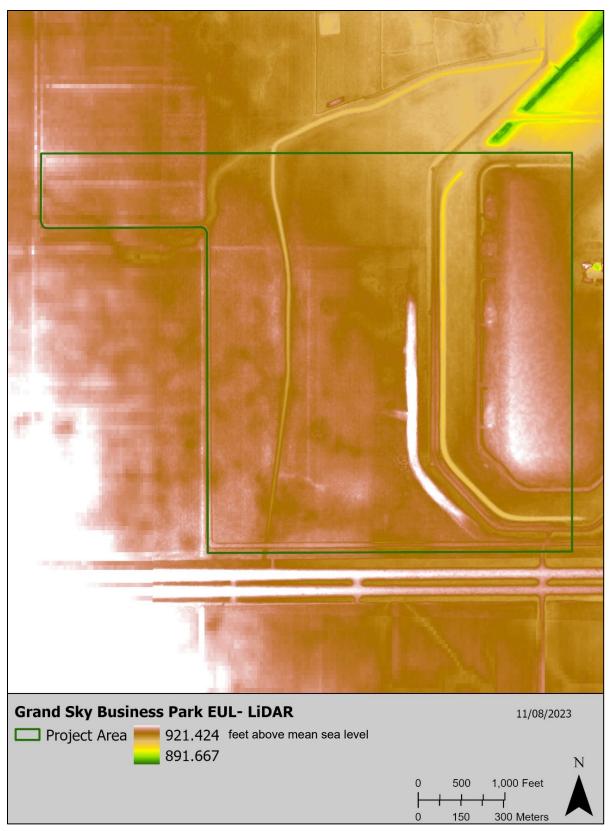


Figure 3-2 Map of the Local Relief of the Project Area

3.2.2 Development of Updated GIS Wetland Layer and Field Maps

As noted, the existing GIS wetland layer (Wetland_A) contained information gathered from a several sources and investigations ranging from 1999 to 2023. The offsite analysis was used to revise and update a copy of the GIS wetland layer.

Efforts focused on wetlands that were created from newer source materials (e.g., 2013 and 2021). Those areas were analyzed, and the upland/wetland boundary was adjusted, when necessary to account for altered site conditions. In cases where an aerial wetland signature was consistent across several years, but was different than or not present in the existing GIS wetland layer, the polygon was altered or a new polygon was added and given a field ID.

This updated GIS layer was used to develop wetland field maps that displayed the extent of wetland polygons with symbology that allowed for identification of the sources. That allowed the user to differentiate between field-delineated wetlands and those that were developed using other methods. The updated GIS layer was also uploaded to two global positioning systems (GPS) to assist navigation and to allow for direct comparison during the field investigation.

3.3 WETLAND DELINEATION FIELD INVESTIGATION

Field investigations were conducted by Versar wetland scientists between September 23 and 28, 2023. Two field teams, each composed of a wetland scientist and a field technician, completed the investigation over 6 consecutive days. The Grand Sky Business Park is a controlled access area. Access was coordinated with a designated GFAFB point of contact, Kevin Knaus.

Previously delineated and potentially new wetlands were evaluated for inclusion by walking previously delineated wetland boundaries, visual identification of hydrophytic vegetation, geomorphic position, and evaluation of soil cores. Modification to previously delineated wetlands and new wetlands were delineated in accordance with the 1987 Manual and the Great Plains Regional Supplement. The location of wetland boundary flags was recorded using the ArcGIS Field Maps application (ESRI 2023) connected to a Juniper Systems Inc. Geode GNS2 Single Frequency GNSS Receiver (Juniper Systems 2021).

Wetland Determination Data Forms from the Great Plains Regional Supplement (data forms) were completed within plots at representative wetland and non-wetland boundary locations. In instances where several wetlands were within close proximity to one another and of similar composition, one upland point was recorded as a representative sample for the grouped wetlands. The data forms correspond to specifically numbered plot locations and provide a quantitative description of how the wetland boundary was identified. Copies of the data forms and site photographs are presented in **Attachment C**.

Determination of wetland hydrology at each plot required documentation of at least one of the 17 primary indicators of hydrology or a minimum of two of the nine secondary indicators of hydrology described in the Great Plains Regional Manual.

Wetland scientists recorded the plant species observed in each vegetative stratum at each of the representative locations. A 5-foot circular plot was used for herbs, a 15-foot circular plot was used for shrubs, and a 30-foot circular plot was used for trees and vines when necessary. The plot dimensions were adjusted where necessary to remain within small or linear wetland features. Plants were identified and each species was assigned a wetland indicator status using the 2020 National Wetland Plant List V3.5 (USACE 2020). The 2020 National Wetland Plant list is the result of a synthesis of the best available scientific and technical information for improving precision in determining the vegetation factor when delineating upland/wetland boundaries for purposes of Section 404 of the CWA. As described in the Great Plains Regional Supplement, if the plant community passed Indicator 1 (Rapid Test for Hydrophytic Vegetation) or Indicator 2 (Dominance Test), then the area was determined to have hydrophytic soil and wetland hydrology, then the area was determined to have hydrophytic soil and wetland hydrology, then the area was determined to have hydrophytic soil and wetland hydrology,

Soil test pits and borings were used to determine hydric/non-hydric soil type. The Great Plains Regional Supplement provides updated information on 28 hydric soil indicators, including technical notes regarding application. Soil profiles were sampled to determine if they matched the description of any indicators. This information was used to determine if the plot contained hydric soils. The Project Area is in Land Resource

Region F, Northern Great Plains; therefore, care was taken to ensure that the indicators used were applicable to this specific region (USACE 2010).

During post-processing in GIS, each wetland was assigned a mapping code(s) corresponding to the following categories:

- Mapping code 1 indicates that a new wetland was identified and delineated in the field. A wetland label was created in the SDSFEATURE GIS field consisting of the next consecutive label number for that area. For example, FLS-08C was the last wetland polygon label in the existing wetland GIS layer (Wetland_A); therefore, FLS-08D was assigned to the first new wetland identified in that area during the investigation.
- Mapping code 2 indicates that a previously identified wetland was adjusted in field. No label change
 was necessary in some cases. However, when larger wetlands were separated into multiple smaller
 wetlands, letters were added as a suffix to the preexisting wetland label. For example, wetland FLS02 became FLS-02a through FLS-02b. In a few cases two smaller polygons were joined. In those
 cases, the larger polygon label was used.
- Mapping code 3 indicates that a combination of field observations, LiDAR and aerial imagery was
 used to adjust boundary. This was almost exclusively used for linear wetlands (ditches) with distinct
 boundaries because of excavation. For larger linear wetland features, GPS points were taken at the
 wetland / upland boundary at representative locations to compare to the mapped GIS boundary.
 Adjustments to the width were completed based on a combination of the wetland / upland boundary
 points and examination of the time series aerial photography (Table 3-1). No label changes
 necessary.
- Mapping code 4 indicates that a previously identified wetland boundary was verified during the investigation. No label changes necessary.

3.4 WETLAND DELINEATION RESULTS

In 2015, construction began for the Grand Sky Business Park, located centrally within the Project Area. Certain areas within the eastern half of the Grand Sky Business Park have been regraded in the initial phases of development resulting in changes to previously delineated wetlands. Grand Sky Blvd, running north to south, splitting the parcel, has been widened and stormwater management features have been regraded as necessary to accommodate the changes. The remainder of the Project Area is undeveloped and maintained as mowed hay fields, ditches, or wetland basins.

The Project Area has undergone several months of unseasonably dry conditions. The area received 0.72 inches of rainfall in the 4 weeks prior to, and 0.75 inches during in the first 2 days, of the delineation. Consequently, standing water was present in a few of the wetlands but most were still relatively dry. The APT output for September 23 indicated that "normal" conditions were present based on the preceding three 30-day periods (**Table 3-1**). Further, the PDSI indicated that the region was in a "severe drought" due to annual rainfall totals that were much lower than normal.

This wetland investigation identified and verified the extent of 38 separate wetland polygons comprising 24.57 acres of wetlands (**Table 3-2; Figures 3-3** through **3-8**). The results and observations are described in the following section.

Wetland ID	Туре	Cowardin*	Area (acres)	Mapping Code**	Connectivity	Latitude	Longitude
FLS-01a	Freshwater emergent; ditch	PEM	0.27	2	Potentially connected	47.9414	-97.4109
FLS-01b	Freshwater emergent; ditch	PEM	0.34	2	Potentially connected	47.9390	-97.4109
FLS-01c	Freshwater emergent; ditch	PEM	0.41	2	Potentially connected	47.9370	-97.4110
FLS-01d	Freshwater emergent; ditch	PEM	0.15	2	Potentially connected	47.9355	-97.4106
FLS-01e	Freshwater emergent; ditch	PEM	0.53	2	Potentially connected	47.9344	-97.4086
FLS-01f	Freshwater emergent; ditch	PEM	0.004	1	Potentially connected	47.9381	-97.4109
FLS-01g	Freshwater emergent; ditch	PEM	0.008	1	Potentially connected	47.9380	-97.4106
FLS-01h	Freshwater emergent; ditch	PEM	0.006	1	Potentially connected	47.9380	-97.4103
FLS-02	Freshwater emergent	PEM	4.71	2	Potentially isolated	47.9390	-97.4130
FLS-07a	Freshwater emergent; ditch	PEM	2.28	3	Potentially connected	47.9364	-97.4161
FLS-07b	Freshwater emergent	PEM	7.37	2	Potentially connected	47.9340	-97.4118
FLS-08d	Freshwater emergent; ditch	PEM	0.06	1	Potentially connected	47.9378	-97.4118
FLS-10a	Freshwater emergent; ditch	PEM	0.44	3	Potentially connected	47.9407	-97.4220
FLS-10b	Freshwater emergent; ditch	PEM	2.28	3	Potentially connected	47.9418	-97.4180
FLS-10c	Freshwater emergent; ditch	PEM	0.01	3	Potentially connected	47.9399	-97.4183
FLS-10d	Freshwater emergent	PEM	2.09	3	Potentially connected	47.9377	-97.4178
FLS-10e	Freshwater emergent	PEM	0.12	2	Potentially connected	47.9380	-97.4167
FLS-10f	Freshwater emergent	PEM	0.18	3	Potentially connected	47.9353	-97.4182
FLS-10g	Freshwater emergent; ditch	PEM	0.006	3	Potentially connected	47.9340	-97.4183
FLS-13a	Freshwater emergent; ditch	PEM	0.11	3	Potentially connected	47.9338	-97.4168
FLS-13b	Freshwater emergent; ditch	PEM	0.45	3	Potentially connected	47.9338	-97.4122
FLS-13c	Freshwater emergent; ditch	PEM	0.22	3	Potentially connected	47.9338	-97.4088
FLS-17	Freshwater emergent; ditch	PEM	0.01	2	Potentially isolated	47.9341	-97.4071
FLS-31a	Freshwater emergent; ditch	PEM	0.18	2	Potentially connected	47.9419	-97.4076
FLS-31b	Freshwater emergent; ditch	PEM	0.11	2	Potentially connected	47.9418	-97.4096
FLS-31d	Freshwater emergent; ditch	PEM	0.04	2	Potentially connected	47.9361	-97.4098
FLS-31h	Freshwater emergent; ditch	PEM	0.03	2	Potentially connected	47.9407	-97.4098
FLS-52	Freshwater emergent	PEM	0.13	2	Potentially isolated	47.9413	-97.4196
FLS-53	Freshwater emergent	PEM	0.82	2	Potentially isolated	47.9417	-97.4195
FLS-55	Freshwater emergent	PEM	0.05	2	Potentially isolated	47.9389	-97.4168

 Table 3-2
 Wetlands Identified in the Project Area

Wetland ID	Туре	Cowardin*	Area (acres)	Mapping Code**	Connectivity	Latitude	Longitude
FLS-57	Freshwater emergent	PEM	0.11	2	Potentially isolated	47.9370	-97.4170
FLS-58	Freshwater emergent	PEM	0.29	2	Potentially isolated	47.9364	-97.4169
FLS-59	Freshwater emergent	PEM	0.12	2	Potentially isolated	47.9356	-97.4173
FLS-60	Freshwater emergent	PEM	0.03	2	Potentially isolated	47.9353	-97.4168
FLS-61a	Freshwater emergent	PEM	0.08	2	Potentially isolated	47.9346	-97.4157
FLS-61b	Freshwater emergent	PEM	0.35	2	Potentially isolated	47.9345	-97.4152
FLS-62	Freshwater emergent	PEM	0.15	2	Potentially isolated	47.9383	-97.4143
FLS-63	Freshwater emergent	PEM	0.03	2	Potentially isolated	47.9390	-97.4146
	Total 24.57						

 Table 3-2
 Wetlands Identified in the Project Area

Notes:

*PEM = Palustrine Emergent (Cowardin et al. 1979) **1 = New wetland identified in field; 2 = Previously identified wetland adjusted in field; 3 = Combination of field observations, LiDAR and aerial imagery used to adjust boundary.



Figure 3-3 Index of Grand Sky Business Park Wetland Delineation Results Maps

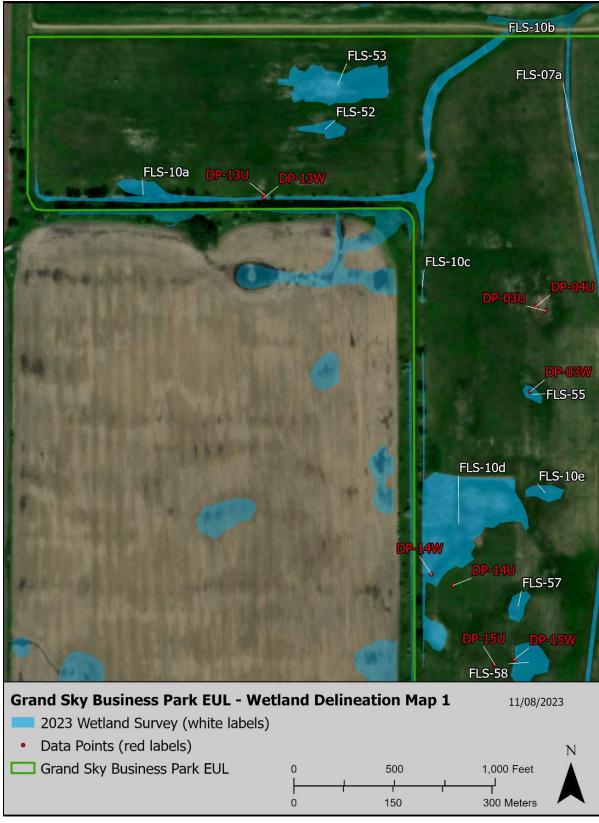


Figure 3-4 2023 Wetland Survey: Detail Map 1

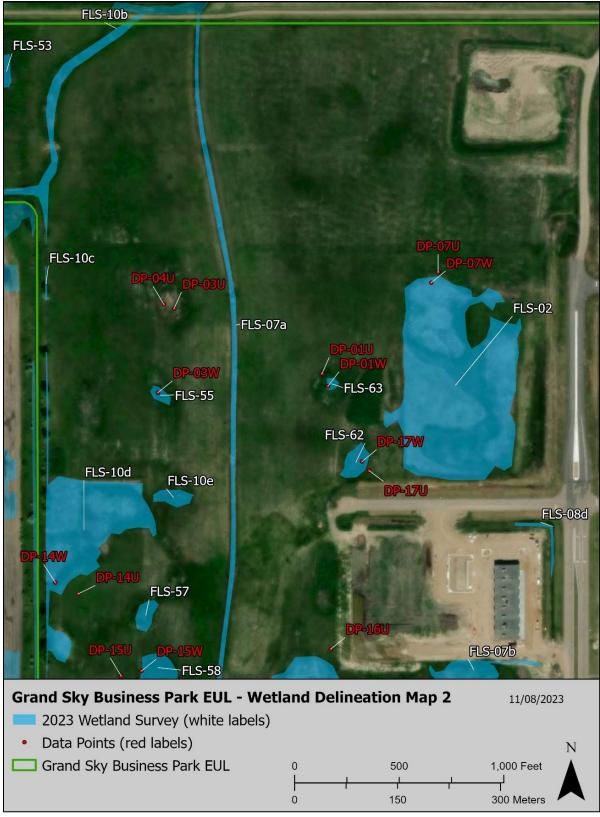


Figure 3-5 2023 Wetland Survey: Detail Map 2

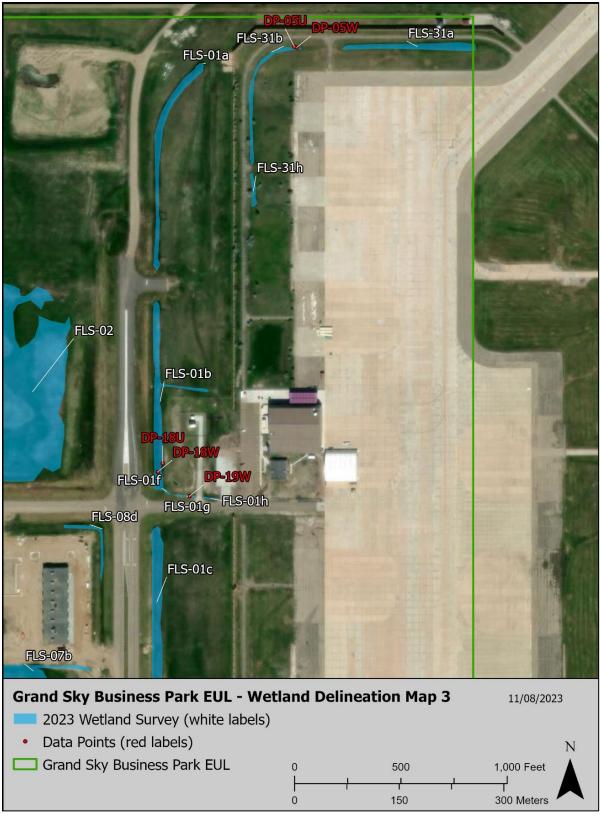


Figure 3-6 2023 Wetland Survey: Detail Map 3



Figure 3-7 2023 Wetland Survey: Detail Map 4



Figure 3-8 2023 Wetland Survey: Detail Map 5

3.4.1 Wetland Descriptions

FLS-01, FLS-01b, FLS-01c, FLS-01d, FLS-01e, FLS-01f, FLS-01g, and FLS-01h are a linear series of vegetated wetlands, connected by culverts, within a drainage ditch for stormwater conveyance, totaling 1.713 acres (**Figure 3-6** and **Figure 3-8**). FLS-01 appears to have a surface water connection to the Turtle River via a system of ditches and culverts that drain to the north. There was water in the ditch during the investigation despite the current drought conditions. Predominant vegetation within the ditch includes cattail (*Typha* sp.), spikerush (*Eleocharis palustris*), Northwest Territory sedge (*Carex ultriculata*), softstem bulrush (*Schoenoplectus tabernaemontani*), and foxtail barley (*Hordeum jubatum*). Data forms DP-18W and DP-18U were collected for this wetland within along the lower and upper side slope of the ditch, respectively, to document conditions on either side of the delineated line. While the soil indicator for the data point was Thick Dark Surface (A12), the Depleted Matrix (F3) soils indicator was used to delineate the wetland boundary along the side slope.

FLS-02 is the second largest single wetland in the Project Area at 4.71 acres (**Figure 3-5**). This wetland is a concave emergent marsh area, underlain by Gilby loam, which may be a relic prairie pothole. This wetland was noted in 2013 to have water depths of up to 1 foot, providing habitat for various waterfowl species. However, the extent of this wetland has changed significantly since 2013 due to excavation resulting in a larger extent. Reed canary grass and cattail were the dominant vegetation in this wetland creating alternating homogenous patches of one or the other throughout most of the area. This wetland is adjacent to the regraded stormwater conveyance but separated by a dike with no apparent drainage occurring through underground seepage. Surface flow would be expected as precipitation causes overflowing. Due to unseasonably dry conditions, there was no surface water present during this investigation and saturation was limited to the lowest elevations of the wetland. Data forms DP-07U and DP-07W were collected for this wetland along the northern wetland / upland boundary.

FLS-07a is a 2.28-acre linear drainage channel that bisects the Project Area (**Figure 3-7**). FLS-07 was divided into two wetlands, FLS-07a and FLS-07b, because of the distinct vegetative composition between the southern portion of both wetlands. This linear wetland drainage serves as a primary connection to the Turtle River. Predominant vegetation within the channel was cattail, reed canary grass (*Phalaris arundinacea*) with willows, peachleaf willow (*Salix amygdaloides*) and bay willow (*Salix pentandra*) distributed along the channel length.

FLS-07b is the largest delineated wetland with the Project Area at 7.37 acres (**Figure 3-7**). As mentioned above, FLS-07 was divided into two wetlands due to distinct vegetative features. This wetland is underlain by Gilby loam and is comprised of several deeper pothole-like wetlands connected within an overall larger depression. In 2013, FLS-07 was noted as having up to 0.5 feet of water, providing habitat for various waterfowl species. There was no water present during this investigation due to unseasonably dry conditions. Data forms DP-16W and DP-16U were collected for this wetland in the northwest corner along the wetland / upland boundary, respectively.

FLS-08d and FLS-17 are wetland features identified within mowed, linear stormwater conveyance ditches that were recontoured during the initial phase of the development. They are 0.06 acre and 0.01 acre in size, respectively (**Figure 3-8**). Data forms DP-11W and DP-11U were collected at FLS-17. DP-11W was taken at the lowest point by the culvert, where vegetation is exclusively *Eleocharis sp.*, a facultative wetland species. FLS-17 drains off property to the east while FLS-08d drains to the north through a culvert that connects to FLS-01.

FLS-10 is a series of freshwater emergent wetlands totaling 5.12-acres occurring in and adjacent to a linear ditch that runs along the western boundary of the property (**Figure 3-7**). In 2013, FLS-10 showed evidence of being one contiguous wetland, however vegetative and soil indicators were lacking between the individual segments. Therefore, it was delineated into smaller individual wetlands named FLS-10a through FLS-10g. Data forms DP-14U and DP-14W were collected for FLS-10 at the wetland / upland boundary on the south end. This ditch drains north to FLS-52 and ultimately off the property to larger features that drain to the Turtle River. Dominant vegetation observed at DP-14W included hybrid cattail and Northwest Territory sedge, with pioneering species such as perennial sow thistle, leafy spurge (*Euphorbia esula*), and field thistle (*Circium arvense*) creeping in along the edges. These weedy species likely persist due to ongoing drought conditions.

FLS-13 is a 0.78-acre wetland broken into three smaller wetlands based on distinct vegetative composition between them: FLS-13a, FLS-13b, and FLS-13c (**Figure 3-7** and **Figure 3-8**). These wetlands are linear drainage ditches located south of the perimeter road that collect water, flow west, and drain north into FLS-07a via a culvert, ultimately flowing north to the Turtle River. Data forms DP-12U and DP-12W were collected for FLS-13 from the southeast corner of the wetland. Dominant vegetation within these wetlands included Northwest Territory sedge, dogbane (*Apocynum cannabinum*), perennial sow thistle (*Sonchus arvensis*), and hybrid cattail (*Typha x glauca*).

FLS-31a, FLS-31b, FLS-31h are a series of mowed, linear, vegetated drainage ditches for stormwater conveyance, totaling 0.36 acre (**Figure 3-6**). FLS-31h connects to FLS-31b which drains into a drop inlet to an underground stormwater drain. FLS-31a also drains to a drop inlet, presumably to the same system. These ditches are separated from FLS-01 by underground culverts. Data forms DP-05W and DP-05W were collected at the eastern end of FLS-31b. Within the drainage ditch, *Eleocharis sp.* was the only species within the wetland sampling point, with a turf grass, hard fescue (*Festuca trachyphylla*) dominant within the upland sampling point. Despite overall drought conditions, rain from the previous day resulted in some standing water within the ditch.

FLS-31d (**Figure 3-8**) is a 0.04-acre remnant depressional area formed by the grading during the initial phase of development. While the feature retained the name of the previous ditch feature that occurred in the same proximity, it is distinct from the other FLS-31 ditches. Data forms DP-20U and DP-20W were collected for FLS-31d. FLS-31d consists of a community of weedy herbaceous species, including the facultative wetland species foxtail barley and quaking aspen and willow species. This wetland drains by surface flow along a roadside swale to FLS-01.

FLW-52 and FLW-53 are depressional wetlands located in the northwest section of the Project Area encompassing 0.13 acre and 0.82 acre, respectively (**Figure 3-4**). These wetlands have no discernible physical connection to neighboring wetlands. Wetland boundaries for both of these wetlands were changed slightly from the 2013 delineation based on field analysis of vegetative composition, geomorphic position, and soil core samples taken at various points. These wetlands are located within an area that is mowed for hay.

FLS-55 is a small, 0.05-acre, pothole depression with no discernible physical connection to neighboring wetland systems (**Figure 3-5**). Data forms DP-03U, at the center of previously delineated FLS-54, and DP-04U were used as representative upland points and DP-03W was collected within the basin of FLS-55. At DP-03W, dominant vegetation included quack grass and Northwest Territory sedge. The presence of Northwest Territory sedge, and soil indicators were used to discern the boundary of the wetland. Areas previously delineated as FLS-54 and FLS-56 lacked these vegetation and soils indicators and were not delineated as wetlands. Boundaries for FLS-55 were adjusted slightly from the 2013 delineation based on field analysis of vegetative composition. FLS-55 is located within an area that is mowed for hay.

FLS-57, FLS-58, FLS-59, and FLS-60 are small, depressional emergent wetlands, encompassing 0.55 acre (**Figure 3-7**). These wetlands are surrounded by uplands, with no discernible physical connection to neighboring wetland systems. Data forms DP-15W and DP-15U were collected at FLS-58 as representative for this group of wetlands in close proximity to one another. Dominant vegetation within DP-15W included reed canary grass, Northwest Territory sedge, and cattail. The wetlands described above are surrounded by uplands, with no discernible physical connection to neighboring wetland systems. Further, boundaries for each of the wetlands above were changed slightly from the 2013 delineation based on field analysis of vegetative composition and geomorphic position at various points. These wetlands are located within an area that is mowed for hay.

FLS-61 was divided into two distinct wetlands due to distinct vegetative features between two distinct basins (**Figure 3-7**). FLS-61a and FLS-61b are small, depressional emergent wetlands, encompassing 0.08 and 0.35 acre, respectively. These wetlands are surrounded by uplands, with no discernible physical connection to neighboring wetland systems. Further, boundaries for each of the wetlands above were changed slightly from the 2013 delineation based on field analysis of vegetative composition and geomorphic position at various points. These wetlands are located within an area that is mowed for hay.

FLS-62 and FLS-63 are small depressional wetlands, 0.15 and 0.03 acre, respectively, that are centrally located within the Project Area, adjacent to FLS-02 (**Figure 3-5**). Data forms DP-01W and DP-01U were

collected at FLS-63 and DP-17W and DP-17U were collected at FLS-62. Reed canary grass was the dominant vegetation within FLS-63 and was used as the primary indicator for wetland extent. Due to long-term drought conditions, the normal plant community was not present at the time of delineation. FLS-62 drains into FLS-02, however, the area between the two did not have sufficient indicators to meet wetland status, likely due to drought conditions. Dominant vegetation within FLS-62 included reed canary grass and Northwest Territory sedge. Wetland boundaries for both of these wetlands were changed slightly from the 2013 delineation based on field analysis of vegetative composition, geomorphic position, and soil core samples taken at various points. These wetlands are located within an area that is mowed for hay.

3.4.2 Other Observations

The following species were observed utilizing wetlands on and near the Project Area:

- Mammals: white-tailed jackrabbit (Lepus townsendii).
- Birds: sharp-tailed grouse (*Tympanuchus phasianellus*), marsh wren (*Cistothorus palustris*), and Wilson's snipe (*Gallinago delicata*), American goldfinch (*Spinus tristis*), western meadowlark (*Sturnella neglecta*), savannah sparrow (*Passerculus sandwichensis*).
- Reptiles and amphibians: plains gartersnake (*Thamnophis radix*), *boreal* chorus *frog* (*Pseudacris maculata*).
- Insects: leafy spurge hawk moth caterpillar (Hyles euphorbiae).
- Plants: Forty-five plant species were identified while completing the wetland/upland data forms (**Table 3-3**). Many other species were noted on the site, but were not recorded in plot data.

Scientific Name	Common Name	Indicator Status	Stratum
Andropogon gerardii	big bluestem	FACU	Н
Apocynum cannabinum	Indian hemp	FAC	Н
Artemisia biennis	biennial wormwood	FACU	Н
Beckmannia syzigachne	American slough grass	OBL	Н
Bromus inermis	smooth brome	UPL	Н
Carex utriculata	Northwest Territory sedge	OBL	Н
Cirsium arvense	Canada thistle	FACU	Н
Cirsium flodmanii	Flodman's thistle	FAC	Н
Elaeagnus angustifolia	Russian-olive	FACU	SH
Eleocharis palustris	common spike-rush	OBL	Н
Elymus repens	creeping wild rye (quackgrass)	FACU	Н
Elymus trachycaulus	slender wild rye	FACU	Н
Eragrostis pectinacea	purple love grass	FAC	Н
Euphorbia escula	leafy spurge	UPL	Н
Festuca trachyphylla	hard fescue	UPL	Н
Fraxinus pennsylvanica	green ash	FAC	Т
Grindelia squarrosa	curly-cup gumweed	UPL	Н
Helianthus maximiliani	Maximilian sunflower	FACU	Н
Hordeum jubatum	fox-tail barley	FACW	Н
Medicago lupulina	black medick	FACU	Н
Medicago sativa	alfalfa	UPL	Н

 Table 3-3
 Plant Species Identified in Plots

Scientific Name	Common Name	Indicator Status	Stratum
Melilotus officinalis	yellow sweet-clover	FACU	Н
Mentha arvensis	American wild mint	FACW	Н
Phalaris arundinacea	reed canary grass	FACW	Н
Plantago major	great plantain	FAC	Н
Populus deltoides	eastern cottonwood	FAC	Т
Rosa arkansana	prairie rose	FACU	S
Rumex crispus	curly dock	FAC	Н
Salix amygdaloides	peach-leaf willow	FACW	Т
Salix pentandra	bay leaf willow	FACW	Т
Scoenoplectus tabernaemontani	softstem bulrush	OBL	Н
Solidago canadensis	Canadian goldenrod	FACU	Н
Solidago gigantea	late goldenrod	FAC	Н
Sonchus arvensis	field sow-thistle	FAC	Н
Sorghastrum nutans	yellow Indian grass	FACU	Н
Spartina pectinata	freshwater cord grass	FACW	Н
Suaeda calceoliformis	paiuteweed	FACW	Н
Symphoricarpos occidentalis	western snowberry	UPL	SH
Symphyotrichum ericoides	white heath American-aster	FACU	Н
Symphyotrichum lanceolatum	white panicled American-aster	FACW	Н
Taraxacum officinale	common dandelion	FACU	Н
Teucrium canadense	American germander	FACW	Н
Trifolium repens	white clover	FACU	Н
Typha angustifolia	narrow leaf cattail	OBL	Н
Typha X glauca	hybrid cattail	OBL	Н

Table 3-3	Plant Species Identi	ified in Plots

Notes: FAC = facultative; FACU=facultative upland; FACW =facultative wetland; H = herbaceous; OBL = obligate; SH = shrub; T=tree; UPL =upland;

4.0 CONCLUSION

During the 2023 wetland field investigation, 24.57 acres of wetlands were identified in 38 separate wetland polygons within the Project Area. Of the 38 delineated wetlands, 26 (17.698 acres) had apparent connections to downstream WOTUS and 13 (6.88) did not appear to have a downstream connection to WOTUS (**Figure 4-1**).

This field investigation adjusted the boundaries of previously delineated wetlands, and excluded nine wetlands that were previously delineated in 2013. The following wetlands were excluded:

• FLS-01h	• FLS-08a	• FLS-09
• FLS-06	 FLS-08b 	• FLS-54
• FLS-07b	• FLS-08c	• FLS-56

FLS-01h did not meet all criteria required to qualify as a wetland. FLS-06 was delineated prior to the Grand Sky Business Park occupancy of the area; this area is now a building complex and parking lot. Similarly, excavation and grading of the area likely altered hydrology patterns of FLS-07b, FLS-08a, FLS-08b, and FLS-08c. FLS-54 and FLS-56 likely did not exhibit wetland characteristics due to persistent drought in the region over several months.

Several depressional wetland boundaries were reduced or eliminated based on the combined off-site and on-site assessments. In 2011, the western part of the Project Area was tilled/reseeded in a one-time event. The area is currently managed for noxious and invasive weeds by spot-spraying applicable herbicides. The hay lease is used as a conservation management tool to generate income that is further utilized for conservation projects. Birds are protected in this area because mowing is not authorized until after July 15. A hay lease is conducted on part of the area on an annual basis in order to sustain a uniform vegetation height and for weed control in order to deter use by birds as recommended for bird aircraft strike hazard management. At the time of delineation, the area had been recently mowed. Additionally, recent dry conditions have resulted with an altered the plant communities in these wetlands consisting of primarily reed canary grass within the wetland and smooth brome outside the wetland. Despite the dry conditions, these results were consistent with previously identified wetlands.

The DAF is directed through DoDI 4715.03 to ensure no net loss of size, function, and value of wetlands, and to preserve the natural and beneficial values of wetlands. An accurate aquatic resources delineation provides crucial base line information for the planning effort. This report provides the documentation necessary to obtain a preliminary jurisdictional determination from the USACE Omaha District.

Air Force Manual 32-7003, *Environmental Conservation*, states that, "the proponent of any activity that may affect known or suspected WOTUS should conduct a jurisdictional delineation utilizing the criteria approved by the USEPA and affirmed by USACE. The Air Force will refer to and accept as determinative the current USACE definitions for WOTUS under USACE jurisdiction. Jurisdictional delineations are valid for a limited period of time, as established by the USACE district regulatory office. Installations are not required to update an expired jurisdictional delineation unless there exists a proposed mission activity that necessitates an updated demarcation of jurisdictional WOTUS boundaries by the proponent activity." The DAF will provide this report to USACE and request a formal jurisdictional delineation that will be included in the Environmental Assessment.

The USACE Omaha District website indicates that information associated with a new request, such as a request to verify an aquatic resources delineation, should be submitted via email to CENWO-OD-RND@usace.army.mil for initial in-processing. The email subject line should include the name of the applicant, name of the project, and name of the county in which the project is proposed (e.g., GFAFB-EUL EA-Grand Forks). This may be accessed online at the following URL:

https://www.nwo.usace.army.mil/Missions/Regulatory-Program/North-Dakota/



Figure 4-1 2023 Wetland Survey: Potentially Isolated Wetlands

5.0 REFERENCES

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ATTACHMENT A FEMA FLOOD INSURANCE RATE MAP AND APT OUTPUT DATA This page intentionally left blank



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PANEL

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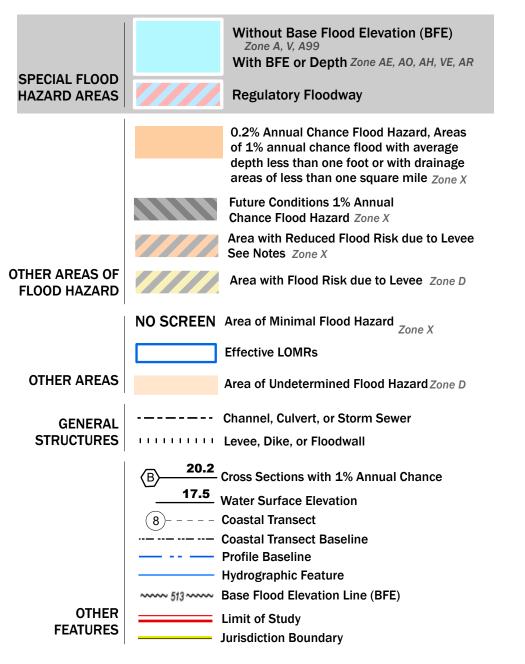
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FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT



NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

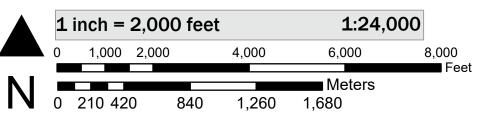
Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 10/27/2023 3:49 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

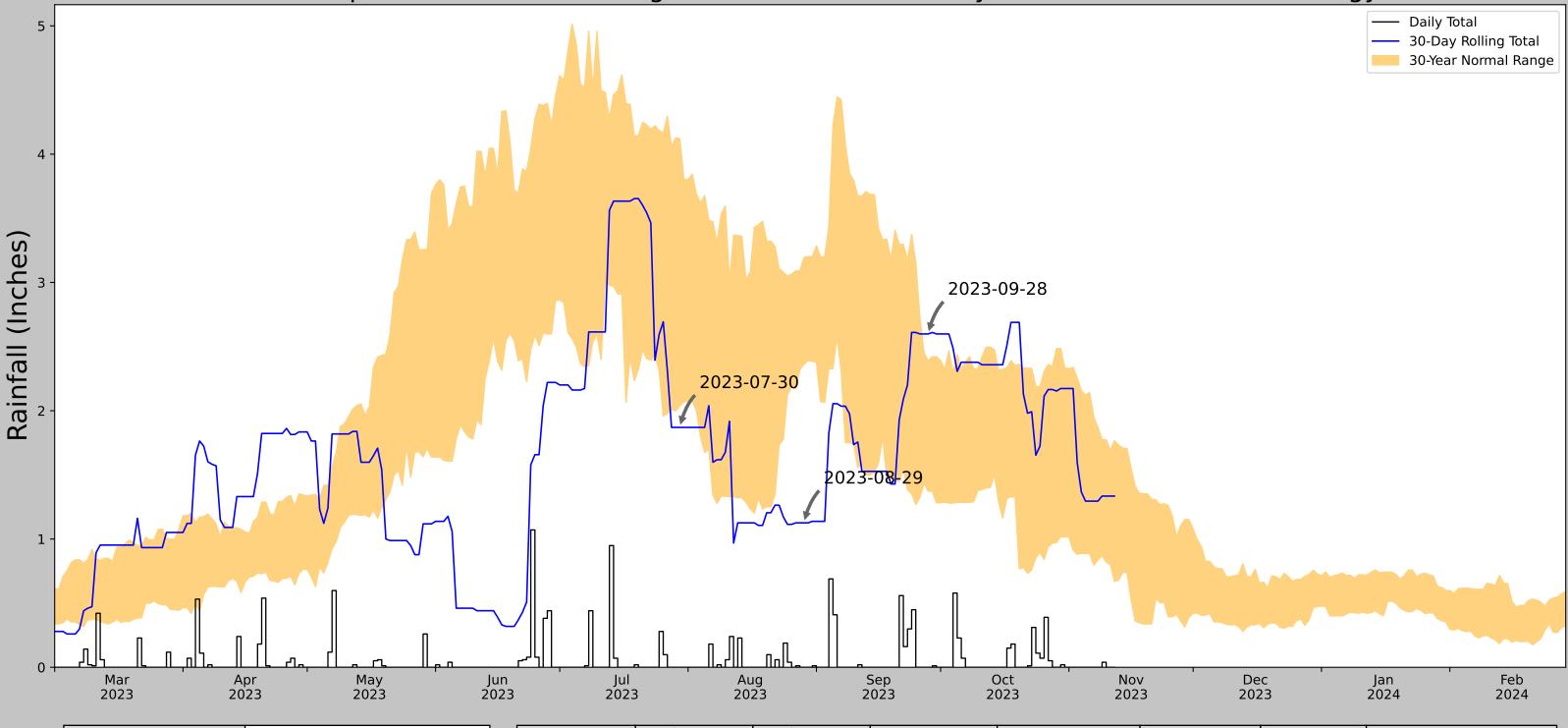
SCALE

Map Projection: GCS, Geodetic Reference System 1980; Vertical Datum: No elevation features on this FIRM For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov



NATIONAL FLOOD INSURANCE PROGRAM Flood Insurance Program **FEMA** FLOOD INSURANCE RATE MAP PANEL 525 OF 1045 **Panel Contains:** COMMUNITY NUMBER CITY OF EMERADO 380034 38ST TURTLE RIVER STATE PARK GRAND FORKS 380033 COUNTY PRAIRIE CHICKEN 38ST STATE GAME ational MANAGEMENT AREA MEKINOCK 380162 TOWNSHIP 380112 **HEGTON TOWNSHIP** 38FED GRAND FORKS AIR FORCE BASE Z and the second MAP NUMBER 38035C0525E **EFFECTIVE DATE** December 17, 2010

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.93510, -97.4127
Observation Date	2023-09-28
Elevation (ft)	914.048
Drought Index (PDSI)	Severe drought
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile(in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-09-28	1.372835	2.390158	2.598425	Wet	3	3	9
2023-08-29	2.361811	3.195276	1.125984	Dry	1	2	2
2023-07-30	2.035827	4.120079	1.870079	Dry	1	1	1
Result							Normal Conditions - 12



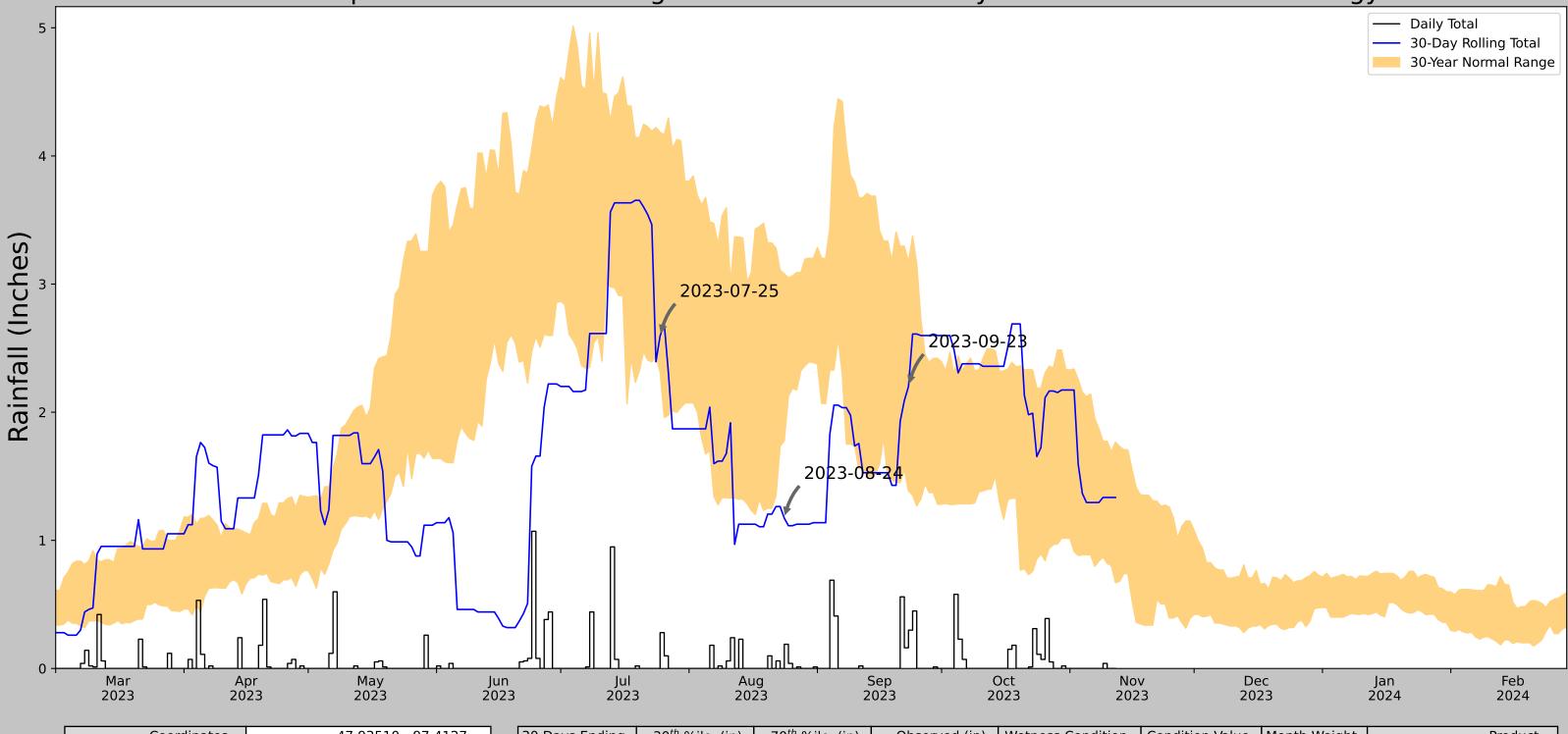
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.121	5.598	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

Dec 2023	Jan 2024	Feb 2024

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.93510, -97.4127
Observation Date	2023-09-23
Elevation (ft)	914.048
Drought Index (PDSI)	Severe drought
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-09-23	1.384646	3.172441	2.200787	Normal	2	3	6
2023-08-24	1.775984	3.080709	1.173228	Dry	1	2	2
2023-07-25	2.31378	4.185433	2.594488	Normal	2	1	2
Result							Normal Conditions - 10

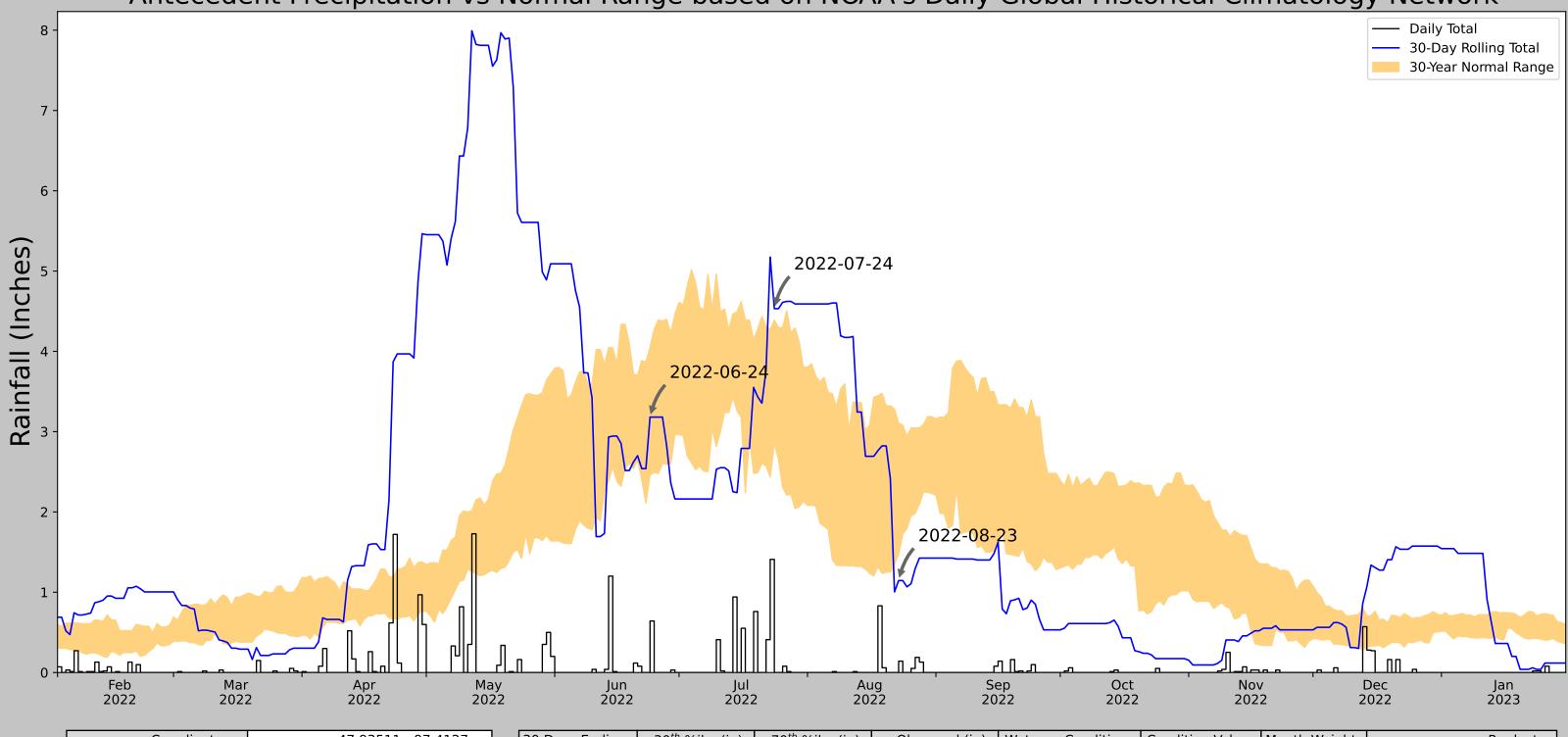


Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.121	5.598	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

Dec	Jan	Feb
2023	2024	2024





Coordinates	47.93511, -97.4127
Observation Date	2022-08-23
Elevation (ft)	914.18
Drought Index (PDSI)	Normal
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30 th %ile(in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-08-23	1.472047	3.108268	1.145669	Dry	1	3	3
2022-07-24	2.858662	4.390158	4.531496	Wet	3	2	6
2022-06-24	2.457874	4.050394	3.181102	Normal	2	1	2
Result							Normal Conditions - 11

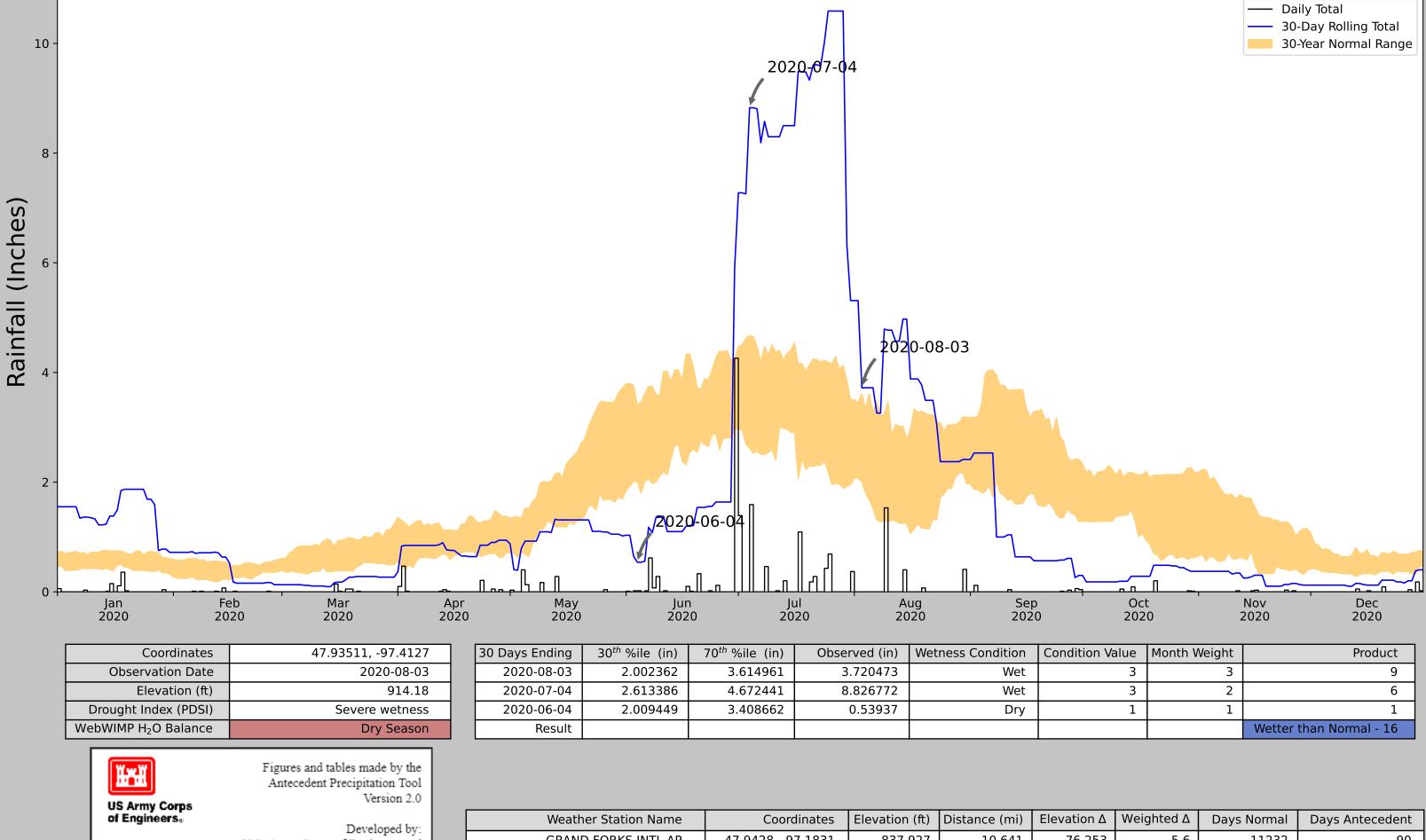


ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.253	5.6	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

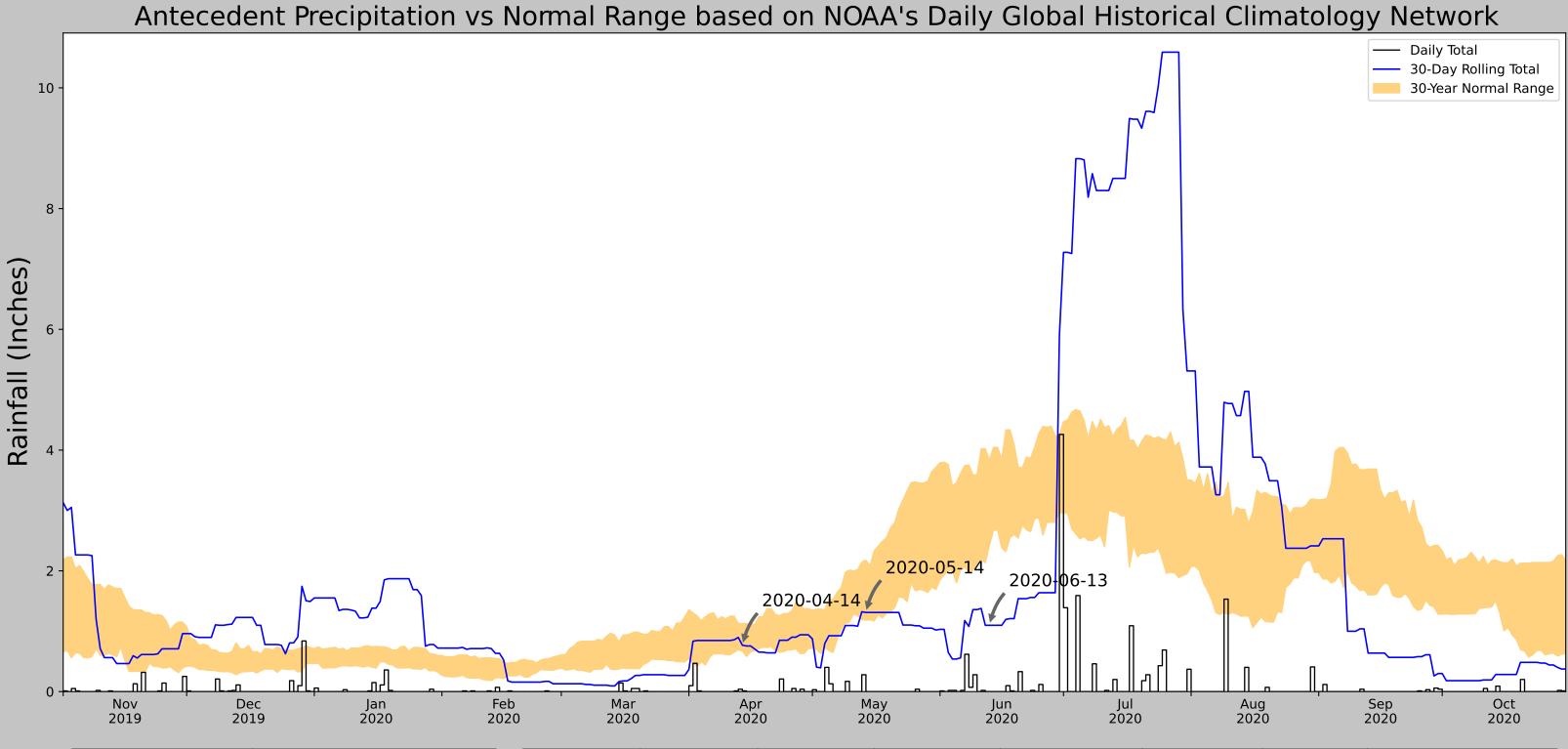
Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



ERDC

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.253	5.6	11232	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

Condition Value	Month Weight	Product
3	3	9
3	2	6
1	1	1
		Wetter than Normal - 16



Coordinates	47.93511, -97.4127
Observation Date	2020-06-13
Elevation (ft)	914.18
Drought Index (PDSI)	Moderate wetness
WebWIMP H_2O Balance	Dry Season

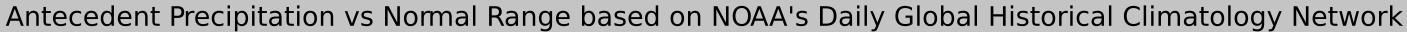
30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-06-13	2.420473	3.833071	1.098425	Dry	1	3	3
2020-05-14	1.183858	2.175197	1.311024	Normal	2	2	4
2020-04-14	0.670079	1.125984	0.767717	Normal	2	1	2
Result							Drier than Normal - 9

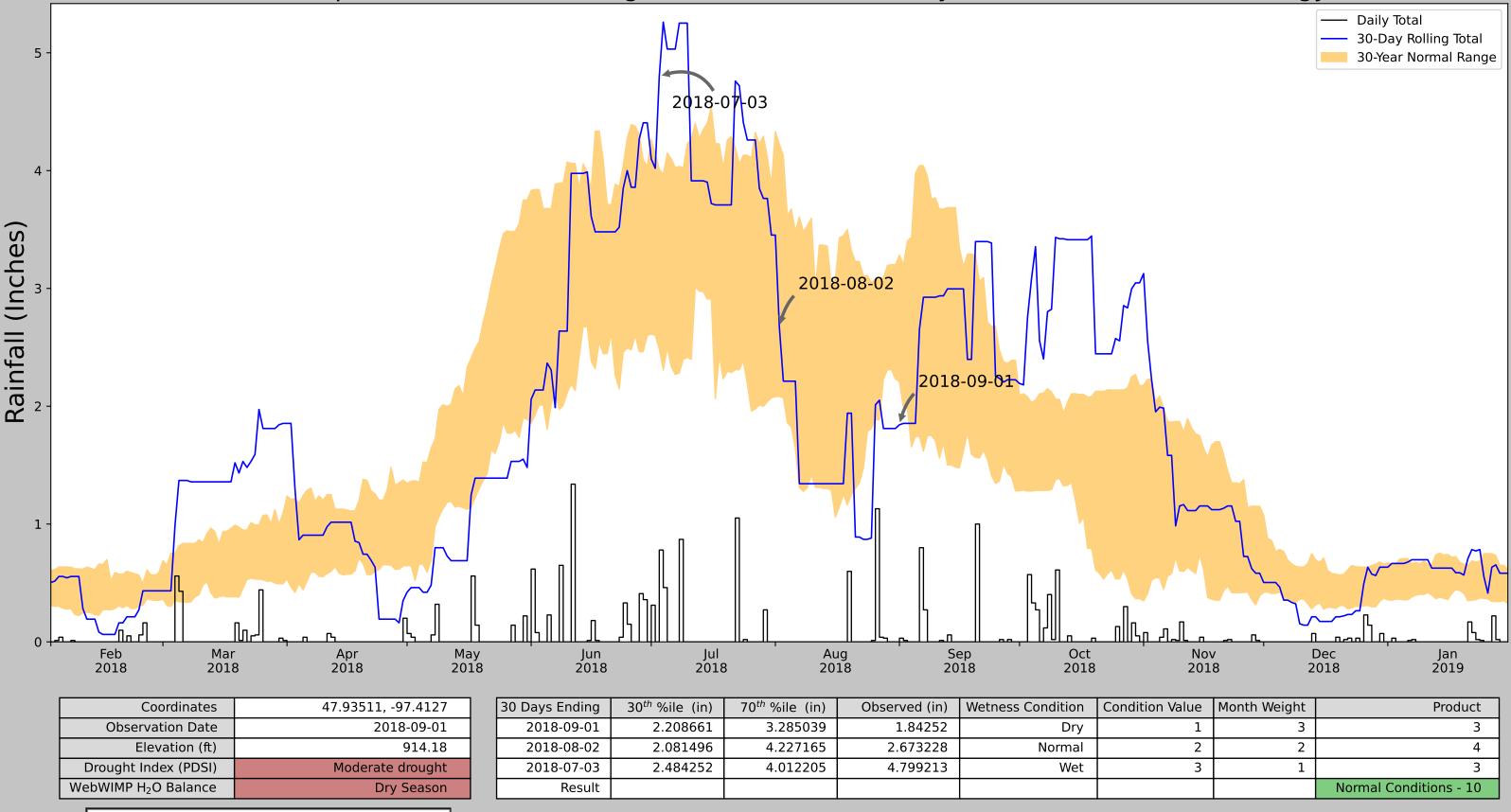


ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.253	5.6	11232	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0







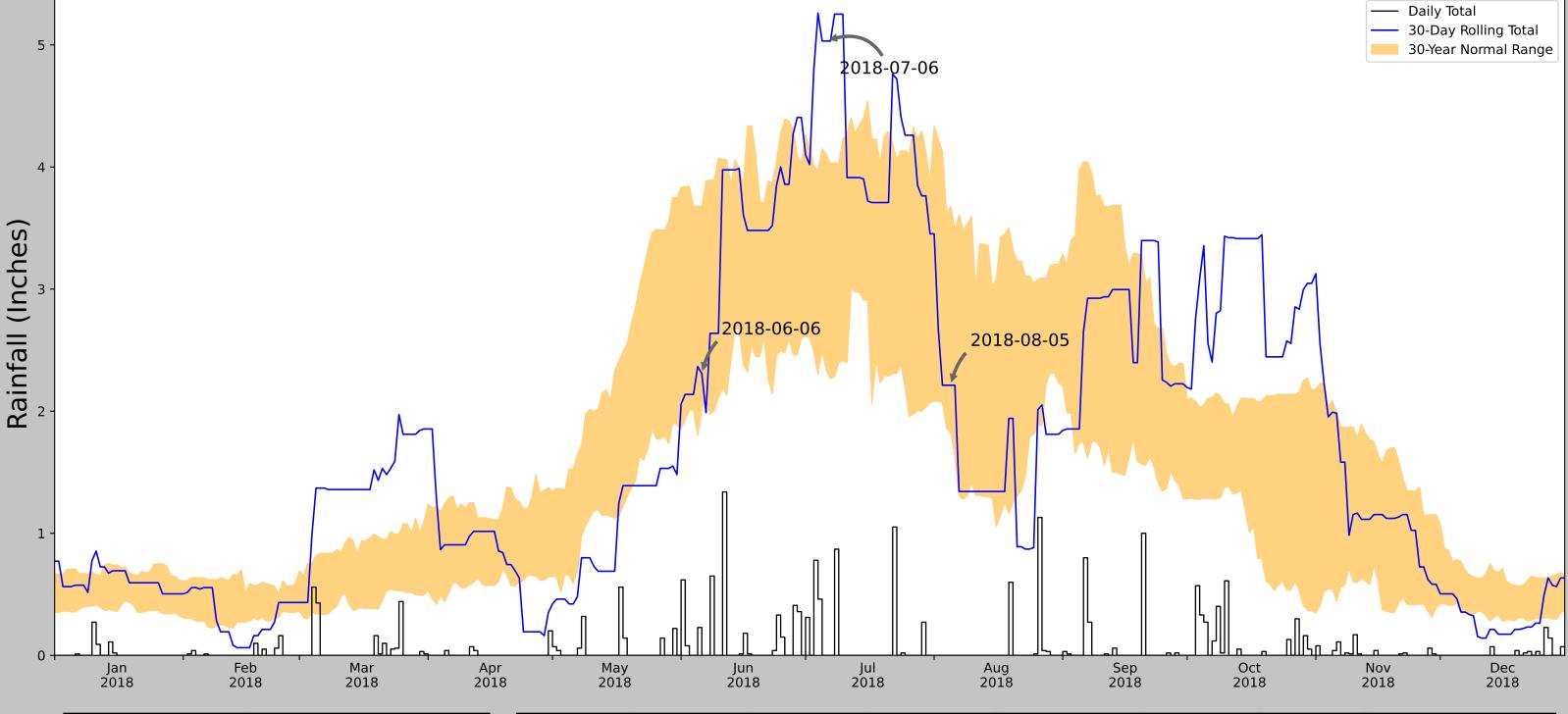
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.253	5.6	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

ondition Value	Month Weight	Product
1	3	3
2	2	4
3	1	3
		Normal Conditions - 10

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.93511, -97.4127
Observation Date	2018-08-05
Elevation (ft)	914.18
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Dry Season

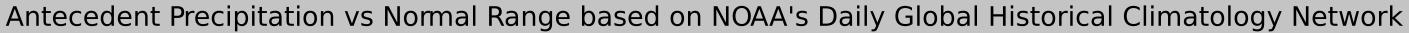
30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2018-08-05	1.822835	3.676772	2.212598	Normal	2	3	6
2018-07-06	2.336221	4.101181	5.031496	Wet	3	2	6
2018-06-06	2.01063	3.678347	2.307087	Normal	2	1	2
Result							Normal Conditions - 14



ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.253	5.6	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0





Coordinates	47.93511, -97.4127
Observation Date	2014-09-07
Elevation (ft)	914.18
Drought Index (PDSI)	Normal
WebWIMP H ₂ O Balance	Dry Season

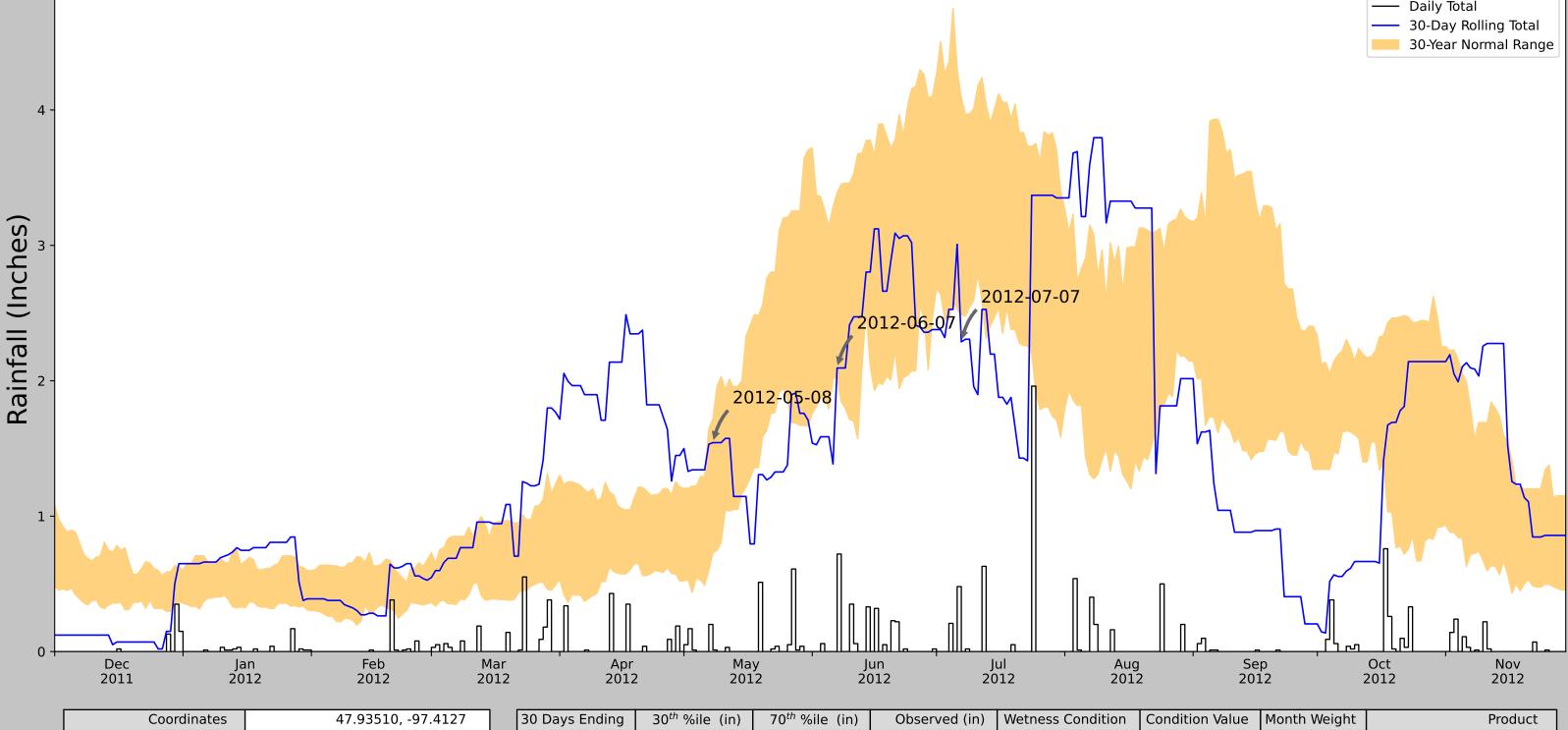
30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2014-09-07	1.617323	3.931496	3.259843	Normal	2	3	6
2014-08-08	1.276772	3.302756	2.944882	Normal	2	2	4
2014-07-09	2.398032	4.024016	5.122047	Wet	3	1	3
Result							Normal Conditions - 13



Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.253	5.6	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.93510, -97.4127
Observation Date	2012-07-07
Elevation (ft)	914.048
Drought Index (PDSI)	Moderate drought
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2012-07-07	2.486221	4.090945	2.287402	Dry	1	3	3
2012-06-07	2.036614	3.387795	2.094488	Normal	2	2	4
2012-05-08	0.730709	1.72126	1.543307	Normal	2	1	2
Result							Drier than Normal - 9



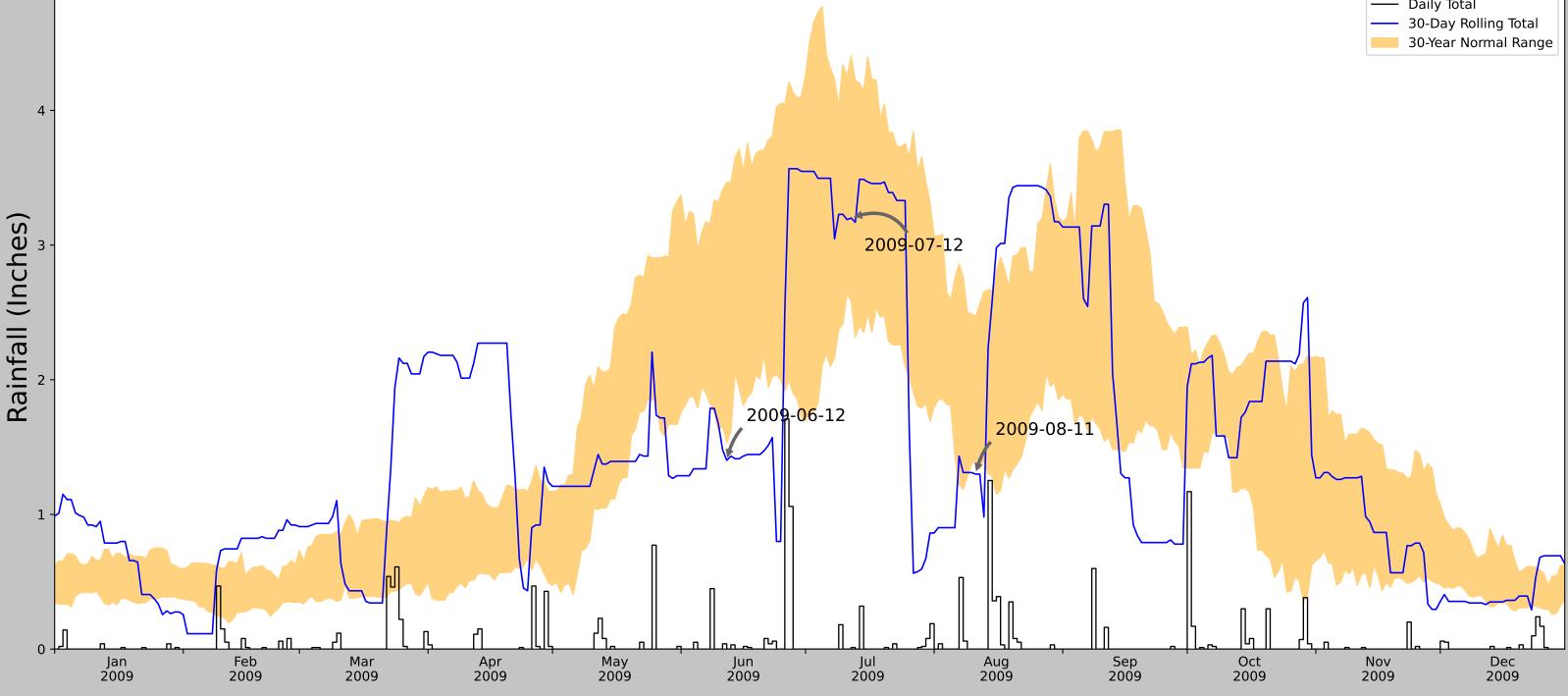
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.121	5.598	11232	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

- Daily Total

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.93510, -97.4127
Observation Date	2009-08-11
Elevation (ft)	914.048
Drought Index (PDSI)	Extreme wetness
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2009-08-11	1.405906	2.468898	1.299213	Dry	1	3	3
2009-07-12	2.583465	4.404725	3.200788	Normal	2	2	4
2009-06-12	1.534646	3.465748	1.401575	Dry	1	1	1
Result							Drier than Normal - 8



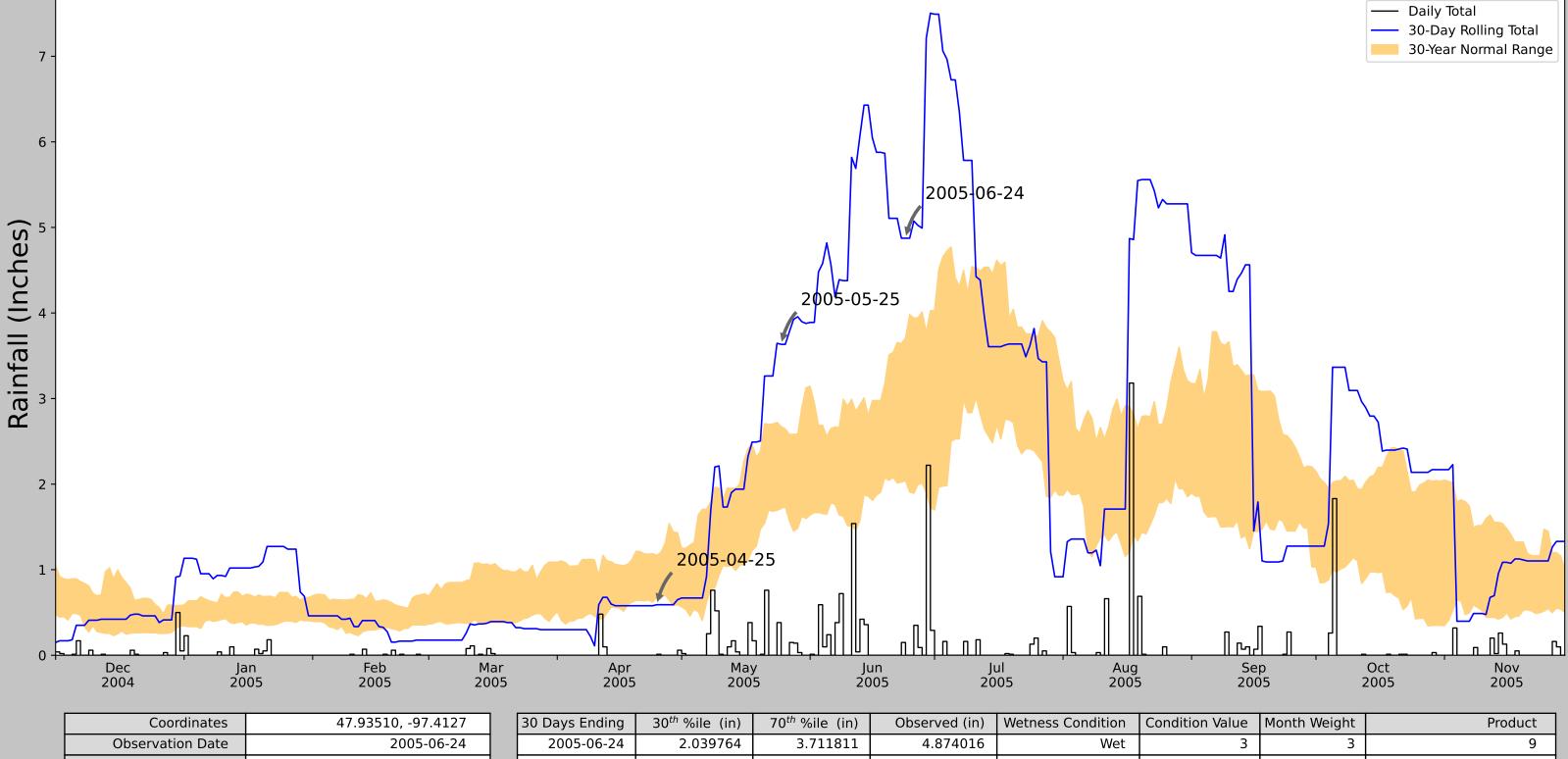
Figures and tables made by the Antecedent Precipitation Tool Version 2.0

ERDC

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.121	5.598	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

- Daily Total

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.93510, -97.4127
Observation Date	2005-06-24
Elevation (ft)	914.048
Drought Index (PDSI)	Extreme wetness
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile(in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2005-06-24	2.039764	3.711811	4.874016	Wet	3	3	9
2005-05-25	1.715354	2.674016	3.633858	Wet	3	2	6
2005-04-25	0.674016	1.169291	0.590551	Dry	1	1	1
Result							Wetter than Normal - 16



ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
GRAND FORKS INTL AP	47.9428, -97.1831	837.927	10.641	76.121	5.598	11233	90
GRAND FORKS UNIV (NWS)	47.9217, -97.0975	830.053	4.222	7.874	1.933	120	0

ATTACHMENT B SOIL SURVEY FOR GRAND FORKS PROJECT AREA This page intentionally left blank



United States Department of Agriculture

Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Grand Forks County, North Dakota

Grand Sky EUL 2023



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



	MAP L	EGEND)	MAP INFORMATION
Area of Int	erest (AOI) Area of Interest (AOI)	8	Spoil Area Stony Spot	The soil surveys that comprise your AOI were mapped at 1:20,000.
Soils	Soil Map Unit Polygons Soil Map Unit Lines	00 V	Very Stony Spot Wet Spot	Please rely on the bar scale on each map sheet for map measurements.
Special I	Soil Map Unit Points Point Features	۵ ••	Other Special Line Features	Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)
9 8 8 8 8 8	Blowout Borrow Pit Clay Spot Closed Depression	Water Fea	Streams and Canals	Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.
* * *	Gravel Pit Gravelly Spot Landfill	* *	US Routes Major Roads Local Roads	This product is generated from the USDA-NRCS certified data as of the version date(s) listed below. Soil Survey Area: Grand Forks County, North Dakota
∧ ⊸ ≪	Lava Flow Marsh or swamp Mine or Quarry	Backgrou	nd Aerial Photography	Survey Area Data: Version 26, Sep 8, 2022 Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.
0	Miscellaneous Water Perennial Water Rock Outcrop			Date(s) aerial images were photographed: May 28, 2021—Jul 1, 2021
+	Saline Spot			The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
	Severely Eroded Spot Sinkhole Slide or Slip			
ø	Sodic Spot			

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
I155A	Grimstad fine sandy loam, 0 to 2 percent slopes	91.4	11.3%
I156A	Antler silt loam, 0 to 2 percent slopes	14.0	1.7%
I157A	Antler, moderately saline- Mustinka silty clay loams, 0 to 2 percent slopes	2.5	0.3%
I199A	Antler-Mustinka silt loams, 0 to 2 percent slopes	161.8	20.0%
1400A	Gilby loam, 0 to 2 percent slopes	491.8	60.9%
I413A	Lankin loam, 0 to 2 percent slopes	10.2	1.3%
1906F	Orthents-Aquents-Urban Land, highway complex, 0 to 35 percent slopes	35.4	4.4%
Totals for Area of Interest		807.1	100.0%

Map Unit Legend

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Grand Forks County, North Dakota

I155A—Grimstad fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2mbkq Elevation: 750 to 1,250 feet Mean annual precipitation: 19 to 24 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: All areas are prime farmland

Map Unit Composition

Grimstad and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Grimstad

Setting

Landform: Deltas Landform position (two-dimensional): Summit Landform position (three-dimensional): Talf Down-slope shape: Convex Across-slope shape: Linear Parent material: Sandy outwash over loamy till

Typical profile

Ap - 0 to 9 inches: fine sandy loam *Bk - 9 to 22 inches:* loamy fine sand *C1 - 22 to 32 inches:* loamy fine sand *2C2 - 32 to 60 inches:* loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2s Hydrologic Soil Group: B Ecological site: R056AY087ND - Limy Subirrigated Forage suitability group: Subirrigated (G056XY700ND) Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

Minor Components

Arveson

Percent of map unit: 10 percent Landform: Deltas Landform position (three-dimensional): Dip Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY102ND - Wet Meadow Other vegetative classification: Wet (G056XY900ND) Hydric soil rating: Yes

Ulen

Percent of map unit: 5 percent Landform: Deltas Landform position (three-dimensional): Rise Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY087ND - Limy Subirrigated Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

I156A—Antler silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2mb9g Elevation: 750 to 1,480 feet Mean annual precipitation: 20 to 26 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: All areas are prime farmland

Map Unit Composition

Antler and similar soils: 80 percent Minor components: 20 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Antler

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Parent material: Silty glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 12 inches: silt loam Ak - 12 to 15 inches: clay loam *Bk1 - 15 to 25 inches:* clay loam *Bk2 - 25 to 28 inches:* gravelly clay loam *C1 - 28 to 35 inches:* clay loam *C2 - 35 to 79 inches:* clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 4 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C Ecological site: R056AY087ND - Limy Subirrigated Forage suitability group: Subirrigated (G056XY700ND) Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

Minor Components

Lankin

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Rise Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY094ND - Loamy Other vegetative classification: Overflow (G056XY500ND) Hydric soil rating: No

Antler, moderately saline

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY089ND - Saline Lowland Other vegetative classification: Saline (G056XY895ND) Hydric soil rating: No

Mustinka

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Linear *Ecological site:* R056AY084ND - Clayey *Other vegetative classification:* Clayey Subsoil (G056XY210ND) *Hydric soil rating:* Yes

Winger

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Concave Ecological site: R056AY102ND - Wet Meadow Other vegetative classification: Wet (G056XY900ND) Hydric soil rating: Yes

I157A—Antler, moderately saline-Mustinka silty clay loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2mb9h Elevation: 750 to 1,480 feet Mean annual precipitation: 20 to 26 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: Not prime farmland

Map Unit Composition

Antler, moderately saline, and similar soils: 55 percent Mustinka and similar soils: 30 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Antler, Moderately Saline

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Parent material: Silty glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 12 inches: silty clay loam Ak - 12 to 15 inches: clay loam Bk1 - 15 to 25 inches: clay loam 2Bk2 - 25 to 28 inches: clay loam 2C1 - 28 to 35 inches: clay loam 2C2 - 35 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent Depth to restrictive feature: More than 80 inches Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 6 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3s Hydrologic Soil Group: C Ecological site: R056AY089ND - Saline Lowland Forage suitability group: Saline (G056XY895ND) Other vegetative classification: Saline (G056XY895ND) Hydric soil rating: No

Description of Mustinka

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Linear Parent material: Silty and clayey glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 9 inches: silty clay loam A - 9 to 14 inches: silty clay loam Btg - 14 to 19 inches: silty clay Bkg - 19 to 41 inches: silty clay loam 2Cyg - 41 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: C/D Ecological site: R056AY084ND - Clayey Forage suitability group: Clayey Subsoil (G056XY210ND) Other vegetative classification: Clayey Subsoil (G056XY210ND) Hydric soil rating: Yes

Minor Components

Antler

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY087ND - Limy Subirrigated Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

Winger, moderately saline

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Concave Ecological site: R056AY089ND - Saline Lowland Other vegetative classification: Saline (G056XY895ND) Hydric soil rating: Yes

Lankin

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Rise Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY094ND - Loamy Other vegetative classification: Overflow (G056XY500ND) Hydric soil rating: No

I199A—Antler-Mustinka silt loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2l6w9 Elevation: 750 to 1,480 feet Mean annual precipitation: 20 to 26 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: Prime farmland if drained

Map Unit Composition

Antler and similar soils: 55 percent Mustinka and similar soils: 30 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Antler

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Parent material: Silty glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 12 inches: silt loam Ak - 12 to 15 inches: clay loam Bk1 - 15 to 25 inches: clay loam 2Bk2 - 25 to 28 inches: gravelly clay loam 2C1 - 28 to 35 inches: clay loam 2C2 - 35 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 4 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C Ecological site: R056AY087ND - Limy Subirrigated Forage suitability group: Subirrigated (G056XY700ND) Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

Description of Mustinka

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Linear Parent material: Silty and clayey glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 14 inches: silt loam Btg - 14 to 24 inches: silty clay Bkg - 24 to 36 inches: silty clay loam 2Cyg - 36 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: C/D Ecological site: R056AY084ND - Clayey Forage suitability group: Clayey Subsoil (G056XY210ND) Other vegetative classification: Clayey Subsoil (G056XY210ND) Hydric soil rating: Yes

Minor Components

Antler, moderately saline

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY089ND - Saline Lowland Other vegetative classification: Saline (G056XY895ND) Hydric soil rating: No

Winger

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Concave Ecological site: R056AY102ND - Wet Meadow Other vegetative classification: Wet (G056XY900ND) Hydric soil rating: Yes

Lankin

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Rise Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY094ND - Loamy Other vegetative classification: Overflow (G056XY500ND) Hydric soil rating: No

I400A—Gilby loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1nyyv Elevation: 750 to 1,480 feet Mean annual precipitation: 20 to 26 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: All areas are prime farmland

Map Unit Composition

Gilby and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Gilby

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 10 inches: loam *Bk - 10 to 24 inches:* loam *2C - 24 to 79 inches:* clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C Ecological site: R056AY087ND - Limy Subirrigated *Forage suitability group:* Subirrigated (G056XY700ND) *Other vegetative classification:* Subirrigated (G056XY700ND) *Hydric soil rating:* No

Minor Components

Mustinka

Percent of map unit: 8 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Linear Ecological site: R056AY084ND - Clayey Other vegetative classification: Clayey Subsoil (G056XY210ND) Hydric soil rating: Yes

Winger

Percent of map unit: 7 percent Landform: Till-floored lake plains Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Concave Ecological site: R056AY102ND - Wet Meadow Other vegetative classification: Wet (G056XY900ND) Hydric soil rating: Yes

Gilby, moderately saline

Percent of map unit: 5 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Linear Across-slope shape: Linear Ecological site: R056AY089ND - Saline Lowland Other vegetative classification: Saline (G056XY895ND) Hydric soil rating: No

I413A—Lankin loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1nyz9 Elevation: 750 to 1,480 feet Mean annual precipitation: 20 to 26 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: All areas are prime farmland

Map Unit Composition

Lankin and similar soils: 75 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Lankin

Setting

Landform: Till-floored lake plains Landform position (three-dimensional): Rise Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy glaciolacustrine deposits over loamy till

Typical profile

Ap - 0 to 7 inches: loam *A - 7 to 11 inches:* loam *Bw1 - 11 to 18 inches:* loam *2Bw2 - 18 to 25 inches:* loam *2Bk - 25 to 34 inches:* clay loam *2C - 34 to 79 inches:* clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2c Hydrologic Soil Group: C Ecological site: R056AY094ND - Loamy Forage suitability group: Overflow (G056XY500ND) Other vegetative classification: Overflow (G056XY500ND) Hydric soil rating: No

Minor Components

Fordville

Percent of map unit: 10 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Linear Ecological site: R056AY094ND - Loamy Other vegetative classification: Droughty Loam (G056XY120ND) Hydric soil rating: No

Wyard

Percent of map unit: 8 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Linear Ecological site: R056AY095ND - Subirrigated Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

Bohnsack

Percent of map unit: 4 percent Landform: Till-floored lake plains Landform position (three-dimensional): Talf Down-slope shape: Convex Across-slope shape: Linear Ecological site: R056AY087ND - Limy Subirrigated Other vegetative classification: Subirrigated (G056XY700ND) Hydric soil rating: No

Tonka

Percent of map unit: 3 percent Landform: Depressions on till-floored lake plains Landform position (three-dimensional): Talf, dip Down-slope shape: Concave Across-slope shape: Linear Ecological site: R056AY102ND - Wet Meadow Other vegetative classification: Wet (G056XY900ND) Hydric soil rating: Yes

I906F—Orthents-Aquents-Urban Land, highway complex, 0 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2qktx Elevation: 750 to 1,250 feet Mean annual precipitation: 19 to 24 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 110 to 160 days Farmland classification: Not prime farmland

Map Unit Composition

Orthents and similar soils: 30 percent Aquents and similar soils: 25 percent Orthents and similar soils: 25 percent Urban land, highway: 20 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orthents

Setting

Landform position (three-dimensional): Side slope Down-slope shape: Concave Across-slope shape: Linear Parent material: Glaciofluvial deposits and/or glaciolacustrine deposits

Typical profile

A - 0 to 5 inches: silty clay loam AC - 5 to 9 inches: silty clay loam C - 9 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: C Ecological site: R056AY088ND - Loamy Overflow Forage suitability group: Loam (G056XY100ND) Other vegetative classification: Loam (G056XY100ND) Hydric soil rating: No

Description of Aquents

Setting

Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Linear Parent material: Fine-silty glaciolacustrine deposits over clayey glaciolacustrine deposits

Typical profile

A - 0 to 5 inches: silty clay loam AC - 5 to 9 inches: silty clay loam Cg1 - 9 to 52 inches: silt loam 2Cg2 - 52 to 81 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Ecological site: R056AY102ND - Wet Meadow Forage suitability group: Wet (G056XY900ND) Other vegetative classification: Wet (G056XY900ND) Hydric soil rating: Yes

Description of Orthents

Setting

Landform position (three-dimensional): Side slope Down-slope shape: Concave Across-slope shape: Linear Parent material: Glaciofluvial deposits and/or glaciolacustrine deposits

Typical profile

A - 0 to 5 inches: silty clay loam AC - 5 to 9 inches: silty clay loam C - 9 to 60 inches: silty clay loam

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: C Ecological site: R056AY088ND - Loamy Overflow Forage suitability group: Loam (G056XY100ND) Other vegetative classification: Loam (G056XY100ND) Hydric soil rating: No

Description of Urban Land, Highway

Interpretive groups

Land capability classification (irrigated): None specified Forage suitability group: Not suited (G056XY000ND) Other vegetative classification: Not suited (G056XY000ND) Custom Soil Resource Report

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ATTACHMENT C WETLAND DATA FORMS AND REPRESENTATIVE PHOTOGRAPHS

Project/Site:	Grand Sky	City/County	Grand Forks		Sampling Date:	September 23, 2023
Applicant/Owner:	US Air Force, GFAFB			State: ND	Sampling Point:	DP-01W
Investigators:	C. Lotts; M. Hayes; K. Erwin; M.		vnship, Range:			<u> </u>
Landform:	flat prairie		concave,convex,n	·	Slope (%):	0-2
Subregion (LRR or MLRA):	LRR F	Lat:	Long:		Datum:	NAD83
Soil Map Unit Name:		ms, 0 to 2 percent slopes		NWI classification:		
, ,	litions on the site typical for this tim	•	Yes	No X	(If no, explain in R	·
Are Vegetation X	, , ,	signficantly disturb		lormal Circumstances" pres		es <u> </u>
Are Vegetation	Soil or Hydrology	naturally problema	auc? (If nee	ded, explain any answers i	n Remarks.)	
SUMMARY OF FINDI	NGS - Attach site map sho	wing sampling poi	nt locations, t	ransects, important f	eatures, etc.	
Hydrophytic Vegetation	Present?	Yes X	No	Is the Sampled Area		
Hydric Soils Present?		Yes X	No	within a Wetland?	Ye	es X No
Wetland Hydrology Pre	sent?	Yes X	No			
Climatic/hydrologic weeks prior to the (August and Septe	parameters met. c conditions are not typical for this t survey and normal rainfall condition ember 2023) and moderate drought dicators, and hydrology. mowed for hay.	ns the week prior and we	ek of the field visit	. However PSDI indicated	severe drought for pr	eseeding two months
VEGETATION - Use s	cientific names of plants.				Sampling Point:	DP-01W
		Absolute Dominant	Indicator	Dominance Test worksh	eet:	
Tree Stratum (Plo	ot size: 30' Radius)	<u>% Cover</u> <u>Species</u>	<u>Status</u>	Number of Dominant Spec	cies That	
1.				Are OBL, FACW, or FAC:	1	(A)
				Total Number of Dominan	t Species	
				Across All Strata:	1	(B)
4.				Percent of Dominant Spec	ies That	
		0% = Total Cov	er	Are OBL, FACW, or FAC:	100	0% (A/B)
	50% of total cover: 0%	•	0%			
Sapling/Shrub Stratum	(Plot size: 15' Rad	lius)		Prevalence Index works	neet:	
				Total % Cover of:		
				OBL species	0% x 1 =	0
3.				FACW species	95% x 2 =	1.9
				FAC species	0% x 3 =	0
5.				FACU species	0% x 4 =	0
		0% = Total Cov		UPL species	0% x 5 =	0
	50% of total cover: 0%	20% of total cover:	0%	Column Totals:	<u>95%</u> (A)	<u>1.9</u> (B)
	ot size: 5' Radius)			Prevalence Inc	lex = B/A =	2.00
1. Phalaris arundinad	;ea	95% Y	FACW			
				Hydrophytic Vegetation		
					or Hydrophytic Veget	ation
				X 2 - Dominance 3 - Prevalence		
					Hydrophytic Vegetati	ion ¹ (Evploin)
6.				4 - Floblematic	nyurophytic vegetati	
				1		
				Indicators of hydric soil a disturbed or problematic.	ind wetland hydrolog	y must be present, unless
				disturbed of problematic.		
10		95% = Total Cov				
	FOW of total acutary 40%	95% = Total Cov 20% of total cover:				
Woody Vine Stratum	50% of total cover: <u>48%</u> (Plot size: 15' Radius		19%	Hydrophytic Vegetation	Present? Yes	X No
1.	(FIOUSIZE. 13 Madius	_)		inguiophytic vegetation	1656111 165	<u>X</u> No
2.						
Z.		0% = Total Cov				
	50% of total cover: 0%	20% of total cover:	0%			
% Bare Ground in Herb			0 78			
-	/ grass (Phalaris arundinacea) as p	primary indicator of exten	t Normal plant cor	nmunity not present due to	lona term drought	
. Smano. Osca recu barlary	Since (i malane aranamacea) as p	and a manual of the stern		prosent due to	.e.ig torin arought.	
1						

Surface Water (A1) Salt Crust (B11) Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidi Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Frost	
(inches) Color (moist) % Cype ¹ Loc ² Texture 0-5 10YR 3/2 100 silly cay loam loam silly cay loam 5-10 10YR 3/2 39 10YR 6/6 1 C M loam 10-19 10YR 3/1 29 sandy loam sandy loam sandy loam 10-19 10YR 3/1 29 sandy loam sandy loam sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, (S) Histosol (A1) Land Water (S) type: C=Concentration, CS Loam Vistos Vistos (AS)	
(inches) Color (moist) % Color (moist) % Type1 Loc2 Texture 0-5 10VR 3/2 100	
0.5 10/TR 3/2 100	Remarks
5-10 10YR 6/2 33 10YR 5/6 1 C M loam 5-10 10YR 6/2 33 10YR 5/6 1 C M loam 10-19 10YR 7/2 70 10YR 4/6 1 C M sandy loam 10-19 10YR 3/1 29 sandy loam sandy loam sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. yddressame sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. yddressame sandy loam Histosol (A1)	romano
5-10 10YR 6/2 39 10YR 5/6 1 C M loam 10-19 10YR 7/2 70 10YR 4/6 1 C M sandy loam 10-19 10YR 3/1 29 sandy loam sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. sandy Redox (S5) Black Histic (A3)	
10-19 10YR 7/2 70 10YR 4/6 1 C M sandy loam 10-19 10YR 3/1 29 sandy loam sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ydric Soil Indicators: Histose (A1)	oxidized rhizospheres on roo
10-19 10YR 3/1 29 sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS Histosol (A1) Histosol (A1)	gravel layer at 20 inches
typic Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histo Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F2) Sandy Mucky Mineral (S1) (LRR O, S) Redox Dark Surface (F7) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) tetrictive Layer (if observed): Type: Type:	, <u></u>
yric Soll Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F2) Sandy Mucky Mineral (S1) (LRR O, S) Redox Dark Surface (F7) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F6) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) tetrictive Layer (if observed): Type: Type:	
Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (S3) Torm Muck (A9) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F6) 2.5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 &73 LRR H) Lettrictive Layer (if observed): Type: Type: Depth (inches): Depth (inches): Salt Crust (B11) High Plains Depressions (F16) Surface Water (A1) Surface Water (A1) Salt Crust (B11) Surface Water (A1) Salt Crust (B11) High Plains Bill (B Odor (C1) X Oddi Saturation (A3) Mari Deposits (B15) (LRR U) Water Marks (B1) Hydross Sulface Odor (C1) X Oddi Sediment Deposits (B2) Dry-Season Water Table (C2) Crayl Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Saturation (C4) Algal Mat or Crust (B4) Presence of Reduced Iron (C4)<	² Location: PL=Pore Lining, M=Matrix
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffde (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Bark Surface (A11) Thick Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) tetrictive Layer (if observed): Type: Depth (inches):	Indicators for Prob. Hydric Soils ³ :
Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A12) X Sandy Mucky Mineral (S1) (LRR O, S) Redox Dark Surface (F6) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) Hydric S Depleted lark (S0) Redox Dark Surface (F7) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR G & H) Multic S Type: Deplet (inches): Dept (inches):	1 cm Muck (A9) (LRR I & J)
Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Martix (F3) Depleted Below Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Dark Surface (F7) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F8) 2.5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) tetrictive Layer (if observed): (MLRA 72 & 73 LRR H) Type:	Coast Prairie Redox (A16) (LRR F, G,
Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Martix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) etrictive Layer (if observed): Type:	Dark Surface (S7) (LRR G)
Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Martix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) etrictive Layer (if observed): Type:	High Plains Depressions
1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) etrictive Layer (if observed): Type: Depleted Dark Surface (F7) Depth (inches):	(F16) (MLRA 72 &73 LRR H
□ Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Hydric S Depth (inches):	Reduced Vertic (F18)
Thick Dark Surface (A12) X Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Hydric S Depth (inches): Lemarks: Soil parameter met. irrivary Indicators: trimary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Salt Crust (B11) Surface Water (A1) Salt Crust (B11) Surface Water (A1) Salt Crust (B11) Saturation (A3) Marl Deposits (B15) (LRR U) Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Ves No X Depth (inches): >19 <td>Red Parent Material (TF2)</td>	Red Parent Material (TF2)
Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) etrictive Layer (if observed): Type: Depth (inches): Depth (inches):	V. Shallow Dark Surf. (TF12)
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) etrictive Layer (if observed): Type:	Other (Explain in Remarks)
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) etrictive Layer (if observed): Type: Depth (inches):	_ ``
Type: Depth (inches): Lemarks: Soil parameter met. iravel layer at 20 inches. ROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one is required; check all that apply) Secondary Indic Surface Water (A1) Salt Crust (B11) Sauface Water (A1) Surface Water (A1) Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidi Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hy //acter Table Present? Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 includes capillary	³ Indicators of hydrophytic vegetation an wetland hydrology must be present, unle
Type: Depth (inches): emarks: Soil parameter met. ravel layer at 20 inches. ROLOGY Ketland Hydrology Indicators: rimary Indicators (minimum of one is required; check all that apply) Secondary Indic Surface Water (A1) Salt Crust (B11) Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidiz Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hy Vater Table Present? Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 includes capillary fringe)	disturbed or problematic.
Depth (inches):	
termarks: Soil parameter met. irravel layer at 20 inches. ROLOGY /etland Hydrology Indicators: frimary Indicators (minimum of one is required; check all that apply) Secondary Indic Surface Water (A1) Salt Crust (B11) Surface Water (A1) Surface Water (A1) Surface Water (A1) Surface Surface Water (A1) Surface Water (A1) Surface Water (A1) Surface Water (A1) Surface Surface (A2) Surface (A1)	Yes X No
Arravel layer at 20 inches. ROLOGY Vettand Hydrology Indicators: rimary Indicators (minimum of one is required; check all that apply) Secondary Indic Surface Water (A1) Salt Crust (B11) Surface High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidized Rhizospheres on Living Roots (C3) Sediment Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hyr Ves No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 medudes capillary fringe)	
Primary Indicators (minimum of one is required; check all that apply) Secondary Indic Surface Water (A1) Salt Crust (B11) Surfac High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidi Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydrogen Sulface Water Present? Yes Surface Water Present? Yes No X Depth (inches): >19 Saturation Present? Yes No X Depth (inches): >19 Metland Hydrogen Saturation Present? Yes No X Depth (inches): >19 Metland Hydrogen Saturation Present? Yes No X<	
Surface Water (A1) Salt Crust (B11) Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidized Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydrogen (Inches): ield Observations: Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Wetland Hydrogen (Inches): >19	
High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidi Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Saturation Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost water-Stained Leaves (B9) Other (Explain in Remarks) Vetland Hydrogen (inches): ield Observations: Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 ncludes capillary fringe) No X Depth (inches): >19	ators (minimum of two required)
High Water Table (A2) Aquatic Fauna (B13) Spars Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidi Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Saturation (C4) X Geon Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Frost water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydrogen Sulface (C7) Frost ield Observations: Yes No X Depth (inches): >19 water Table Present? Yes No X Depth (inches): >19 iaturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Hot X Depth (inches): >19 Yes	ce Soil Cracks (B6)
Saturation (A3) Marl Deposits (B15) (LRR U) Drain Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidiz Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hyditare Table Present? Yes ield Observations: Yes No X Depth (inches): >19 iaturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Yes No X Depth (inches): >19	ely Vegetated Concave Surface (B8)
Water Marks (B1) Hydrogen Sulfide Odor (C1) X Oxidii Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydrogen Sulface (C7) Frost ield Observations: Ves No X Depth (inches): >19 iaturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Ves No X Depth (inches): >19	age Patterns (B10)
Sediment Deposits (B2) Dry-Season Water Table (C2) Crayf Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hyr ield Observations: Ves No X Depth (inches): >19 iaturation Present? Yes No X Depth (inches): >19 inchudes capillary fringe) Inchudes capillary fringe)	zed Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satur Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hyr ield Observations: Ves No X Depth (inches): >19 vater Table Present? Yes No X Depth (inches): >19 No X aturation Present? Yes No X Depth (inches): >19 No	ish Burrows (C8)
Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geon Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Frost ield Observations: Ves No X Depth (inches): >19 vater Table Present? Yes No X Depth (inches): >19 iaturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Wetland Hyr K Ketland Hyr Ketland Hyr	ation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC- Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Frost ield Observations: Ves No X Depth (inches): >19 //ater Table Present? Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 ncludes capillary fringe) Hest No X Depth (inches): >19	
Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Water-Stained Leaves (B9) Other (Explain in Remarks) Frost ield Observations: Other (Explain in Remarks) Wetland Hype water Present? Yes No X Depth (inches): >19 water Table Present? Yes No X Depth (inches): >19 water autoritor Present? Yes No X Depth (inches): >19 includes capillary fringe) No X Depth (inches): >19	norphic Position (D2)
Water-Stained Leaves (B9) Other (Explain in Remarks) ield Observations:	Neutral Test (D5)
ield Observations: Ves No X Depth (inches): Wetland Hyde vater Table Present? Yes No X Depth (inches): >19 vater Table Present? Yes No X Depth (inches): >19 vaturation Present? Yes No X Depth (inches): >19 includes capillary fringe) No X Depth (inches): >19	Heave Hummocks (D7) (LRR F)
urface Water Present? Yes No X Depth (inches): Wetland Hyr /ater Table Present? Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Ves No X Depth (inches): >19	
/ater Table Present? Yes No X Depth (inches): >19 aturation Present? Yes No X Depth (inches): >19 includes capillary fringe) Includes capillary fringe Includes capillary fringe Includes capillary fringe	
aturation Present? Yes No X Depth (inches):	drology Present?
ncludes capillary fringe)	Yes X No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Hydrology parameter met.	
he Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated	extreme drought. On-site observations suggest dr

DP-01-W: Dominant vegetation, *Phalaris arundinacea* (FACW), FLS-63 wetland



DP-01-W: Soil meeting F3 & F7 indicators



Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	September 23, 2023
Applicant/Owner:	US Air Force, GFAFB	in M. Comoine	Oration Tou	mahin Damas	State:	ND	Sampling Point:	DP-01U
Investigators: Landform:	C. Lotts; M. Hayes; K. Erw side slope	In; M. Correiro		nship, Range: concave,convex	nono):	none	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Long		none	Datum:	NAD83
Soil Map Unit Name:	Antler-Mustinka		percent slopes	-		ssification:	Batam	10.000
Are climatic/hydrolgoic condi				Yes	No	X	(If no, explain in R	emarks.)
Are Vegetation X	Soil X or Hydrolog	y sign	ficantly disturb	ed? Are	"Normal Cir	cumstances" pres	ent? Ye	es No X
Are Vegetation	Soil or Hydrolog	ynatu	rally problema	tic? (If ne	eeded, expl	ain any answers i	n Remarks.)	
SUMMARY OF FINDIN	IGS - Attach site map	showing sa	mpling poir	nt locations,	transect	s, important f	eatures, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No X	ls the	Sampled Area		
Hydric Soils Present?		Yes	_	No <u>X</u>		in a Wetland?	Ye	es No X
Wetland Hydrology Pres	sent?	Yes	_	No <u>X</u>				
Climatic/hydrologic weeks prior to the s (August and Septer	parameters not met. conditions are not typical fo survey and normal rainfall co mber 2023) and moderate d icators, and hydrology. howed for hay.	nditions the wee	k prior and we	ek of the field vis	sit . Howeve	er PSDI indicated	severe drought for pr	reseeding two months
VEGETATION - Use so	cientific names of plant	S.					Sampling Point:	DP-01U
		Absolute		Indicator	Domina	nce Test worksh	eet:	
	t size: 30' Radius)	<u>% Cover</u>	Species	Status		of Dominant Spec ., FACW, or FAC:		
1. 2.						mber of Dominan		(A)
						All Strata:	t Species	(B)
4.					Percent	of Dominant Spec	ies That	(-/
		0%	= Total Cove	er	Are OBL	, FACW, or FAC:	0%	% (A/B)
	50% of total cover:	0% 20% of te	otal cover:	0%				
Sapling/Shrub Stratum	(Plot size: 1	5' Radius)			nce Index works	neet:	
						Cover of:	00/	0
2					OBL spe FACW s	-	0% x 1 = 5% x 2 =	0
					FAC spe	· -	0% x 3 =	0
5.					FACU s	-	90% x 4 =	3.6
		0%	= Total Cove	er	UPL spe	cies	2% x 5 =	0.1
	50% of total cover:	0% 20% of t	otal cover:	0%	Column	-	97% (A)	<u>3.8</u> (B)
	t size: 5' Radius)		Ň	FAOL		Prevalence Inc	lex = B/A =	3.92
 Sorghastrum nutan Elymus repens 	S	80% 10%	Ŷ	FACU FACU	Hydrop	hytic Vegetation	Indicators	
3. Phalaris arundinace	ea	5%		FACW	nyurop		or Hydrophytic Veget	ation
4. Euphorbia escula		2%		UPL		2 - Dominance		
5.						3 - Prevalence I	ndex is ≤3.0 ¹	
6.						4 - Problematic	Hydrophytic Vegetat	ion ¹ (Explain)
							nd wetland hydrolog	y must be present,
					unless d	isturbed or proble	matic.	
10		97%	= Total Cove					
	50% of total cover:			19%				
Woody Vine Stratum	(Plot size: 15' Radi			1070	Hydrop	hytic Vegetation	Present? Yes	No X
1.								
2.								
		0%	= Total Cove	er				
	50% of total cover:	0% 20% of t	otal cover:	0%				
% Bare Ground in Herb								
Vegetation parame	for hay but plants present. ter not met							
	te. normot.							

							Sampling Point: D	P-01
Profile Description: (Describe to	o the depth ne	eeded to docume	ent the indi	icator or confir	m the abser	nce of indicators.)		
Depth M	atrix		Redox	x Features				
(inches) Color (moi	ist) %	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-16 10YR 2/				•		silt loam		
16-18 10YR 6/2	2 60					loam		
16-18 10YR 3/	1 40					loam		
18-22 10YR 2/-	1 80	10YR 6/2	19	D	М	loam		
18-22		10YR 3/6	1	С	М	loam		
22-32 10YR 3/	1 98	10YR 7/1	2	D	М	loam		
Type: C=Concentration, D=Dep	lation DM-D	aduand Matrix C	-Covor	ad or Coatad S	Sand Crains		² Location: PL=Pore Lining, M=N	Actriv
Type: C=Concentration, D=Dep	netion, Rivi-R	educed Matrix, C	-Covere	ed of Coaled a	Sanu Grains	•	Indicators for Prob. Hydric Soi	
iyunc son mulcators.							indicators for From Hydric Sor	15.
Histosol (A1)			Sandy Gl	leyed Matrix (S	54)		1 cm Muck (A9) (LRR I & J)	
Histic Epipedon (A2)				edox (S5)	,		Coast Prairie Redox (A16) (LR	RR F.
Black Histic (A3)			Stripped	Matrix (S6)			Dark Surface (S7) (LRR G)	
Hydrogen Sulfide (A4)			-	Mucky Minea	(F1)		High Plains Depressions	
Stratified Layers (A5) (LRR F	-)		-	ileyed Martix (I			(F16) (MLRA 72 &73	
1 cm Muck (A9) (LRR F, G, F	-		-	Matrix (F3)	-,		Reduced Vertic (F18)	
Depleted Below Dark Surface				ark Surface (F	6)		Red Parent Material (TF2)	
Thick Dark Surface (A12)	6 (711)		-	Dark Surface	,		V. Shallow Dark Surf. (TF12)	
Sandy Mucky Mineral (S1) (L	RR O S)			epressions (F8			Other (Explain in Remarks)	
			-		,			
2.5 cm Mucky Peat or Peat (· · ·)		ns Depression	. ,		³ Indicators of hydrophytic vegeta wetland hydrology must be prese	
5 cm Mucky Peat or Peat (S3	3) (LKK F)		(IVIL	LRA 72 &73 LI	кк п)		disturbed or problematic.	int, t
tetrictive Layer (if observed):						Hydric	Soils Present?	
Туре:						_	Yes	No
Depth (inches):			-					
Votional Undrology Indicators								
	ne is required	· check all that a				Secondary Ind	icators (minimum of two required)	
Primary Indicators (minimum of o	ne is required						icators (minimum of two required)	
Primary Indicators (minimum of or Surface Water (A1)	ne is required	Salt Crust (B	11)			Surf	ace Soil Cracks (B6)	
Primary Indicators (minimum of or Surface Water (A1) High Water Table (A2)	ne is required	Salt Crust (B ² Aquatic Faun	11) ia (B13)	3811)		Surfa Spai	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8)	
Primary Indicators (minimum of or Surface Water (A1) High Water Table (A2) Saturation (A3)	ne is required 	Salt Crust (B ² Aquatic Faun Marl Deposits	11) ia (B13) s (B15) (LF			Surfa Spai	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10)	
Primary Indicators (minimum of or Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	ne is required 	Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su	11) ia (B13) s (B15) (LF lfide Odor	(C1)		Surfa Spar Drai Oxid	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3)	
Primary Indicators (minimum of or Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	ne is required	Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V	11) ia (B13) s (B15) (LF lfide Odor Water Tabl	(C1) le (C2)		Surfa Spar Drai Oxid	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) <i>f</i> fish Burrows (C8)	
Primary Indicators (minimum of or Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	ne is required	Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz	11) la (B13) s (B15) (LF lfide Odor Water Tabl zospheres	(C1) le (C2) on Living Roc		Surf: Spai Drai Oxid Cray Satu	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) /fish Burrows (C8) ıration Visible on Aerial Imagery (C9)	
Primary Indicators (minimum of or Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	ne is required 	Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F	11) a (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir	(C1) le (C2) on Living Roc ron (C4)		Surf: Spai Draii Oxid Cray Satu Geo	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) /fish Burrows (C8) irration Visible on Aerial Imagery (C9) morphic Position (D2)	
Primary Indicators (minimum of or 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)		Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F Recent Iron F	11) a (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced In Reduced In	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils		Surf: Span Draii Oxid Cray Satu Geo FAC	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) <i>f</i> fish Burrows (C8) iration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5)	
Primary Indicators (minimum of or 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 Aerials		Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F Recent Iron F Thin Muck Su	11) ia (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir Reduced Ir Reduction i urface (C7	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils ()		Surf: Span Draii Oxid Cray Satu Geo FAC	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) /fish Burrows (C8) irration Visible on Aerial Imagery (C9) morphic Position (D2)	
Primary Indicators (minimum of or 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)		Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F Recent Iron F	11) ia (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir Reduced Ir Reduction i urface (C7	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils ()		Surf: Span Draii Oxid Cray Satu Geo FAC	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) <i>f</i> fish Burrows (C8) iration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5)	
Primary Indicators (minimum of or 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 Aerials Water-Stained Leaves (B9)		Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F Recent Iron F Thin Muck Su	11) ia (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir Reduced Ir Reduction i urface (C7	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils ()		Surf: Span Draii Oxid Cray Satu Geo FAC	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) <i>f</i> fish Burrows (C8) iration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5)	
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Primary Indicators (minimum of or 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 Aerials Water-Stained Leaves (B9) Field Observations: Surface Water Present?	(B7)	Salt Crust (B' Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F Recent Iron F Thin Muck Su Other (Explai	11) a (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir Reduced Ir Reduction i urface (C7) in in Rema	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils) irrks)		Surf: Span Draii Oxid Cray Satu Geo FAC Fros	ace Soil Cracks (B6) rssely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) fish Burrows (C8) rration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) t Heave Hummocks (D7) (LRR F)	No
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 Aerials	(B7)	Salt Crust (B' Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of f Recent Iron F Thin Muck Su Other (Explai	11) a (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir Reduction i urface (C7) in in Rema h (inches):	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils) arks)	(C6)	Surf: Span Draii Oxid Cray Satu Geo FAC Fros	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) /fish Burrows (C8) rration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) It Heave Hummocks (D7) (LRR F)	No
Primary Indicators (minimum of or 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 Aerials Water-Stained Leaves (B9) Field Observations: Surface Water Present? Vater Table Present? Saturation Present?	(B7)	Salt Crust (B' Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of f Recent Iron F Thin Muck Su Other (Explai	11) a (B13) s (B15) (LF lfide Odor Water Tabl zospheres Reduced Ir Reduced Ir Reduction i urface (C7) in in Rema h (inches): h (inches):	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils) arks)	(C6)	Surf: Span Draii Oxid Cray Satu Geo FAC Fros	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) /fish Burrows (C8) rration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) It Heave Hummocks (D7) (LRR F)	No
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Primary Indicators (minimum of or 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 Aerials Water-Stained Leaves (B9) Field Observations: Surface Water Present? Vater Table Present? Saturation Present? includes capillary fringe)	(B7) YesN YesN gauge, monit	Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Su Dry-Season V Oxidized Rhiz Presence of F Recent Iron F Thin Muck Su Other (Explai	11) Ia (B13) If (B15) (LF Vater Tabl zospheres Reduced Ir Reduced Ir Reduction i urface (C7) in in Rema h (inches): h (inches):	(C1) le (C2) on Living Roc ron (C4) in Tilled Soils () urks)	(C6)	Surf: Span Orai Oxid Cray Satu Geo FAC Fros	ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3) /fish Burrows (C8) rration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) It Heave Hummocks (D7) (LRR F)	No
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DP-01-U: Dominant vegetation, *Sorghastrum nutans* (FACU)



DP-01-U: Soil did not meet indicators



Project/Site:	Grand Sky	City/County:	Grand Forks			Sampling Date	e: Sept	tember 23, 2023
Applicant/Owner:	US Air Force, GFAFB			State:	ND	Sampling Poir		DP-03U
Investigators:	C. Lotts; M. Hayes; K. Erwin; M. Correir	o Section, Tow	nship, Range:					
Landform:	prairie, flat	Local relief (o	concave,convex,r	none):	none	Slope (%):	0 - 2	
Subregion (LRR or MLRA):	LRR F Lat:		Long	-		Datum:	NAD	083
Soil Map Unit Name:	Antler-Mustinka silt loams, 0 to			-	ssification:			
, ,	litions on the site typical for this time of ye		Yes	No	X	(If no, explain		·
Are Vegetation		signficantly disturb			cumstances" pres		Yes	NoX
Are Vegetation		naturally problemat			ain any answers ir	,		
SUMMARY OF FINDI	NGS - Attach site map showing	sampling poir	nt locations, t	ransect	s, important f	eatures, etc		
Hydrophytic Vegetation	Present? Yes		No X	lo the	Sampled Area			
Hydric Soils Present?	Yes		No X		in a Wetland?		Yes	No X
Wetland Hydrology Pre	sent? Yes	x	No					
Climatic/hydrologio weeks prior to the (August and Septe phenology, soil ind	parameters not met. conditions are not typical for this time of survey and normal rainfall conditions the mber 2023) and moderate drought from N licators, and hydrology. and. Point is within a wetland that was de	week prior and we May to July 2023. C	ek of the field visi On-site observatio	it . Howeve ons sugges	er PSDI indicated s st drier than norma	severe drought	for preseedi	ng two months
VEGETATION - Use s	cientific names of plants.					Sampling Poir	nt:	DP-03U
	-			1				51 000
Trace Otractions (DI	Abso		Indicator		nce Test workshe			
<u>Tree Stratum</u> (Plo 1.	ot size: 30' Radius) <u>% Co</u>	over <u>Species</u>	<u>Status</u>		of Dominant Spec , FACW, or FAC:	ies i nat	0	(A)
2					mber of Dominant		0	
3.					All Strata:	opecies	1	(B)
4.				Percent	of Dominant Spec	ies That	•	(2)
	09	6 = Total Cove	er		, FACW, or FAC:		0%	(A/B)
	50% of total cover: 0% 20%	of total cover:	0%					
Sapling/Shrub Stratum	(Plot size: 15' Radius)		Prevaler	nce Index worksh	eet:		
1.				Total %	Cover of:			
2.				OBL spe		<u>0%</u> x	1 =	0
3.				FACW s	·		2 =	0.16
4.				FAC spe			3 =	0.12
5.				FACU sp	_		4 =	3.64
	09	_		UPL spe			5 =	0
Llorh Stratum (Dl		of total cover:	0%	Column	Prevalence Ind		(A) 3.81	3.92 (B)
Herb Stratum (Plo 1. Elymus repens	ot size: 5' Radius) 80'	% Y	FACU		Prevalence ind	ex – d/A –	3.01	
2. Sorghastrum nutar			FACU	Hydroph	nytic Vegetation I	ndicators:		
3. Phalaris arundinad			FACW	i i yai opi	1 - Rapid Test for		egetation	
4. Sonchus arvensis	49		FAC		2 - Dominance 1		-9	
5. Mentha arvensis	3%		FACW		3 - Prevalence li	ndex is ≤3.0 ¹		
6. Medicago lupulina	19	6	FACU		4 - Problematic I	Hydrophytic Veg	getation ¹ (Ex	(plain)
7.					-			
8.				¹ Indicate	ors of hydric soil a	nd wetland hydr	ology must	be present,
0				unless d	isturbed or probler	matic.		
10.								
	103	8% = Total Cove	er	1				
		of total cover:	21%	1		_		
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrop	hytic Vegetation	Present?	/es	No X
2.		·						
	09							
% Baro Ground in Llash		of total cover:	0%					
% Bare Ground in Herb	o Stratum ommunity affected by severe drought and	not normal pres		_				
Remarks: Vegetation co Vegetation parame	, , ,	not normal preser						
vegetation parame	eter not met.							

IL								Sampling Point:	DP-03L
Profile Description: (Desc	ribe to the de	pth nee	ded to docume	ent the inc	licator or confir	rm the absei	nce of indicators.)		
Depth	Matrix				ox Features	. 2			
	r (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
	/R 2/1	100					silt loam		
	/R 3/2	90	10YR 6/2	10	D	M	sandy loam		
19-29 2.5	6Y 5/3	95	10YR 4/8	5	С	М	sandy loam		
¹ Type: C=Concentration, D	=Depletion, F	RM=Red	duced Matrix, C	S=Cove	red or Coated S	Sand Grains	<u>.</u>	² Location: PL=Pore Lini	ng, M=Matrix
Hydric Soil Indicators:								Indicators for Prob. Hyd	dric Soils ³ :
Histosol (A1)				Sandv G	Gleyed Matrix (S	S4)		1 cm Muck (A9) (LRR	1&J)
Histic Epipedon (A2)					Redox (S5)	,		Coast Prairie Redox (A	-
Black Histic (A3)				-	Matrix (S6)			Dark Surface (S7) (LR	
						(54)		_	,
Hydrogen Sulfide (A4)				- '	alMucky Minea	. ,		High Plains Depressio	
Stratified Layers (A5) (L	.RR F)			Loamy	Gleyed Martix (F	F2)		(F16) (MLRA	A 72 &73 LRR
1 cm Muck (A9) (LRR F	, G, H)			Deplete	d Matrix (F3)			Reduced Vertic (F18)	
Depleted Below Dark S	urface (A11)			Redox D	Dark Surface (F	·6)		Red Parent Material (1	(F2)
Thick Dark Surface (A1	. ,				d Dark Surface	,		V. Shallow Dark Surf.	,
Sandy Mucky Mineral (,	S)			Depressions (F8	. ,		Other (Explain in Rem	. ,
				-		,			,
2.5 cm Mucky Peat or F 5 cm Mucky Peat or Pe	. , .		1)		ains Depression ILRA 72 &73 LF	. ,		³ Indicators of hydrophyti wetland hydrology must l	be present, ur
							Ukudisia Opila	disturbed or problematic.	
Retrictive Layer (if observe	ea):						Hydric Soils		
Туре:				-				Yes	No
Depth (inches):									
Motional Hudrology Indias									
Wetland Hydrology Indicat Primary Indicators (minimum		quired; o	check all that a	(ylqq			Secondary Indicato	rs (minimum of two required)	
Surface Water (A1)		, -	Salt Crust (B1					Soil Cracks (B6)	
				,				()	
High Water Table (A2)			Aquatic Faun	. ,			· · ·	Vegetated Concave Surface (E	38)
Saturation (A3)			Marl Deposits		-			e Patterns (B10)	
Water Marks (B1)			Hydrogen Sul	lfide Odo	r (C1)			Rhizospheres on Living Roots	(C3)
Sediment Deposits (B2))		Dry-Season V	Nater Tal	ble (C2)		Crayfish	Burrows (C8)	
Drift Deposits (B3)			Oxidized Rhiz	zosphere	s on Living Roo	ots (C3)	X Saturatio	n Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)			Presence of F	Reduced	Iron (C4)		X Geomorp	phic Position (D2)	
			-		()	(00)		()	
Iron Deposits (B5)			-		i in Tilled Soils ((C6)		utral Test (D5)	
Inundation Visible on A	erials (B7)		Thin Muck Su	irface (C	7)		Frost Hea	ave Hummocks (D7) (LRR F)	
Water-Stained Leaves	(B9)		Other (Explain	n in Rem	arks)				
Field Observations:									
Surface Water Present?	Yes	No	X Depth	h (inches	.):		Wetland Hydrol	logy Present?	
Water Table Present?	Yes	No		h (inches	-	>29		Yes	X No
Saturation Present?	Yes	No		h (inches	-				
	105			I (IIIOIICS	<i>.</i>				
(includes capillary fringe)					<u> </u>				
Describe Recorded Data (st	ream gauge,	monitor	ing well, aerial	photos, p	previous inspec	ctions), if ava	allable:		
Remarks: Hydrolog	gy parameter	met.							
Antopodont Drasinitation T-	ADT)	rtad ac-	mal rainfall c	oditions f	or the Crand C.	orko oroc -	PDI indicated astronom	a draught. On aite cheanigtions	
	ol (APT) repo	rtea nor	mai raintali cor	naitions to	or the Grand Fo	orks area. F	SDI indicated extreme	e drought. On-site observations	suggest drief
al conditions.									

DP-03-U : Dominant vegetation, *Elymus repens (FACU)*

DP-03-U: Soil lacks enough redox features to meet indicators



Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	Septe	mber 23, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:		DP-03W
Investigators:	C. Lotts; M. Hayes; K. Erwin; M.	Correiro	Section, Tow	nship, Range:					
Landform:	pothole depression	-	Local relief (c	concave,convex,r	,	concave	Slope (%):	0 - 2	
Subregion (LRR or MLRA):	LRR F	Lat:		_ Long:	-		Datum:	NAD8	3
Soil Map Unit Name:	Antler-Mustinka silt loa		rcent slopes		-	ssification:			
, ,	itions on the site typical for this tim			Yes	No	<u>×</u>	(If no, explain in	,	
Are Vegetation	Soil or Hydrology		antly disturbe			cumstances" pres		Yes	No <u>X</u>
Are Vegetation X			lly problemat			ain any answers ir	,		
SUMMARY OF FINDIN	NGS - Attach site map sho	wing sam	pling poin	nt locations, t	ransec	ts, important f	eatures, etc.		
Hydrophytic Vegetation	Present?	Yes X		No					
Hydric Soils Present?		Yes X		No		e Sampled Area in a Wetland?		Yes X	No
Wetland Hydrology Pre	sent?	Yes X		No	with				
		<u>.</u>							
weeks prior to the (August and Septe	conditions are not typical for this survey and normal rainfall condition mber 2023) and moderate drough icators, and hydrology. r hay.	ns the week	prior and wee	ek of the field visi	t.Howev	er PSDI indicated	severe drought for	r preseeding	g two months
VEGETATION - Use se	cientific names of plants.						Sampling Point:		DP-03W
		Absolute	Dominant	Indicator	Domina	nce Test worksho	eet:		
Tree Stratum (Plo	ot size: 30' Radius)	<u>% Cover</u>	Species	<u>Status</u>	Number	of Dominant Spec	ies That		
1.	·		-		Are OBL	, FACW, or FAC:		1	(A)
2.					Total Nu	mber of Dominant	Species		
3.					Across /	All Strata:		2	(B)
4.						of Dominant Spec	ies That		
		0%	= Total Cove	er	Are OBL	, FACW, or FAC:		50%	(A/B)
	50% of total cover: 0%	-	al cover:	0%					
Sapling/Shrub Stratum	(Plot size: 15' Rac	lius)			nce Index worksh	neet:		
1.				<u> </u>		Cover of:	500/		
2.					OBL spe		<u>50%</u> x 1	-	0.5
3. 4.				<u> </u>	FACW s	· _	0% x 2 0% x 3		0
4. 5.					FAC Spe		45% x 4		1.8
J		0%	= Total Cove	ar.	UPL spe	· –	<u>-43 %</u> × 4 0% × 5		0
	50% of total cover: 0%			0%	Column	-	95% (A		2.3 (B)
Herb Stratum (Plo	ot size: 5' Radius)	_ 20/0 01 1010			Column	Prevalence Ind		2.42	2.0 (2)
1. Carex utriculata	,	50%	Y	OBL					
2. Elymus repens		40%	Y	FACU	Hydrop	hytic Vegetation	ndicators:		
3. Cirsium arvense		5%		FACU		1 - Rapid Test fo	or Hydrophytic Veg	getation	
4.						2 - Dominance	Fest is >50%		
5.					Х	3 - Prevalence I			
6.						4 - Problematic	Hydrophytic Vege	tation ¹ (Exp	lain)
7.									
8.						ors of hydric soil a		ogy must be	e present,
					unless d	listurbed or proble	matic.		
10									
			= Total Cove						
Woody Vine Straty	50% of total cover: 48%	_ 20% of tota	a cover:	19%	Hydron	hytic Vegetation	Present? V-	~ v	No
<u>Woody Vine Stratum</u> 1.	(Plot size: 15' Radius)			Hydrop	mytic vegetation	Present? Ye	s <u>X</u>	No
2.									
		0%	= Total Cove	<u>ا</u> ت	L				
	50% of total cover: 0%	20% of tota		0%					
% Bare Ground in Herb									
	I climatic conditions the plant com	munity would	be hydric. C.	. utriculata was u	_ sed as pri	mary vegetation ir	ndicator. During se	vere droug	ا ht conditions thre

Vegetation parameter met.

Profile Description: (Description: (Descrip	NL								Sampling Point:	DP-03W
Depth Matrix Redix Features Type Loc ² Toxine Remarks 0-10 007H 211 00 107H 211 00 107H 211 10FH	Profile Description	- (Deceribe to the d	lanth noodo	d to docume	ant the inc	disator or confin		and of indicators)		
(archers) Caller (molat) % Type Loc ² Texture Remarks 10-19 107K 241 100 isandy barn isandy barn isandy barn 19-25 100 100 YK 42 07 100 YK 42 0 Missindy barn 19-26 100 YK 42 07 100 YK 42 0 Missindy barn Garcial ison of the second of the	Prome Description		epunneeue		nt the ma	licator or commi	ท แทย สมระเ	nce of indicators.		
Under Best Color (rones) % Type ¹ Los ² Texture Remarks 10-10 10VR 2/1 100	Depth	Matrix			Redo	ox Features				
0-0 10/0	-		% C	color (moist)			Loc ²	Texture	Remarks	
10-19 10YR 3/1 100 andy learn 19-25 10YR 4/2 pr 10YR 4/8 2 C M sandy learn 19-25 10YR 4/2 pr 10YR 4/8 2 C M sandy learn 19-25 10YR 4/8 2 C M sandy learn Created Sand Grains * Locator: PL-Pare Lining, M-Main 17-ype: C-Concentration, D-Depletion, RM=Reduced Matrix, CS-Covered or Coated Sand Grains. * Locator: PL-Pare Lining, M-Main 17-ype: C-Concentration, D-Depletion, RM=Reduced Matrix, CS-Covered or Coated Sand Grains. * Locator: PL-Pare Lining, M-Main 17-ype: C-Concentration, D-Depletion RM, CS-Covered or Coated Sand Grains. * Locator: PL-Pare Lining, M-Main 17-ype: C-Concentration, D-Depletion RM, CS-Covered or Coated Sand Grains. * Locator: PL-Pare Lining, M-Main 19-105 Sandry Meaor, Kill (RR C, K) Coast Parine Readow Coast Parine Readow 1Coast Parine Readow Coast Parine Readow Coast Parine Readow Coast Parine Readow 1Coast Parine Readow Parine D-Pare 200 (RCA C, K) Coast Parine Readow Coast Parine Readow Parine D-Pare 200 (RCA		()		, , , , , , , , , , , , , , , , , , ,		. 76 -				
19-25 10/17 A12 0/17 A1 C M sandy barm Gravel layer at 25 inche 19-25 2.5YR 4/8 2 C M sandy loan Gravel layer at 25 inche 1*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Pore Lining, MMAtrix 1*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Pore Lining, MMAtrix 1*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Pore Lining, MMAtrix 1*Type: C=Concentration, D=Depletion Matrix, CS=Covered or Coated Sand Grains. * 1 or Muck (A9) (LRR 1 & J) Coast Parent Matrix (CS) (LR 6) - 1 or Muck (A9) (LRR 1 & J) Coast Parent Matrix (CS) Fight Matrix (CS) (LR 6) - Fight Matrix (CS) (LR 7) Fight Matrix (CS) (LR 7) Coast Parent Matrix (CS) - Reduce Darens Matrix (CS) - No 2.5 on Muck (A9) (LRR F, G, H) Depleted Bark Matrix (CS) Depleted Matrix (CS) - No - - No - No - <td></td>										
19-25 2.5 YR 46 2 M sandy loam *1yze: Consentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *1 (coation: PL=Pore Lining, Methating Matrix Sale)* *1yze: Consentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *1 (coation: PL=Pore Lining, Methating Sale)* *1yteigen Staffe (A) Sandy Glayed Matrix (S4) Indicators for Prob. Hydric Sale)* *1yteigen Staffe (A) Coamy Staffer (A) Coamy Staffer (A) *1 com Mark (A) (LRR F, G, H) Coamy Staffer (A) Coamy Staffer (A) *1 com Mark (A) (LRR F, G, H) Coamy Staffer (A) Read Parent Matrix (S1) Depleted Badro, Dark Staffer (A) Read Parent Matrix (S1) Read Parent Matrix (S1) Sandy Macky Munral (S1) (LRR C, S1) Read Parent Matrix (S1) Read Parent Matrix (S1) Staffer Matrix (A) Read Parent (A) Read Parent (A) Read Parent (A) *1 muck (A) Read Parent (A) Read Parent (A) Read Parent (A) *2 S on Multy Parent Paren (S2) (LRR C & H) Implement Matrix (S1) Read Parent (A) *2 S on Multy Parent Parence (S1) (LRR C & H) Implement Matrix (S1) Read Parent (A) *2 S on Multy Parent Parence (S1) (LRR C & H) Implement Matrix (S1)<				10YR 7/6	1	С	М		Gravel lave	r at 25 inches
¹ Type: C-Concentration, D-Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Graina. ² Location: PL=Pore Lining, M=Matrix ¹ Type: C-Concentration, D-Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Graina. ² Location: PL=Pore Lining, M=Matrix ¹ Halocol (A1) Sandy Robox (S5) 1 cm Muck (A0) (LRR I & J) Black Hate (A3) Sandy Robox (S5) Dark Surface (S7) (LRR C) Black Hate (A3) Loarny Graye Matrix (C3) Dark Surface (S7) (LRR C) Stratified Layar (A5) (LRR C, S1) Depleted Matrix (C3) Red Pater Matrix (C1) Depleted Matrix (C3) Red Pater Matrix (C1) Red Pater Matrix (C1) Sandy Matrix (S1) (LRR C, S1) Depleted Matrix (C3) Red Pater Matrix (C1) Sandy Matrix (S3) (LRR C) High Plaina Depressions (F1) Vs. Ballow Dark Surf. (F17) Sandy Matrix (S3) (LRR F) High Plaina Depressions (F10) ¹ Understrating (T17) Son Muck Yeat or Patrix (S3) (LRR F) (MLRA 72 A73 LRR H) ¹ Hydric Soli B Present? Vs. X Soli parameter met. Sand Cruck (B1) Sand Cruck (B1) Sand Cruck (B1) Sand Cruck (B1) Sand Cruck (B2) Type:			-						Ciuroi iajo	I di 20 monoc
Hydric Soil Indicators: Indicators for Prob. Hydric Soils*: Histos (A1) Sandy Gleved Matrix (S4) Coast Prainer Radox (A16) (LRR 1 & J) Histo Epipedon (A2) Sandy Radox (S5) Dock Trainer Radox (A16) (LRR 1 & J) Black Histik (A3) Sintpod Matrix (S6) Dark Matrix (S7) Hydrogon Sulfide (A1) Learny (Black Histik (T2)) High Plains Depressions Stratified Layer (A5) (LRR 7, G, H) Depleted Matrix (T3) Reduced Vertic (F18) Sandy Micky Marel (A1) (LRR 0, S) Redox Ratics (F7) Reduced Vertic (F18) 2.5 cm Mucky Peat or Paet (S2) (LRR C & H) High Plains Depressions (F16) Red Parent Material (T22) S cm Mucky Peat or Paet (S2) (LRR C & H) High Plains Depressions (F16) *Indicators of hydrophydru updation Type:				2.01.1	<u> </u>			oundy toatt		
Hydric Soil Indicators: Indicators for Prob. Hydric Soils*: Histic Spipedon (A2) Sandy Gleyed Matrix (S4)										
Hydric Soil Indicators: Indicators for Prob. Hydric Soils*: Histic Spipedon (A2) Sandy Gleyed Matrix (S4)	1		Did Dadua	-	-			_		
Histics (1)			RM=Reauc	ed Matrix, U	S=Cover	red or Coated St	and Grains	s.		
Histic Epipedon (A2) Sandy Redox (S3) Coast Praine Redox (A16) (LRR R) Hydrogen Sulfide (A4) Stripped Matrix (S2) Dark Strafee (A7) (LRR R) Straffed Layers (A5) (LRR F, 1) Loamy Gived Matrix (S2) Praine Redox Car (S7) (LRR R) Depleted Below Dark Surface (A1) Redox Dark Surface (FF) Redox Dark Surface (FF) Straffed Layers (A5) (LRR C, 5) Redox Dark Surface (FF) V. Shallow Dark Surf (TF12) Sandy Mucky Mineral (S1) (LRR C, 5) Redox Dark Surface (FF) V. Shallow Dark Surf (TF12) Sandy Mucky Mineral (S1) (LRR C, 5) Redox Dark Surface (FF) V. Shallow Dark Surf (TF12) Sandy Mucky Mineral (S1) (LRR C, 5) Redox Dark Surface (FF) V. Shallow Dark Surf (TF12) Sandy Mucky Mineral (S1) (LRR C, 5) Redox Dark Surface (FF) Visite Mineral Surface (A12) Sandraw Mucky Meat Or Paet (S2) (LRR C & 1) High Plaine Darposites (A16) Plaine Mineral Surface (A12) Sandraw Marks (B1) Sandraw Marks (B1) Sandraw Marks (B1) Sandraw Marks (B1) Sandraw Marks (B1) Hydrology Indicators: Sandraw Marks (B1) Sandraw Marks (B1) Sandraw Marks (B1) Hydrology Minetal (C2) Angle Marks (C1) Sandraw Marks (B1) Sandraw Marks (B1) Obaposite (B2)	Hydric Soli mulca	tors:							Indicators for From my	Aric Solis .
Histic Epipedon (A2) Sandy Redox (S3) Coast Praine Redox (A16) (LRR R) Hydrogen Sulfide (A3) Stripped Matrix (S2) Dark Stratec (A12) Hydrogen Sulfide (A4) Stripped Matrix (S2) Dark Stratec (A12) (P16) (MLR A7 2 2 32 LR R) (P16) (MLR A7 2 2 32 LR R) Stripped Matrix (S2) Depieted Matrix (S2) Red Pater Material (TF2) V. Shallow Dark Surface (A12) Stripped Matrix (S3) Depieted Matrix (S3) Redox Dark Surface (F1) V. Shallow Dark Surface (TF1) Stripped Matrix (S3) Depieted Depieted Solew Dark Surface (A12) V. Shallow Dark Surface (TF1) V. Shallow Dark Surface (TF1) Stripped Matrix (S3) Depieted	Histosol (A1)				Sandy (Pleved Matrix (S	\$4)		1 cm Muck (A9) (I RF	2 I & I)
Higk Histic (A3)		· (A 2)					4)			-
Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Strattified Layers (AS) (LRR F) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Strattified Layers (AS) (LRR F) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Strattified Layers (AS) (LRR F) Implyingen Sulfide (Ay) Implyingen Sulfide (Ay) Strattified Layers (If Observed): Implyingen Sulfide (AY) Implyingen Sulfide (AY) Type: Implyingen Sulfide (AY) Implyingen Sulfide (AY) Implyingen Sulfide (AY) Secondary Indicators (minimum of one is required: check all that apply) Sulface Sol Cracks (B6) Implyingen Sulfide (AY) Sulface (A3) Implyingen Sulface (Ar) Implyingen Sulface (Ar) Implyingen Sulface (Ar) Secondary Indicators (minimum of one is required: check all that apply) Implyingen Sulface (Ar) Implyingen Sulface (Ar) Sulface (Ar) Aquatic Faura (B1) Implyingen Sulface (Ar) Implyingen Sulface (Ar) Implyingen Sulface (Ar) Second										
Image: Stand Stan										
Image:		. ,								
Peripher Below Dark Surface (A11) Red Parent Material (TF2) Y Thick Dark Surface (A12) Depleted Dark Surface (F6) P. Shaldow Dark Surf. (TF12) Sandy Mucky Meral (S1) (LRR O, S) P. Sond Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) ³ Indicators of hydrophytic vegetation S cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) ³ Indicators of hydrophytic vegetation S cm Mucky Peat or Peat (S2) (LRR G & H) (MLRA 72 & X3 LRR H) ³ Indicators of hydrophytic vegetation Retrictive Layer (If observed): Type: Weinand Hydrology Indicators Periphic (nches): Soil parameter met. DROLOGY Surface Water (A1) Salt Crust (B11) Hydro Soil parameter (A2) Aquatic Fauna (B13) Surface Water (A1) Saturation (A3) Mart Deposits (B15) (LRR U) Surface Water (A1) Saturation (A3) Hydropen Sulface Odor (C1) Dirainage Pateres (B10) Saturation (K3) Hydropen Sulface Odor (C2) Order (C3) Sofface Water (B2) Oxidace Rhizospheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9) Saturation (K3) Mart Deposits (B2) Oxidace Rhizospheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)	Stratified Laye	ers (A5) (LRR F)			Loamy C	Gleyed Martix (F	-2)		(F16) (MLR	A 72 &73 LRR.
Peptende Bolow Dark Surface (A11) Redo Dark Surface (F6) Red Parent Material (F72) Sandy Mucky Mieral (S1) (LRR O, S) Depleted Dark Surface (F7) V. Shallow Dark Surf. (TF12) Sandy Mucky Meard OP Patl (S2) (LRR G & H) High Plains Depressions (F16) ³ Indicators of hydrophytic vegetation S orn Mucky Peat or Peat (S2) (LRR G & H) MIRA 72 & 73 LRR H) ³ Indicators of hydrophytic vegetation S orn Mucky Peat or Peat (S2) (LRR G & H) (MLRA 72 & 73 LRR H) ³ Indicators of hydrophytic vegetation Retrictive Layer (if observed): Type: Weind Hydrology Indicators Pepter (nohes): Yes X No Surface Water (A1) Salt Crust (B11) Surface Water (A1) Surface Water (A1	1 cm Muck (As	9) (LRR F, G, H)			Depleter	d Matrix (F3)			Reduced Vertic (F18))
Image: Sandy Mucky Mineral (S1) (LRR 0, S) Depleted Dark Surface (F7) V. Shalow Dark Surf. (F12) 2.5 cm Mucky Peat or Peat (S2) (LRR 6 & H) High Plains Depressions (F8) Other (Explain in Remarks) 2.5 cm Mucky Peat or Peat (S2) (LRR 6 & H) High Plains Depressions (F8) Initiations of Hydrophytic vegetability Type:)				6)		Red Parent Material	(TF2)
Sandy Mucky Mineral (S1) (LRR O. S) Redox Depressions (F8) Other (Explain in Remarks) 2.5 om Mucky Peat or Peat (S2) (LRR F) High Plains Depressions (F16) ³ Indicators of hydrophytic vegetation wetland hydrology must be present, disturbed or problematic. Retrictive Layer (if observed): Type: Hydric Soils Present? Yes X No Remarks: Soil parameter met. Socondary Indicators (minimum of two required) Surface Valer (A1) Salf Crust (B1) Surface Valer (A1) Surface Valer (A1) Salf Crust (B1) Surface Valer (A1) Surface Valer (A1) </td <td></td> <td></td> <td>)</td> <td></td> <td>-</td> <td></td> <td>,</td> <td></td> <td></td> <td></td>)		-		,			
2.5 cm Mucky Peat or Peat (S2) (LRR F) High Plains Depressions (F16) (MLRA 72 & 73 LRR H) ** Indicators of hydrophytic vegetation wetland hydrology must be present, siturbed or proteimatic. Retrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? Yes X No Remarks: Soil parameter met. Soil parameter met. Secondary Indicators (minimum of two required) Surface Water (A1) Sati Crust (B1) Surface Soil Cracks (B6) Sprarely Vegetated cracks (B6) Saturation (A3) High Valer (A1) Sati Crust (B1) Surface Soil Cracks (B6) Drainage Patterns (B1) Oxidized Rhizospheres on Living Roots (C3) Sediment Deposits (B2) Doy/season Water Table (A2) Aquatic Fauna (B13) Surface Valer (A1) Surface Soil Cracks (B6) Startare Water (A1) Sati Crust (B4) Presence of Reduced fron (C4) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3) Sectiment Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Carafish Burrows (C8) X Saturation Visible on Aerial Inagery (C9) Apal Mat or Crust (B4) Presence of Reduced fron (C4) Fost Heave Hurmnocks (D7) (LR F) Yes No Sufface Water Present? Yes No X Depth (inches): S25 Yes No		. ,	C)				. ,			. ,
					-		,			,
Retrictive Layer (if observed): Type:							` '			
Retrictive Layer (If observed): Type: Depth (inches): Type: Depth (inches): Soil parameter met. YesX No Remarks: Soil parameter met. DROLOGY Wetand Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1)	5 cm Mucky P	eat or Peat (S3) (LRF	र F)		(M	ILRA 72 &73 LR	₹R H)			
Type: Yes X No Depth (inches):	Districtive Lover (i	• - k = + <i>c</i> ad\.						Hudric Soils).
Depth (inches):	•	f observea):						Hyune Jona		Y No
Remarks: Soll parameter met. PROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Aquatic Fauna (B13) Saluration (A3) Marl Deposits (B10) Water Marks (B1) Dividee Variage Patterns (B10) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxid/dzed Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B3) Oxid/dzed Rhizospheres on Living Roots (C3) Water Table Presence (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes Ves X Saturation Present? Yes Ves X Depth (inches): >25 Ves X No X Depth (inches): >25 Ves X Ves X No X Depth (inches					-				res	X INO
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(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest dri	Water Table Prese	nt? Yes	No	X Depth	n (inches`	,): <u>></u>	>25		Yes	X No
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Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest dri										
	Remarks:	Hydrology paramete	er met.							
									descelation site shares stime	
		tation Tool (APT) rep	orted norma	a raintali con	iditions to	or the Grand For	rks area. F	-SDI Indicated extreme	drought. On-site observation	s suggest arier
	nar conditions.									

DP-03-W: FLS-55



DP-03-W: Soil meeting A12 soil indicator, in FLS-55 wetland



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 23, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-04U
Investigators:	C. Lotts; M. Hayes; K. Erwin; M.	Correiro		nship, Range:			
Landform:	level plain		Local relief (concave,convex,	·		0-2
Subregion (LRR or MLRA):	LRR F Grimstad fine sandy loa	Lat:	orcont clopos	Long	NWI classification:	Datum:	NAD83
Soil Map Unit Name:	itions on the site typical for this tim		bercent slopes	Yes	No X	(If no, explain in R	emarks)
Are Vegetation	Soil or Hydrology	-	ficantly disturb		Normal Circumstances		es No X
Are Vegetation	Soil or Hydrology		rally problema		eded, explain any answ	•	<u> </u>
	IGS - Attach site map sho	wing sa	mpling poir	nt locations,	transects, importa	ant features, etc.	
Hydrophytic Vegetation	Present?	Yes X		No			
Hydric Soils Present?		Yes	_	No X	Is the Sampled A within a Wetland	V	es No X
Wetland Hydrology Pres	sent?	Yes X	-	No	Within a Wetland		
Climatic/hydrologic weeks prior to the s (August and Septer phenology, soil indi	parameters not met. conditions are not typical for this t survey and normal rainfall conditio mber 2023) and moderate drought cators, and hydrology. thin wetland delineated in 2013, m	ns the wee from May	k prior and we to July 2023. C	ek of the field vis On-site observatio	it . However PSDI indic	ated severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plants.					Sampling Point:	DP-04U
		Absolute	Dominant	Indicator	Dominance Test wo	rksheet:	
Tree Stratum (Plo	t size: 30' Radius)	<u>% Cover</u>		<u>Status</u>	Number of Dominant		
1.	,				Are OBL, FACW, or F	FAC: 2	(A)
					Total Number of Dom	ninant Species	
					Across All Strata:	2	(B)
4.		<u></u>	T () O		Percent of Dominant Are OBL, FACW, or F		
	50% of total cover: 0%	0%	= Total Cove tal cover:	er 0%		FAC: 100	<u>)%</u> (A/B)
Sapling/Shrub Stratum	(Plot size: 15' Rad)	078	Prevalence Index we	orksheet:	
1.	(**************************************		_'		Total % Cover of:		
2.					OBL species	50% x 1 =	0.5
2					FACW species	15% x 2 =	0.3
					FAC species	20% x 3 =	0.6
5.					FACU species	<u> </u>	0.2
	500/ 51 1 1 00/	0%	= Total Cove		UPL species	0% x 5 =	<u> </u>
Herb Stratum (Plo	50% of total cover: <u>0%</u> t size: 5' Radius)	20% of to	otal cover:	0%	Column Totals: Prevalence	90% (A) ce Index = B/A =	<u>1.6</u> (B)
1. Carex utriculata		50%	Y	OBL	Trevalence		1.70
2. Sonchus arvensis		20%	Y	FAC	Hydrophytic Vegeta	tion Indicators:	
3. Mentha arvensis		10%		FACW	1 - Rapid T	Fest for Hydrophytic Veget	ation
4. Teucrium canadens	se	5%		FACW		ance Test is >50%	
5. Sorghastrum nutan	S	3%		FACU		ence Index is ≤3.0 ¹	. 1
6. Elymus repens		2%		FACU	4 - Problen	natic Hydrophytic Vegetat	ion' (Explain)
7. 8.					1		
0					unless disturbed or p	soil and wetland hydrolog	y must be present,
10.							
		90%	= Total Cove	er			
	50% of total cover: 45%	20% of to	tal cover:	18%			
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrophytic Vegeta	ation Present? Yes	X No
-							
2		201	T () O				
	E00/ of total action 00/	0%	= Total Cove				
% Bare Ground in Herb	50% of total cover: 0%	20% 01 10	otal cover:	0%			
	list morphological adaptations bel	ow.)			_		
Vegetation parame		,					

Profile Description: (Description: (Descrip	DP-04U
(moles) Color (molet) % Type1 Loc ² Texture Remarks 0-12 10VR 2/1 96 0YR 5/8 1 C M sandy loam 12-24 2.5YR 5/2 96 5YR 5/8 1 C M sandy loam 12-24 2.5YR 5/2 96 5YR 5/8 1 C M sandy loam 12-24 2.5YR 5/2 96 5YR 5/8 1 C M sandy loam 12-24 2.5YR 5/2 96 5YR 5/8 1 C M sandy loam 12-24 2.5YR 5/2 96 5YR 5/8 1 C M sandy load	
O-12 10YR 2/I 96 10YR 6/2 55 D M learn 12.24 2.5YR 5/2 99 5YR 5/8 1 C M sandy loarn Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Pore Linin Indicators for Prob. Hydr Histic Soll Indicators: Indicators for Prob. Hydr Indicators for Prob. Hydr Histic Epipedori (A2) Sandy Rodox (S5)	
12-24 2.5VR 5/2 00 5VR 5/8 1 C M sandy loam Type: C 00 5VR 5/8 1 C M sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains, the concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains, the concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains, the concentration, D=Depletion, RM=Reduced Vertic, CF19, the concentration, CA 1 or Muck (A9) (LRR 1, CS), the concentration of the concentration of the concentration, CA 1 or Muck (A9) (LRR 1, CS), the concentration of the concentration of the concentration of the concentration, CF2), the concentration of the concentratin the concentratin the concentration of the	
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sydric Soil Indicators: Indicators for Prob. Hydri	
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Histic Epipedon (A2) Sandy Redox (S5) Coast Prairie Redox (A2) Bidack Histic (A3) Stripped Matrix (S6) Dark Surface (S7) (LRR F) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Reduced Vertic (F18) Dapleted Botw Dark Surface (A11) Redox Dark Surface (F6) Red Prairie Redox (A2) Sandy Muck (Marei (S1) (LRR O, S) Depleted Matrix (F3) Redox Dark Surface (F7) Sandy Muck (Marei (S1) (LRR O, S) Redox Depressions (F6) Other (Explain in Remains) Sc m Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 273 LRR H) Wetland Hydrology must be and hydrology fulcators: Type: Yes Surface Water (A1) Satal Chust (B1) Sataration (A3) Matl Deposits (B15) (LRR U) Sataration (A3) Matl Deposits (B15) (LRR U) Sataration (A3) Presence of Reduction in Tilied Solis (C6)	10 00113 .
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) (MLRA 72 & 73 LRR H) ³ Indicators of hydrophytic wetland hydrology must be disturbed or problematic. Retrictive Layer (if observed): Yes Yes Type: Depth (inches): Yes Bernarks: Soil parameter not met. Yes Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required). Surface Water (A1) Sati Crust (B11) Surface Soil Cracks (B6) High Vater Table (A2) Aquatic Fanua (B13) Surface Soil Cracks (B6) Saturation (A3) Mari Deposits (B15) (LRR U) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C2) Ordyfish Burrows (C8) Dry-Season Water Table (C2) Crayfish Burrows (C8) Xeaturation Visible on Aerial Imagery (C9) Algal Mat cr Crust (B4) Presence of Reduced Iron (C4) X. Geomorphic Position (D2) For St Heave Hummocks (D7) (LRR F) Inundation Visible on Aeriais (B7) Thin Muck Surface (C7) Forst Heave Hummocks (D7) (LRR F) Yes <	16) (LRR F, (& G) s 72 &73 LRR =2)
S cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) wetland hydrology must be disturbed or problematic. Retrictive Layer (if observed): Type:	,
Hydric Soils Present? Type: Yes Depth (inches): Yes Remarks: Soil parameter not met. Remarks: Soil parameter not met. Remarks: Soil parameter not met. Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Origize Affizzospheres on Living Roots (C3) X Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B3) Oxidized Rhizospheres on Living Roots (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water Table Present? Yes Water Table Present? Yes Water Table Present? Yes Suface Water Present? Yes Yes No X Depth (inches): Sularution Present? Yes	
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High Water Table (A2) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Saturation (A3) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfish Burrows (C8) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) X Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geomorphic Position (D2) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-Neutral Test (D5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Other (Explain in Remarks) Vestand Hydrology Present? Yes Saturation Present? Yes No X Depth (inches): Yes Saturation Present? Yes No X Depth (inches): Yes Yes Saturation Present? Yes No X Depth (inches): Yes Yes Yes Yes Saturation Present? Yes No X Depth (inches): Yes Yes Yes Yes Yes Yes Yes	
Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) X Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) X Geomorphic Position (D2) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-Neutral Test (D5) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Heave Hummocks (D7) (LRR F) Water-Stained Leaves (B9) Other (Explain in Remarks) Frost Heave Hummocks (D7) (LRR F) Surface Water Present? Yes No X Depth (inches): >24 Saturation Present? Yes No X Depth (inches): >24 Secribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	,
Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Heave Hummocks (D7) (LRR F) Water-Stained Leaves (B9) Other (Explain in Remarks) Frost Heave Hummocks (D7) (LRR F) Field Observations: Surface Water Present? Yes No X Surface Water Present? Yes No X Depth (inches): >24 Wetland Hydrology Present? Vater Table Present? Yes No X Depth (inches): >24 Yes	
Surface Water Present? Yes No X Depth (inches): >24 Wetland Hydrology Present? Water Table Present? Yes No X Depth (inches): >24 Yes	
	K No
Remarks: Hydrology parameter met.	
Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations s al conditions.	uggest drier

DP-04-U: Dominant hydrophytic vegetation, *Carex utriculata (OBL)* and *Sonchus arvensis* (FAC) and hydrology present



DP-04-U: Soil lacks enough redox features to meet indicators



Project/Site:	Grand Sky		City/County:	Grand Forks	Stata	ND	Sampling Date:		mber 24, 2023 DP-05W
Applicant/Owner: Investigators:	US Air Force, GFAFB C. Lotts; M. Hayes; K. Erwin; M.	Correiro	Section Tou	nship, Range:	State:	ND	Sampling Point:		DP-05W
Landform:	drainage ditch	Correlito		concave,convex,n	ione).	concave	Slope (%):	0 - 2	
Subregion (LRR or MLRA):	LRR F	Lat:	2000110101(Long:	'		Datum:	NAD8	3
Soil Map Unit Name:	Gilby loam, 0 to 2 perc	ent slopes		-	NWI clas	sification:			
Are climatic/hydrolgoic cond	itions on the site typical for this tin	ne of year?		Yes	No	Х	(If no, explain in F	Remarks.)	
Are Vegetation X	, , ,		icantly disturb			cumstances" pres		/es	No <u>X</u>
Are Vegetation X	Soil or Hydrology	natu	rally problema	tic? (If nee	ded, expla	ain any answers in	n Remarks.)		
SUMMARY OF FINDIN	IGS - Attach site map sho	wing sar	npling poir	nt locations, t	ransect	s, important f	eatures, etc.		
Hydrophytic Vegetation	Present?	Yes X		No	Is the	Sampled Area		, .	
Hydric Soils Present?		Yes X	-	No	with	in a Wetland?	١	res X	No
Wetland Hydrology Pres	sent?	Yes X	-	No					
Climatic/hydrologic weeks prior to the s (August and Septe phenology, soil ind	parameters met. conditions are not typical for this survey and normal rainfall condition mber 2023) and moderate drough icators, and hydrology. tative for 31A and 31B. Mowed do	ons the weel t from May t	k prior and we to July 2023. (ek of the field visi	t. Howeve	er PSDI indicated	severe drought for	preseeding	g two months
VEGETATION - Use so	cientific names of plants.						Sampling Point:		DP-05W
		Absolute	Dominant	Indicator	Domina	nce Test workshe	eet:		
1.	t size: 30' Radius)	<u>% Cover</u>	<u>Species</u>	<u>Status</u>		of Dominant Spec , FACW, or FAC:		1	(A)
2					Total Nu Across A	mber of Dominant Il Strata:	Species	1	(B)
4.						of Dominant Speci	ies That		
	50% of total cover: 0%	0% 20% of to	_ = Total Cove tal cover:	er 0%	Are OBL	, FACW, or FAC:	10	0%	(A/B)
Sapling/Shrub Stratum	(Plot size: 15' Rad	dius)		Prevaler	nce Index worksh	eet:		
1.					Total % (Cover of:			
2.					OBL spe		<u>80%</u> x 1 =		0.8
					FACW s	· _	<u>0%</u> x 2 =		0
4. 5.					FAC spe FACU sp		0% x 3 = 0% x 4 =		0
		0%	= Total Cove	er	UPL spe		$\frac{0\%}{0\%}$ x 5 =	-	0
	50% of total cover: 0%	20% of to	-	0%	Column		80% (A)		0.8 (B)
Herb Stratum (Plo	t size: 5' Radius)	_				Prevalence Ind		1.00	
1. Eleocharis sp.	*	80%	Y	OBL					
2.					Hydroph	nytic Vegetation I			
					X		or Hydrophytic Vege	etation	
<i>_</i>					X	2 - Dominance T 3 - Prevalence Ir			
6						-	Hydrophytic Vegeta	tion ¹ (Exp	lain)
7						_		(±	
8.						ors of hydric soil a isturbed or probler	nd wetland hydrolog matic.	gy must be	e present,
10.									
		80%	= Total Cove	er					
	50% of total cover: 40%	20% of to	tal cover:	16%					
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrop	hytic Vegetation	Present? Yes	<u>x</u>	No
1. 2.									
Z		0%	= Total Cove	ər					
% Bare Ground in Herb	50% of total cover: 0%	-	tal cover:	0%					
	species are FACW or OBL. Line	ar feature r	egular mowed	so no trees, shrul	_ bs, vines r	oresent.			
Vegetation parame				,	· · · ·				

0-4 10YR 3/1 100 Ioan 4-10 10YR 4/1 80 10YR 6/6 10 C M clay 4-10 10YR 3/1 10 clay clay 10/16 10YR 3/1 80 10YR 6/6 10 C M clay	xture Remarks
(inches) Color (moist) % Color (moist) % Type1 Loc2 Text 0-4 10YR 3/1 100 Ioan Ioan Ioan Ioan 4-10 10YR 3/1 10 C M clay 4-10 10YR 3/1 10 C M clay 10-16 10YR 3/1 80 10YR 6/6 10 C M clay 10-16 10YR 4/1 10 clay clay clay clay 10-16 10YR 4/1 10 clay clay clay 10-16 10YR 4/1 10 clay clay 11 0 Sandy Gleyed Matrix (S4) slay clay 11	m y loam y loam y loam 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
(inches) Color (moist) % Color (moist) % Type1 Loc2 Text 0-4 10YR 3/1 100 Ioan Ioan Ioan Ioan 4-10 10YR 3/1 10 C M clay 4-10 10YR 3/1 10 C M clay 10-16 10YR 3/1 80 10YR 6/6 10 C M clay 10-16 10YR 4/1 10 clay clay clay clay 10-16 10YR 4/1 10 clay clay clay 10-16 10YR 4/1 10 clay clay 11 0 Sandy Gleyed Matrix (S4) slay clay 11	m y loam y loam y loam 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
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4-10 10YR 4/1 80 10YR 6/6 10 C M clay 4-10 10YR 3/1 10 clay 10-16 10YR 3/1 80 10YR 6/6 10 C M clay 10-16 10YR 3/1 80 10YR 6/6 10 C M clay 10-16 10YR 4/1 10 clay clay 10-16 10YR 4/1 10 clay 10-16 10YR 4/1 10 clay clay 10-16 clay clay 10-16 10YR 4/1 10 clay clay clay clay 10-16 10YR 4/1 10 clay clay clay clay 10-16 10YR 4/1 10 clay clay clay clay clay 10-16 10YR 4/1 10 clay cla	y loam y loam y loam ² Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
4-10 10YR 3/1 10 clay 10-16 10YR 3/1 80 10YR 6/6 10 C M clay 10-16 10YR 4/1 10 clay clay clay clay 10-16 10YR 4/1 10 clay clay clay 1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Mydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) LoamyralMucky Minea (F1) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F3) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: memarks: Soil parameter met. DROLOGY Soil parameter met. Soil parameter met.	² Joam y Ioam ² Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
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10-16 10YR 4/1 10 clay 1 10 clay 1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Hydric Soil Indicators:	² Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Hydric Soil Indicators:	² Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
Hydric Soil Indicators: Sandy Gleyed Matrix (S4) Histosol (A1) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Type: Depth (inches): Depth (inches): Soil parameter met. DROLOGY Soil parameter met.	Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter met. DROLOGY Soil parameter met.	Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): Type: Type: Depth (inches): Depth (inches): Soil parameter met.	1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter met.	Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic.
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter met.	Coast Prairie Redox (A16) (LRR F, Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic.
Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter met.	Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic.
Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter met.	High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic.
Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter met.	(F16) (MLRA 72 &73 LRR Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic.
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1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Depth (inches): Soil parameter met.	Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type:	Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic.
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter met.	V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): Type:	Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type:	³ Indicators of hydrophytic vegetation a wetland hydrology must be present, un disturbed or problematic. Hydric Soils Present?
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter met. DROLOGY	wetland hydrology must be present, u disturbed or problematic. Hydric Soils Present?
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter met. DROLOGY	wetland hydrology must be present, u disturbed or problematic. Hydric Soils Present?
Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter met. DROLOGY	Hydric Soils Present?
Type: Depth (inches): Remarks: Soil parameter met.	•
Depth (inches): Remarks: Soil parameter met. ROLOGY	Yes <u>X</u> No
Remarks: Soil parameter met.	
Remarks: Soil parameter met.	
Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply) Sec	condary Indicators (minimum of two required)
X Surface Water (A1) Salt Crust (B11)	Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
X Saturation (A3) Marl Deposits (B15) (LRR U)	Drainage Patterns (B10)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2) Dry-Season Water Table (C2)	Crayfish Burrows (C8)
Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
	X Geomorphic Position (D2)
Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6)	X FAC-Neutral Test (D5)
Inundation Visible on Aerials (B7) Thin Muck Surface (C7)	Frost Heave Hummocks (D7) (LRR F)
Water-Stained Leaves (B9) Other (Explain in Remarks)	
Field Observations:	
	Wetland Hydrology Present?
Nater Table Present? Yes No X Depth (inches): >16	Yes X No
Saturation Present? Yes X No Depth (inches): 16 in.	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	3:
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.	3:
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	9:
Remarks: Hydrology parameter met.	a:
	ə:
Remarks: Hydrology parameter met.	a:
Remarks: Hydrology parameter met.	e:
Remarks: Hydrology parameter met.	

DP-05-W: Wetland ditch FLS-31b dominant vegetation Eleocharis sp.



DP-05-W: Soil meeting F3 indicator



Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:		ember 24, 2023
Applicant/Owner:	US Air Force, GFAFB	. N.O	0 / T		State:	ND	Sampling Point		DP-05U
Investigators:	C. Lotts; M. Hayes; K. E	rwin; M. Correiro		nship, Range:	v n on o);	222/22		0.0	
Landform: Subregion (LRR or MLRA):	LRR F	Lat:	Local relief (d	concave,conve		convex	Slope (%): Datum:	0 - 2 NAD8	22
Soil Map Unit Name:		o 2 percent slopes		Lor		ssification:	Datum.	NADO	55
Are climatic/hydrolgoic cond				Yes	No	X	(If no, explain ir	n Remarks)	1
Are Vegetation	Soil or Hydrol		ficantly disturb			cumstances" pres		Yes	No X
Are Vegetation	Soil or Hydrol		rally problemat			ain any answers i			
SUMMARY OF FINDIN						•	,		
Hydrophytic Vegetation		Yes		No X	,	io, important			
Hydric Soils Present?	Flesent?	Yes	-	No X		Sampled Area		Yes	No X
Wetland Hydrology Pres	sent?	Yes	_		with	in a Wetland?		103	110 <u>X</u>
Climatic/hydrologic weeks prior to the s (August and Septe phenology, soil ind	parameters not met. conditions are not typical survey and normal rainfall mber 2023) and moderate icators, and hydrology. tative for 31A and 31B. Si	conditions the wee drought from May	k prior and wee to July 2023. C	ek of the field v)n-site observa	risit . Howeventions sugge	er PSDI indicated st drier than norm	severe drought for	or preseedin	ig two months
VEGETATION - Use so	cientific names of pla	nts.					Sampling Point		DP-05U
		Absolute	Dominant	Indicator	Domina	nce Test worksh	eet:		
<u>Tree Stratum</u> (Plo 1.	ot size: 30' Radius) <u>% Cover</u>	Species	Status		of Dominant Spe ., FACW, or FAC:		0	(A)
2.					Total Nu	mber of Dominan			
3. 4.						All Strata:	ning That	2	(B)
4.		0%	= Total Cove	or.		of Dominant Spec ., FACW, or FAC:		0%	(A/B)
	50% of total cover:		_ = rotar cove otal cover:	0%				070	(700)
Sapling/Shrub Stratum	(Plot size:	15' Radius)		Prevale	nce Index works	heet:		
1. Rosa arkansana		1%	Y	FACU	Total %	Cover of:			
2.					OBL spe	ecies	0% x 1	=	0
3.					FACW s	-	0% x 2	2 =	0
					FAC spe	-	1% x 3	3 =	0.03
5.					FACU s	-	<u>2%</u> x 4		0.08
		1%	= Total Cove		UPL spe	-	<u>95%</u> x 5		4.75
Liszte Otrastrum (Dis	50% of total cover:	<u>1%</u> 20% of to	otal cover:	0%	Column	-	<u>98%</u> (A	· ·	4.86 (B)
Herb <u>Stratum</u> (Plo 1. Festuca trachyphyl	t size: 5' Radius	<u>)</u> 95%	V	UPL		Prevalence Inc	dex = B/A =	4.96	
2. Symphyotrichum e		95% 1%	I	FACU	Hydrop	hytic Vegetation	Indicators:		
3. Apocynum cannab		1%		FAC	nyarop		or Hydrophytic Ve	aetation	
4.		170		1710		2 - Dominance		gotation	
F						3 - Prevalence			
6						4 - Problematic	Hydrophytic Vege	etation ¹ (Exp	olain)
7						_			
0					¹ Indicat	ors of hydric soil a	and wetland hydro	logy must b	e present,
0					unless d	isturbed or proble	ematic.		
10.									
		97%	= Total Cove	er					
	50% of total cover:		otal cover:	19%			-		
Woody Vine Stratum	(Plot size: 15' Ra	adius)			Hydrop	hytic Vegetation	Present? Ye	es	No X
1. 2.									
Z		0%	= Total Cove	or .					
	50% of total cover:			0%					
% Bare Ground in Herb		20700110		070					
	wed lawn adjacent to drai	nage ditch							
Vegetation parame		<u></u>							
1									

L								Sampling Point:	DP-05L	
Profile Description	on: (Describe to the d	epth ne	eded to docume	ent the in	idicator or confi	irm the absei	nce of indicators.)			
Depth	Matrix			Red	lox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-9	10YR 2/2	100					loam			
9-15	10YR 2/2	70	10YR 4/3	30	С	М	loam			
Type: C=Conce	entration, D=Depletion,	RM=Re	duced Matrix (CS=Cove	ered or Coated	Sand Grains	_	² Location: PL=Pore Lin	ing M=Matrix	
Hydric Soil Indica			autora matrix, t	00.001			•	Indicators for Prob. Hy		
Histosol (A1)					Gleyed Matrix ((S4)		1 cm Muck (A9) (LRR		
Histic Epiped	lon (A2)			Sandy	Redox (S5)			Coast Prairie Redox (
Black Histic ((A3)			Strippe	d Matrix (S6)			Dark Surface (S7) (LF	≀R G)	
Hydrogen Su	llfide (A4)			Loamy	ralMucky Minea	a (F1)		High Plains Depression	ons	
Stratified Lay	rers (A5) (LRR F)			Loamy	Gleyed Martix	(F2)		(F16) (MLR/	A 72 &73 LRR	
1 cm Muck (A	49) (LRR F, G, H)			Deplete	ed Matrix (F3)			Reduced Vertic (F18)		
Depleted Bel	ow Dark Surface (A11)		Redox	Dark Surface (I	F6)		Red Parent Material (TF2)	
Thick Dark S	urface (A12)			Deplete	ed Dark Surface	e (F7)		V. Shallow Dark Surf.	(TF12)	
Sandy Mucky	y Mineral (S1) (LRR O,	S)		Redox	Depressions (F	8)		Other (Explain in Rem	ıarks)	
2.5 cm Mucky	y Peat or Peat (S2) (LF	RRG&	H)	- High Pl	ains Depressio	ons (F16)		³ Indicators of hydrophyt	ic vegetation a	
5 cm Mucky F	Peat or Peat (S3) (LRF	RF)	·	(1	MLRA 72 &73 L	_RR H)	wetland hydrology must be present, disturbed or problematic.			
Retrictive Layer ((if observed):						Hydric S	Soils Present?		
Туре:								Yes	No	
Depth (inches	s):			-				-		
ROLOGY										
Netland Hydrolo	0,									
	s (minimum of one is re	equired;						cators (minimum of two required)		
Surface Wate	()		Salt Crust (B	,				ace Soil Cracks (B6)		
High Water T	()	_	Aquatic Faur	· · ·				sely Vegetated Concave Surface (I	38)	
Saturation (A	.3)		Marl Deposit	. , ,				age Patterns (B10)		
Water Marks	(B1)	_	Hydrogen Su		. ,			zed Rhizospheres on Living Roots	(C3)	
Sediment De	posits (B2)		Dry-Season		. ,			fish Burrows (C8)		
Drift Deposits	s (B3)				es on Living Ro	oots (C3)	Satur	ration Visible on Aerial Imagery (CS	1)	
Algal Mat or 0	Crust (B4)		Presence of	Reduced	l Iron (C4)		Geon	norphic Position (D2)		
Iron Deposits	s (B5)		Recent Iron F	Reductio	n in Tilled Soils	(C6)	FAC-	Neutral Test (D5)		
Inundation Vi	isible on Aerials (B7)		Thin Muck S	urface (C	(77		Frost	Heave Hummocks (D7) (LRR F)		
Water-Staine	ed Leaves (B9)		Other (Explai	in in Ren	narks)					
ield Observatio	ns:									
Surface Water Pre	esent? Yes	No	Dept	th (inche	s):		Wetland Hy	drology Present?		
Vater Table Pres	ent? Yes	No	Dept	th (inche	s):	>15		Yes	No	
Saturation Presen	nt? Yes	No	Dept	th (inche	s):					
includes capillary	/ fringe)									
Describe Recorde	ed Data (stream gauge	, monito	oring well, aeria	l photos,	previous inspe	ections), if av	ailable:			
Remarks:	Hydrology paramete	r not me	et.							
Antecedent Precir	pitation Tool (APT) rep	orted no	ormal rainfall co	nditions	for the Grand F	orks area	SDI indicated extr	eme drought. On-site observations	sugnest drie	
								J	55 401	
al conditions.								·		



DP-05-U: Hydrology, Vegetation, and Soils not meeting indicators

Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 24, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-07U
Investigators:	C. Lotts; M. Hayes; K. Erwin	; M. Correiro		nship, Range:			
Landform:	hillslope		Local relief (concave,convex	· · ·	Slope (%):	0-2
Subregion (LRR or MLRA): Soil Map Unit Name:	LRR F Gilby loam, 0 to 2 j	Lat:		Lon	NWI classification:	Datum:	NAD83
	itions on the site typical for thi			Yes	No X	(If no, explain in R	emarks)
Are Vegetation	Soil or Hydrology		ficantly disturb		Normal Circumstances" pre		es No_X_
Are Vegetation	Soil or Hydrology	natu	arally problema	tic? (If ne	eded, explain any answers		
SUMMARY OF FINDIN	NGS - Attach site map s	showing sa	mpling poir	nt locations,	transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No <u>X</u>	Is the Sampled Area		
Hydric Soils Present? Yes		_	No <u>X</u>	within a Wetland?	Y	es No X	
Wetland Hydrology Pre	sent?	Yes	_	No <u>X</u>			
Climatic/hydrologic weeks prior to the (August and Septe phenology, soil ind	parameters not met. conditions are not typical for survey and normal rainfall con mber 2023) and moderate dro icators, and hydrology. an area mowed for hay but ve	ditions the wee ught from May	ek prior and we to July 2023. C	ek of the field vi	sit . However PSDI indicated	l severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plants					Sampling Point:	DP-07U
		Absolute	Dominant	Indicator	Dominance Test works	neet:	
	ot size: 30' Radius)	<u>% Cover</u>	Species	<u>Status</u>	Number of Dominant Spe		
1. 2.					Are OBL, FACW, or FAC Total Number of Dominar		(A)
<u>^</u>					Across All Strata:	aion That	(B)
4.		0%	= Total Cove)r	Percent of Dominant Spe Are OBL, FACW, or FAC)% (A/B)
	50% of total cover: 0	% 20% of to	_	0%	- , - , -		(AB)
Sapling/Shrub Stratum		Radius)	070	Prevalence Index works	sheet:	
1.	·				Total % Cover of:		
2.					OBL species	5% x 1 =	0.05
3.					FACW species	28% x 2 =	0.56
4.					FAC species	<u>0%</u> x 3 =	0
5.		00/	- Tatal Oau		FACU species	<u>57%</u> x 4 =	2.28
	50% of total cover: 0	0% % 20% of to	_ = Total Cove otal cover:		UPL species Column Totals:	<u>10%</u> x 5 = 100% (A)	0.5 3.39 (B)
Herb Stratum (Plo	ot size: 5' Radius)	<u>70</u> 2070 01 ll	Jiai Cover.	0%	Prevalence In	()	3.39 (D)
1. Sorghastrum nutar	,	57%	Y	FACU			
2. Phalaris arundinac	ea	28%	Y	FACW	Hydrophytic Vegetation	Indicators:	
3. Typha X glauca		5%		OBL		for Hydrophytic Vege	tation
4. Medicago sativa		10%		UPL	2 - Dominance		
5.					3 - Prevalence		· . 1 (=)
6.					4 - Problematic	: Hydrophytic Vegetat	ion' (Explain)
7. °					1		
8. 9.					¹ Indicators of hydric soil unless disturbed or proble		y must be present,
10.							
		100%	= Total Cove	er			
	50% of total cover: 50	0% 20% of to	otal cover:	20%			
Woody Vine Stratum	(Plot size: 15' Radiu	s)			Hydrophytic Vegetation	n Present? Yes	No X
1.							
2.							
	500/ 5/ / /	0%	= Total Cove				
% Bare Ground in Herb		% 20% of to	otal cover:	0%			
Remarks: Mowed.	Suatum				_		
Vegetation parame	eter not met						
	Nor Hot mot.						

15

L								Sampling Point:	DP-07U
Profile Description	on: (Describe to the c	lepth need	ed to docume	ent the inc	licator or confin	m the abser	nce of indicators.)		
Depth	Matrix			Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-16	10YR 2/1	100	, ,				loam		
16-21	10YR 4/1	100					sandy loam		
21-26	10YR 3/2	40					sandy loam	coarse grav	el approximate
¹ Type: C=Conce	ntration, D=Depletion,	, RM=Redu	uced Matrix, 0	CS=Cove	red or Coated S	and Grains		² Location: PL=Pore Lir	ing, M=Matrix
Hydric Soil Indica	ators:							Indicators for Prob. Hy	
Listenal (A1)				Sandy	Neved Metrix (C	• 4)		1 am Music (AO) /I DE	
Histosol (A1)					Bleyed Matrix (S	94)		1 cm Muck (A9) (LRR	
Histic Epiped					Redox (S5)			Coast Prairie Redox (
Black Histic (l Matrix (S6)			Dark Surface (S7) (LF	,
Hydrogen Su				-	alMucky Minea			High Plains Depression	ons
Stratified Lay	ers (A5) (LRR F)			Loamy C	Gleyed Martix (F	-2)		(F16) (MLR	A 72 &73 LRR
1 cm Muck (A	49) (LRR F, G, H)			Deplete	d Matrix (F3)			Reduced Vertic (F18)	
	ow Dark Surface (A11)		Redox D	Dark Surface (F	6)		Red Parent Material (,
Thick Dark S	urface (A12)			Deplete	d Dark Surface	(F7)		V. Shallow Dark Surf.	(TF12)
Sandy Mucky	/ Mineral (S1) (LRR O	, S)		Redox D	Depressions (F8	3)		Other (Explain in Ren	narks)
2.5 cm Mucky	y Peat or Peat (S2) (L	RR G & H)		– High Pla	ins Depression	s (F16)		³ Indicators of hydrophy	tic vegetation a
-	Peat or Peat (S3) (LRI			-	ILRA 72 &73 LF			wetland hydrology must disturbed or problematic	be present, ur
Retrictive Layer ((if observed):						Hydric Soil	Is Present?	
Туре:								Yes	No
Depth (inches	s):			-				-	
-	cessary to meet indica	itor.							
ROLOGY	av Indicators:								
-	(minimum of one is re	equired: ch	neck all that a	(vlaa			Secondary Indicate	ors (minimum of two required)	
Surface Wate	•		Salt Crust (B				· · · · ·	Soil Cracks (B6)	
High Water T	()		Aquatic Faur	,				y Vegetated Concave Surface (
Ũ	()		Marl Deposit	. ,	RR II)		·	e Patterns (B10)	Бо)
Saturation (A			Hydrogen Su					d Rhizospheres on Living Roots	(C3)
Water Marks	()		Dry-Season					Burrows (C8)	(03)
Sediment De					. ,	ta (02)		on Visible on Aerial Imagery (C	2
Drift Deposits					s on Living Roo	us (C3)		0,7(9)
Algal Mat or 0			Presence of		· · ·			phic Position (D2)	
Iron Deposits	s (B5)		Recent Iron F	Reduction	in Tilled Soils (C6)	FAC-Ne	utral Test (D5)	
Inundation Vi	sible on Aerials (B7)		Thin Muck Si	urface (C	7)		Frost He	eave Hummocks (D7) (LRR F)	
Water-Staine	d Leaves (B9)		Other (Explai	in in Rem	arks)				
ield Observation							Wetlend Hudre	lam: Bracant2	
Surface Water Pre		No _		h (inches			wettand Hydro	blogy Present?	
Water Table Pres		No		h (inches	-	>26		Yes	No
Saturation Presen	nt? Yes	No	X Dept	h (inches):				
includes capillary	r fringe)								
Describe Recorde	ed Data (stream gauge	e, monitorir	ng well, aerial	l photos, p	previous inspec	tions), if ava	ailable:		
Pomorko:		ar not mot							
Remarks:	Hydrology paramete	er not met.							
	oitation Tool (APT) rep	orted norm	nal rainfall co	nditions fo	or the Grand Fo	rks area. F	SDI indicated extrem	ne drought. On-site observations	s suggest drier
al conditions.									

DP-07-U: Vegetation outside wetland boundary of FLS-02 dominated by Sorghastrum nutans (FACU) and Phalaris arundinacea (FACW)



DP-07-U: Soil not meeting soil indicators



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 24, 2023
Applicant/Owner:	US Air Force, GFAFB	. N.O	0 / T		State: ND	Sampling Point:	DP-07W
Investigators:	C. Lotts; M. Hayes; K. Erv	vin; M. Correiro		nship, Range:			
Landform:	depression	I t	Local relief (o	concave,convex,	· · · · · · · · · · · · · · · · · · ·	Slope (%):	0-2
Subregion (LRR or MLRA):	LRR F	Lat:		Long		Datum:	NAD83
Soil Map Unit Name:		2 percent slopes			NWI classification:		
Are climatic/hydrolgoic condi		-		Yes	No X	(If no, explain in Re	,
Are Vegetation	_ Soilor Hydrolog		icantly disturb		Normal Circumstances" pre		es No X
Are Vegetation	Soilor Hydrolog	gy natu	ally problemat	lic? (If he	eded, explain any answers	In Remarks.)	
SUMMARY OF FINDIN	IGS - Attach site map	o showing sar	npling poir	nt locations,	transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes X		No			
		Yes X		No	Is the Sampled Area	V	es X No
			-		within a Wetland?	Te	es <u>X</u> No
Wetland Hydrology Pres	sent?	Yes X	-	No			
Climatic/hydrologic weeks prior to the s (August and Septer phenology, soil indi	parameters met. conditions are not typical fo survey and normal rainfall co mber 2023) and moderate o icators, and hydrology. ominated by cattail and reed	onditions the weel Irought from May t	prior and wee	ek of the field vis	it . However PSDI indicated	I severe drought for pr	eseeding two months
VEGETATION - Use so	cientific names of plan	ts.				Sampling Point:	DP-07W
		Absolute	Dominant	Indicator	Dominance Test works	neet:	
Tree Stratum (Plo	t size: 30' Radius)	<u>% Cover</u>	Species	<u>Status</u>	Number of Dominant Spe		
1.					Are OBL, FACW, or FAC	: 2	(A)
2.					Total Number of Dominal	nt Species	
					Across All Strata:	2	(B)
4.					Percent of Dominant Spe		
		0%	= Total Cove	er	Are OBL, FACW, or FAC	100	0% (A/B)
	50% of total cover:	0% 20% of to	tal cover:	0%			
Sapling/Shrub Stratum	(Plot size: 1	5' Radius)		Prevalence Index works	sheet:	
1.					Total % Cover of:	05%	0.05
					OBL species	<u>35%</u> x 1 =	0.35
3.					FACW species	<u>60%</u> x 2 =	1.2
4. 5.					FAC species FACU species	3% x 3 = 0% x 4 =	0.09
J		0%	= Total Cove		-	<u> </u>	0
	50% of total cover:	0% 20% of to	-	0%	UPL species Column Totals:		
Herb Stratum (Plo	t size: 5' Radius)	20% 0110		0.76	Prevalence In		<u> 1.64 (B)</u>
1. Phalaris arundinace	- 1	60%	Y	FACW			
2. Typha angustifolia		35%	Y	OBL	Hydrophytic Vegetation	Indicators:	
3. Rumex crispus		3%	•	FAC		for Hydrophytic Veget	ation
4.		•••			X 2 - Dominance	, , , ,	
5.					3 - Prevalence	Index is ≤3.0 ¹	
6					4 - Problematio	c Hydrophytic Vegetati	ion ¹ (Explain)
7							
0					¹ Indicators of hydric soil	and wetland hydrolog	y must be present,
0					unless disturbed or proble	ematic.	, . .
10.							
		98%	= Total Cove	er			
	50% of total cover:	49% 20% of to	tal cover:	20%			
Woody Vine Stratum	(Plot size: 15' Rad	lius)			Hydrophytic Vegetation	n Present? Yes	X No
2.							
		0%	= Total Cove				
	50% of total cover:	0% 20% of to	tal cover:	0%			
% Bare Ground in Herb	Stratum				_		
Remarks:							
Vegetation parame	ter met.						

								· · ·	
rofile Descriptior	a: (Describe to the de	epth nee	eded to docume	nt the in	dicator or confi	irm the abser	nce of indicators.)		
Depth	Matrix			Red	ox Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-16	10YR 2/1	100					silt loam		
16-26	10YR 4/2	98	10YR 3/4	2	С	М	sandy loam		
Type: C=Concent	tration, D=Depletion,	RM=Re	duced Matrix, C	S=Cove	ered or Coated	Sand Grains		² Location: PL=Pore Lin	
ydric Soil Indicat	ors:							Indicators for Prob. Hy	dric Soils ³ :
Histosol (A1)				Sandy	Gleyed Matrix ((S4)		1 cm Muck (A9) (LRR	I & J)
Histic Epipedor	n (A2)				Redox (S5)			Coast Prairie Redox (A16) (LRR F,
Black Histic (A	3)			Strippe	d Matrix (S6)			Dark Surface (S7) (LR	RRG)
Hydrogen Sulfi	de (A4)			Loamyr	alMucky Minea	a (F1)		High Plains Depression	ons
Stratified Layer	rs (A5) (LRR F)			Loamy	Gleyed Martix	(F2)		(F16) (MLRA	A 72 &73 LRR
1 cm Muck (A9) (LRR F, G, H)			Deplete	ed Matrix (F3)			Reduced Vertic (F18)	
Depleted Below	v Dark Surface (A11))		Redox	Dark Surface (I	F6)		Red Parent Material (TF2)
X Thick Dark Sur	face (A12)			Deplete	d Dark Surface	e (F7)		V. Shallow Dark Surf.	(TF12)
Sandy Mucky N	vineral (S1) (LRR O,	S)		Redox	Depressions (F	-8)		Other (Explain in Rem	arks)
2.5 cm Mucky	Peat or Peat (S2) (LF	RRG&	H)	Hiah Pl	ains Depressio	ons (F16)		³ Indicators of hydrophyt	
-	eat or Peat (S3) (LRF		,	()	MLRA 72 &73 L	_RR H)		wetland hydrology must disturbed or problematic.	be present, ur
	- h						Hydric Soi		•
etrictive Layer (if	observeu):						Hyune Son	Yes	Y No
									X No
Type:									
Depth (inches) emarks:	Soil parameter met.								
Depth (inches) emarks: ROLOGY /etland Hydrolog	Soil parameter met. y Indicators: minimum of one is re (A1)	quired;	check all that ap _ Salt Crust (B1 _ Aquatic Fauna	1)			Surface	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E	
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits	1) a (B13) (B15) (Surface Sparsel	- ors (minimum of two required) Soil Cracks (B6)	
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2))	quired;	Salt Crust (B1 Aquatic Fauna	1) a (B13) (B15) (Surface Sparsel Drainag Oxidized	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots	38)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3)	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V	1) a (B13) (B15) (fide Odd Vater Ta	or (C1) Ible (C2)		Surface Sparsely Drainag Oxidized Crayfish	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2) 31) psits (B2)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V	1) a (B13) (B15) (fide Odd Vater Ta	or (C1)	oots (C3)	Surface Sparsely Drainag Oxidized Crayfish	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (f Sediment Depo	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V	1) a (B13) (B15) (fide Odo Vater Ta cosphere	or (C1) Ible (C2) es on Living Ro	oots (C3)	Surface Sparsely Drainag Oxidized Crayfish X	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3) ust (B4)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of R	1) a (B13) (B15) (fide Odd Vater Ta cosphere Reduced	or (C1) Ible (C2) es on Living Ro		Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3) ust (B4) B5)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of R	1) a (B13) (B15) (fide Odd Vater Ta cosphere Reduced	or (C1) able (C2) as on Living Ro I Iron (C4) n in Tilled Soils		Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3) ust (B4) B5) ble on Aerials (B7)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of R Recent Iron R	1) a (B13) (fide Odd Vater Ta cosphere Reduced Reduction	or (C1) ible (C2) es on Living Ro I Iron (C4) n in Tilled Soils 7)		Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (F e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (CS phic Position (D2) putral Test (D5)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (f Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) posits (B2) B3) rust (B4) B5) ble on Aerials (B7) Leaves (B9)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of F Recent Iron R Thin Muck Su	1) a (B13) (fide Odd Vater Ta cosphere Reduced Reduction	or (C1) ible (C2) es on Living Ro I Iron (C4) n in Tilled Soils 7)		Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (F e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (CS phic Position (D2) putral Test (D5)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) posits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s:	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Suf Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	1) a (B13) (fide Odd Vater Ta cosphere Reduced Reduction	or (C1) Ible (C2) or Living Ro I Iron (C4) n in Tilled Soils (7) narks)		Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (F e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (CS phic Position (D2) putral Test (D5)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrology rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) posits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s: ent? Yes		Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Suf Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explain	1) a (B13) (fide Odd Vater Ta cosphere Reduced Reduction rface (C n in Ren	or (C1) bble (C2) es on Living Ro l Iron (C4) n in Tilled Soils 77) harks) s):	s (C6)	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (B e Patterns (B10) d Rhizospheres on Living Roots b Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations urface Water Pres	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s: eent? Yes t? Yes		Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	1) a (B13) (fide Odd Vater Ta cosphere Reduced Reduction rface (C n in Ren	or (C1) ble (C2) so on Living Ro l Iron (C4) n in Tilled Soils c7) harks) s): s):		Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations Jater Table Preser aturation Present?	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s: eent? Yes y Yes y Yes		Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	1) a (B13) ((B15) (fide Odd Vater Ta cosphere Reduced Reduction rface (C n in Ren n (inches n (inches	or (C1) ble (C2) so on Living Ro l Iron (C4) n in Tilled Soils c7) harks) s): s):	s (C6)	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water Tail Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations urface Water Press /ater Table Preser aturation Present? ncludes capillary fin	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) osits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s: eent? Yes y Yes y Yes	Nc Nc Nc	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	a (B13) (B13) ((B15) (fide Odd Vater Ta cosphere Reduced reduction rface (C n in Ren (inches n (inches n (inches	or (C1) bble (C2) es on Living Ro l Iron (C4) n in Tilled Soils ir) harks) s): s): s): s): 	>26	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water Tail Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations urface Water Press /ater Table Preser aturation Present? ncludes capillary fin	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) bits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s: eent? Yes of Yes yes yes yes ringe)	Nc Nc Nc	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	a (B13) (B13) ((B15) (fide Odd Vater Ta cosphere Reduced reduction rface (C n in Ren (inches n (inches n (inches	or (C1) bble (C2) es on Living Ro l Iron (C4) n in Tilled Soils ir) harks) s): s): s): s): 	>26	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water Tail Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations urface Water Press /ater Table Preser aturation Present? ncludes capillary fin	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2)) 31) bits (B2) B3) ust (B4) B5) ble on Aerials (B7) Leaves (B9) s: eent? Yes of Yes yes yes yes ringe)	Na Na Na Na	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	a (B13) (B13) ((B15) (fide Odd Vater Ta cosphere Reduced reduction rface (C n in Ren (inches n (inches n (inches	or (C1) bble (C2) es on Living Ro l Iron (C4) n in Tilled Soils ir) harks) s): s): s): s): 	>26	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations urface Water Preser aturation Present includes capillary fi escribe Recorded	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2) 31) osits (B2) B3) rust (B4) B5) ble on Aerials (B7) Leaves (B9) s: ent? Yes ringe) Data (stream gauge	Na Na Na Na	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	a (B13) (B13) ((B15) (fide Odd Vater Ta cosphere Reduced reduction rface (C n in Ren (inches n (inches n (inches	or (C1) bble (C2) es on Living Ro l Iron (C4) n in Tilled Soils ir) harks) s): s): s): s): 	>26	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))
Depth (inches) emarks: ROLOGY /etland Hydrolog rimary Indicators (Surface Water High Water Tal Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr Iron Deposits (Inundation Visi X Water-Stained ield Observations urface Water Preser aturation Present includes capillary fi escribe Recorded	Soil parameter met. y Indicators: minimum of one is re (A1) ble (A2) 31) osits (B2) B3) rust (B4) B5) ble on Aerials (B7) Leaves (B9) s: ent? Yes ringe) Data (stream gauge	Na Na Na Na	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season V Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explair	a (B13) (B13) ((B15) (fide Odd Vater Ta cosphere Reduced reduction rface (C n in Ren (inches n (inches n (inches	or (C1) bble (C2) es on Living Ro l Iron (C4) n in Tilled Soils ir) harks) s): s): s): s): 	>26	Surface Sparsely Drainag Oxidized Crayfish X Saturati X Geomor X FAC-Ne Frost He	ors (minimum of two required) Soil Cracks (B6) y Vegetated Concave Surface (E e Patterns (B10) d Rhizospheres on Living Roots n Burrows (C8) on Visible on Aerial Imagery (C9 phic Position (D2) eutral Test (D5) eave Hummocks (D7) (LRR F)	38) (C3)))



DP-07-W: Wetland vegetation at north boundary of FLS-02

DP-07-W: Soil meeting A12 indicator



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-11U
Investigators:	C. Lotts; M. Hayes; K. Erwin; M.	Correiro	Section, Towr	nship, Range:			
Landform:	hillslope	-	Local relief (c	oncave,convex,	none): none	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Long		Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2 perc	ent slopes			NWI classification:		
Are climatic/hydrolgoic condi	itions on the site typical for this tin			Yes	No X	(If no, explain in Re	marks.)
Are Vegetation X			ficantly disturbe		Normal Circumstances" pres		es No X
Are Vegetation X	Soil or Hydrology	natu	rally problemati	c? (If nee	eded, explain any answers i	n Remarks.)	
SUMMARY OF FINDIN	IGS - Attach site map sho	wing sa	mpling poin	t locations, t	transects, important f	features, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No <u>X</u>	Is the Sampled Area		
Hydric Soils Present?		Yes		No X	within a Wetland?	Ye	es No X
Wetland Hydrology Pres	sent?	Yes	_	No <u>X</u>			
Climatic/hydrologic weeks prior to the s (August and Septer phenology, soil indi	parameters not met. conditions are not typical for this survey and normal rainfall condition mber 2023) and moderate drough cators, and hydrology. vn drainage to wetland	ons the wee	k prior and wee	k of the field vis	it . However PSDI indicated	severe drought for pr	eseeding two months
VEGETATION - Use so	cientific names of plants.					Sampling Point:	DP-11U
		Absolute	Dominant	Indicator	Dominance Test worksh	eet:	
Tree Stratum (Plo	t size: 30' Radius)	% Cover	Species	<u>Status</u>	Number of Dominant Spec	cies That	
1.					Are OBL, FACW, or FAC:	0	(A)
					Total Number of Dominan Across All Strata:	•	
3. 4.							(B)
4.		0%	= Total Cove		Percent of Dominant Spec Are OBL, FACW, or FAC:	oles mat 0%	6 (A/B)
	50% of total cover: 0%	20% of to	-	0%	- , - , -	07	(A/D)
Sapling/Shrub Stratum	(Plot size: 15' Rad	-)	070	Prevalence Index works	neet:	
1.	(**************************************		/		Total % Cover of:		
2.					OBL species	0% x 1 =	0
3					FACW species	0% x 2 =	0
					FAC species	0% x 3 =	0
5.					FACU species	8% x 4 =	0.32
		0%	= Total Cover	r	UPL species	95% x 5 =	4.75
	50% of total cover: 0%	20% of to	otal cover:	0%	Column Totals:	<u>103%</u> (A)	<u>5.07</u> (B)
	t size: 5' Radius)	-	X	UPI	Prevalence Inc	lex = B/A =	4.92
 Festuca trachyphyl Elymus repens 	la	95% 5%	Y	FACU	Hydrophytic Vegetation	Indicators	
3. Taraxacum officina	le	2%		FACU		or Hydrophytic Veget	ation
4. Trifolium repens		1%		FACU	2 - Dominance		
5.		170		1760	3 - Prevalence		
6					4 - Problematic	Hydrophytic Vegetati	on ¹ (Explain)
7.							
8.					¹ Indicators of hydric soil a	and wetland hydrology	/ must be present,
9.					unless disturbed or proble		•
10.							
		103%	= Total Cover	r			
	50% of total cover: 52%	20% of to	otal cover:	21%			
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrophytic Vegetation	Present? Yes	No X
2.		00/	- Tatal Cause	-			
	50% of total cover: 0%	0%	= Total Cover				
% Bare Ground in Herb		20% 01 10	tal cover:	0%			
Remarks: Mowed lawn.	Ottatum						
Vegetation parame	ter not met.						
, ogotation parame							

L								Sampling Point:	DP-11L
Profile Descriptic	on: (Describe to the de	epth ne	eded to docume	ent the in	ndicator or conf	irm the abser	nce of indicators.)		
Depth	Matrix			Red	lox Features				
(inches)	Color (moist)	%	Color (moist)) %	Type ¹	Loc ²	Texture	Remarks	
0-16	10YR 3/2	100					loam		
16-20	10YR 3/2	95	10YR 5/3	5	С	М	loam		
	ntration, D=Depletion,	RM-Re	duced Matrix (^S=Cov	ared or Costed	Sand Grains		² Location: PL=Pore Lini	na M=Matrix
Hydric Soil Indica				00-001				Indicators for Prob. Hyd	
Histosol (A1)	(. .)			-	Gleyed Matrix ((S4)		1 cm Muck (A9) (LRR	
Histic Epiped				-	Redox (S5)			Coast Prairie Redox (A	
Black Histic (/	A3)			Strippe	d Matrix (S6)			Dark Surface (S7) (LR	
Hydrogen Sul	lfide (A4)			Loamy	ralMucky Minea	a (F1)		High Plains Depressio	ns
Stratified Laye	ers (A5) (LRR F)			Loamy	Gleyed Martix	(F2)		(F16) (MLRA	72 &73 LRR
1 cm Muck (A	A9) (LRR F, G, H)			Deplete	ed Matrix (F3)			Reduced Vertic (F18)	
	ow Dark Surface (A11))			Dark Surface (F6)		Red Parent Material (1	F2)
Thick Dark Su					ed Dark Surface	,		V. Shallow Dark Surf.	
	/ Mineral (S1) (LRR O,	S)		-	Depressions (F			Other (Explain in Rem	
	v Peat or Peat (S2) (LF		<u>——</u>	-	lains Depressio			³ Indicators of hydrophyti	,
	Peat or Peat (S3) (LRR				MLRA 72 &73 L	. ,		wetland hydrology must l disturbed or problematic.	
etrictive Layer ((if observed):						Hydric S	Soils Present?	
Type:								Yes	No
Depth (inches	s):			-				-	
ROLOGY									
Vetland Hydrolog	gy indicators: (minimum of one is re	auirod:	chock all that a				Secondary Indi	cators (minimum of two required)	
•	•	quireu,						ace Soil Cracks (B6)	
Surface Wate	. ,		Salt Crust (B	,				()	
High Water T	()		Aquatic Faur	· · ·				sely Vegetated Concave Surface (E	38)
Saturation (A3	3)		Marl Deposit					nage Patterns (B10)	(00)
Water Marks	(B1)		Hydrogen Su					zed Rhizospheres on Living Roots	(C3)
Sediment Dep	posits (B2)		Dry-Season		. ,			fish Burrows (C8)	
Drift Deposits	s (B3)				es on Living Ro	oots (C3)	Satur	ration Visible on Aerial Imagery (C9)
Algal Mat or C	Crust (B4)		Presence of	Reduced	d Iron (C4)		Geor	norphic Position (D2)	
Iron Deposits	(B5)		Recent Iron F	Reductio	n in Tilled Soils	s (C6)	FAC-	Neutral Test (D5)	
Inundation Vis	sible on Aerials (B7)		Thin Muck S	urface (C	27)		Frost	Heave Hummocks (D7) (LRR F)	
Water-Staine	d Leaves (B9)		Other (Explai		-				
ield Observatior									
Surface Water Pre	-	No		th (inche			wetland Hy	drology Present?	
Vater Table Prese	-	No	'	th (inche	-	>20	1	Yes	No
Saturation Presen	t? Yes	No	X Dept	th (inche	s):		1		
includes capillary	r fringe)						1		
Describe Recorde	ed Data (stream gauge	, monito	ring well, aeria	l photos,	previous inspe	ections), if ava	ailable:		
Remarks:	Hydrology paramete	i not me	÷l.						
Nowed lawn.									
ntecedent Precis	vitation Tool (APT) repo	orted no	rmal rainfall co	nditione	for the Grand F	orks area	SDI indicated evtr	reme drought. On-site observations	sunnest drive
al conditions.	(•		J	00

DP-11-U: Non-hydric soil



Are Vegetation Are Vegetation X SUMMARY OF FINDIN Hydrophytic Vegetation Hydric Soils Present? Wetland Hydrology Pres Remarks: All p	IGS - Attach site map sho Present? sent?	Correiro Section Local re Lat: cent slopes me of year?	lematic? (If nee point locations, t No No No	NWI classification: No X Jormal Circumstances" pres eded, explain any answers ir ransects, important f Is the Sampled Area within a Wetland?	n Remarks.) eatures, etc. Ye	25 <u>X</u> No X
weeks prior to the s (August and Septer phenology, soil indi FLS-17. Area is a s	conditions are not typical for this survey and normal rainfall conditi mber 2023) and moderate drougl cators, and hydrology. wale in a mowed lawn. cientific names of plants.	ions the week prior an	d week of the field visi	t . However PSDI indicated	severe drought for p	reseeding two months
· · · · · · · · · · · · · · · ·		Absolute Domi	nant Indiaator	Dominance Test worksho		
Tree Stratum (Plot	t size: 30' Radius)	<u>% Cover</u> Spec		Number of Dominant Spec		
1	,			Are OBL, FACW, or FAC:	1	(A)
0				Total Number of Dominant	Species	
				Across All Strata:	1	(B)
4	50% of total cover: 0%	0% = Total 20% of total cover		Percent of Dominant Spec Are OBL, FACW, or FAC:	ies That100	<u>% (</u> A/B)
Sapling/Shrub Stratum	(Plot size: 15' Ra	idius)		Prevalence Index worksh	neet:	
1.				Total % Cover of:	000/	
2.					90% x 1 = 0% x 2 =	0.9
3. 4.				FACW species	0% x 2 = 1% x 3 =	0.03
5.				FACU species	10% x 4 =	0.4
		0% = Total	Cover	UPL species	0% x 5 =	0
	50% of total cover: 0%	20% of total cover	: 0%	Column Totals:	101% (A)	1.33 (B)
	t size: 5' Radius)	_		Prevalence Ind	ex = B/A =	1.32
1. Eleocharis palustris	}	90% Y	OBL			
2. Elymus repens		10%	FACU	Hydrophytic Vegetation I		
3. Sonchus arvensis		1%	FAC		or Hydrophytic Veget	ation
4.				X 2 - Dominance 1 3 - Prevalence I		
0					Hydrophytic Vegetati	on ¹ (Explain)
7						
0				¹ Indicators of hydric soil a	nd wetland bydrolog	u must be present
0				unless disturbed or problem		y must be present,
10.						
		101% = Total	Cover			
	50% of total cover: 51%	20% of total cover	20%			
Woody Vine Stratum	(Plot size: 15' Radius	_)		Hydrophytic Vegetation	Present? Yes	X No
1.						
2.				L		
	C00/ - 54-4-1	0% = Total				
% Bare Ground in Herb	50% of total cover: 0%	20% of total cover	: 0%			
	i - lawn grasses stop and are rep	laced by guack grass	Point is at lowest by	- Sulvert, Conter has only Elec	ocharic en (all en Ar	
Vegetation paramet	• • •	aced by quack grass	. Tomin's actowest by t	Suivent. Genter has only Liet	ылана эр. (ан эр. Аг	er AGW of OBE).

Saturation Present? Yes No X Depth (inches): (includes capillary fringe)	L								Sampling Point:	DP-11W
(incles) Code (moist) % Code (moist) % Type Loc Texture Remarks 10-15 10748 6/2 100 Loam Loam <tdl< th=""><th>Profile Descriptic</th><th>on: (Describe to the d</th><th>epth nee</th><th>eded to docume</th><th>ent the in</th><th>dicator or confirm</th><th>n the abse</th><th>nce of indicators</th><th>.)</th><th></th></tdl<>	Profile Descriptic	on: (Describe to the d	epth nee	eded to docume	ent the in	dicator or confirm	n the abse	nce of indicators	.)	
Important Procession Color (most) % Color (M	D									
C+0 10YR 5/2 0 I own 10-15 10YR 5/2 100 Ioam Type: C-Concentration, D-Depieleton, RM-Reduced Matrix, CS+COvered or Coated Sand Grains. * Locaton:: PL=Pore Lining, MeN Type: C-Concentration, D-Depieleton, RM-Reduced Matrix, CS+COvered or Coated Sand Grains. * Locaton:: PL=Pore Lining, MeN Histics Soll Indicators: Indicators for Prob. Hydris Soil - Tom Mack (A) (LRR 1, A) Histics (A) Sandy Review, (S5) - Tom Mack (A) (LRR 1, A) Block Husic (A) Strateger (F) - Depresion Matrix (F2) Histics (JRR 6, A) - Depresion Matrix (F2) - High Plants Depresion Depleted Block Dark Strates (F1) - Depleted Matrix (F2) - High Plants Depresions Traix Dark Strates (F1) - Depleted Matrix (F2) - Provem Matrix (F1) Depleted Dark Strates (F1) - Depleted Matrix (F2) - Other (F1) Son Mucky Moreal (S1) (LRR 0, S) - Reduce Varits (F2) - Other (F1) Son Mucky Peat or Peat (S3) (LRR N 1) - Medicators of fyritery here varies (F1) - Other (F1) Son Mucky Moreal (S1) (LRR 0, S) - Medicators (F1) - Other (F1) Son Mucky Moreal (S1)	•		0/			4	12	T	Demedue	
10:15 10/16 10/17 Issem Type: C=Concentration. D=Deptetion, RM=Reduced Matrix. CS=Covered or Costied Sand Grains. **Location: PL=Pore Lining, MeM Haitosol (A1)	,								Remarks	
Type: C-Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Pore Lining, Meh. Type: C-Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Pore Lining, Meh. Heitosol (A1) Sandy Gleyed Matrix (S4) Coase Pare Road Concentration. Heitosol (A2) Sandy Gleyed Matrix (S5) Coase Pare Road Concentration. Standard Layor, CS) Sandy Gleyed Matrix (S2) Coase Surface (S1) Year Concentration. Coase Surface (S1) Coase Surface (S2) Year Concentration. Coase Surface (S2) Coase Surface (S1) Sandy Mucky Merical (S1) (LRR O, S1) Redoc Dark Surface (F1) Redoc Dark Surface (F1) Sandy Mucky Merical (S2) (LRR O, S1) Redoc Dark Surface (F1) Pedoc Dark Surface (F1) Sandy Mucky Merical (S2) (LRR O, S1) Redoc Dark Surface (F1) Pedoc Dark Surface (F1) Sandy Mucky Merical (S2) (LRR O, S1) Redoc Dark Surface (F1) Profect Salini Nearchites Sandy Mucky Merical (S2) (LRR F) (MLR 72 & 27 SLR H) The distance (rininitum of Inco reputed) Surface Verse (Materical C) Auguste Fariar (F3) Surface Soli Cracks (B6) Sandy Mucky Merical (S1) Hydric Solie Present? Ves X <td></td> <td></td> <td></td> <td>101K 3/4</td> <td>Z</td> <td>C</td> <td>IVI</td> <td></td> <td></td> <td></td>				101K 3/4	Z	C	IVI			
hydric Sail Indicators: Indicators for Prob. Hydric Sail Histic Exploration (A2) Sandy Redox (S5)	10-13	1011(0/2	100					loan		
hydric Sail Indicators: Indicators for Prob. Hydric Sail Histic Exploration (A2) Sandy Redox (S5)										
hydric Sail Indicators: Indicators for Prob. Hydric Sail Histic Exploration (A2) Sandy Redox (S5)										
Hydric Soil Indicators Indicators for Prob. Hydric Soil Histic Epipedion (A2) Sandy Redox (S5)										
hydric Sail Indicators: Indicators for Prob. Hydric Sail Histic Exploration (A2) Sandy Redox (S5)										
Histos (A)	Type: C=Conce	ntration, D=Depletion,	RM=Re	educed Matrix, C	S=Cove	ered or Coated S	and Grains	5.	² Location: PL=Pore Lining	g, M=Matrix
Histic Exploredor (A2) Sandy Redors (S5) Coast Prains Redox (A16) (LRR F) Black Histic (A3) Stripped Matrix (S8) Dark Surface (S7) (LRR G) Stripped Matrix (S8) Loamy Glayed Matrix (F2) (F16) (MLRA 72 487 LRR H) Stripped Matrix (S1) Depleted Matrix (F2) (F16) (MLRA 72 487 LRR H) Depleted Below Dark Surface (A11) X. Redox Dark Surface (F7) P. Schaue Watrix (F17) Trick Dark Surface (A12) Depleted Matrix (F2) V. Schaue Watrix (F17) Start Stratee (A12) Depleted Matrix (F2) V. Schaue Watrix (F17) Start Stratee (A12) Depleted Matrix (F2) V. Schaue Watrix (F17) Start Stratee (A11) X. Redox Dark Surface (F7) V. Schaue Watrix (F17) Start Stratee (A11) X. Redox Dark Surface (F18) Wetland Hydrology matrix be prese disturbed or problematic. 2.5 orn Muxky Peat or Paat (S2) (LRR G & H) High Plains Depressions (F18) Stripped Matrix (S10) Stripped Matrix (S10) Matrix Depressions (F18) Stripped Matrix (S10) Stripped Matrix (S10) Stripped Matrix (S10) Matrix Depressions (F18) Stripped Matrix (S10) Stripped Matrix (S10) Stripped Matrix (S10) Matrix Depressions (S10) Matrix Depressin (S10) Stripped Matrix (S10)<	Hydric Soil Indica	ators:							Indicators for Prob. Hydr	ic Soils ³ :
Hetsic Epipedon (A2) Sandy Redox (S5) Coast Praine Redox (A16) (LRR F) Black Hielic (A3) Stripped Matrix (S8) Dark Surface (S7) (LRR G) Stripped Matrix (S8) Coast Praine Redox (A16) (MLRA 72 AST) (LRR G) High Plains Depressions Stripped Matrix (S1) Depleted Matrix (F2) (F16) (MLRA 72 AST) (F12) Depleted Below Dark Surface (A11) X. Redox Dark Surface (F7) P. Schaller Unit (F12) Stripped Matrix (F2) Other (Explain in Remarks) Thick Dark Surface (A12) Stripped Matrix (F2) Wetland Hydrology Indicators of Hydrology matrix Pereleted Delow Dark Surface (F7) Stripped Matrix (F2) Wetland Hydrology Indicators of Hydrology matrix Pereleted Delow Dark Surface (F8) 2.5 or Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) Thick Dark Surface (S10) Stripped Matrix (S1) Secondary Indicators (Inininum of two required). Type: Depth (Inches): Yes X Stripped Matrix (S1) Sat Cruss (B11) Sat Cruss (B11) Secondary Indicators (Inininum of two required). Saturation (A2) Saturation (A2) Stripped Matrix (S1) Matrix (S10) Saturation (S10) Saturation (S10) Saturation (A3) Hydrologe Suti										
Bitack Hatic (A3)	Histosol (A1)						4)			
Hydrogen Sulfide (A4) LearnyralMucky Mines (F1) High Plaine Depressions Stratified Layers (A5) (LRR F, 6, H) Depleted Matrix (F2) (F16) (MLRA 72.873 Depleted Matrix (F2) Reduced Veric (F18) Reduced Veric (F18) Depleted Matrix (F2) V.S. Shalow Dark Surface (A11) Reduced Veric (F18) Depleted Matrix (F2) V.S. Shalow Dark Surface (A12) Reduced Veric (F18) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F6) V.S. Shalow Dark Surfaces (A17) 2.5 cm Mucky Peat or Peat (S2) (LRR 6 & H) High Plaina Depressions (F16) Vinciators of tytorytopic wegets welland bytology must be prese disturbed or problematic. Retreating the interval of the interval interva					-					
Stratified Layres (A5) (LRR F) Loamy Gleyed Martix (F2) C (F16) (MLRA 72 A73 1 cm Muck (A9) (LRR F) Loamy Gleyed Martix (F2) Reduced Vertic (F18) Depleted Bolk Wards (A12) Depleted Dark Surface (F7) Reduced Vertic (F18) Sandy Mucky Meral (S1) (LRR 0, S) Redox Dark Surface (F7) V. Shallow Dark Surface (F7) Sandy Mucky Meral (S1) (LRR 0, S) Redox Dark Surface (F7) V. Shallow Dark Surface (F8) S cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) "Indicators of hydrophylic wegte disturbed or problematic. Verticitive Layer (if observed): Type: Mydric Soils Present? Yes Depth (inches): Soil parameter met. Secondary Indicators (minimum of two required) Surface Wards (A1) Satar Crust (B11) Surface Variance S(10) Spareely Vegetated Concave Surface (B8) Saturation (A3) Mari Deposits (B15) (LRR N) Spareely Vegetated Concave Surface (B8) Spareely Vegetated Concave Surface (B8) Staturation Visible on Aerial Imagery (C3) Saturation (K1) Spareely Vegetated Concave Surface (B8) Saturation Visible OA Crust (B1) Hydrogen Sufface Varian (B13) Spareely Vegetated Concave Surface (B8) Saturation Visible OA Aerial Imagery (C3) Saturation Visible OA Aerial Imagery (C3)		,				()				
1 mmkuck (40) (LRR F, G, H) X Depleted Mark Surface (A1) Redox Dark Surface (F6) Redox Dark Surface (F1) 2 Sandy Musky Mineral (S1) (LRR O, S) Redox Dark Surface (F7) Other (Esplain in Remarks) 3 Sandy Musky Mineral (S1) (LRR O, S) Redox Depressions (F6) Other (Esplain in Remarks) 3 Mucky Peat or Peat (S2) (LRR G & H) High Phains Depressions (F16) 3 5 mucky Peat or Peat (S2) (LRR G & H) High Phains Depressions (F16) 3 5 mucky Peat or Peat (S2) (LRR G & H) High Phains Depressions (F16) 3 5 mucky Peat or Peat (S2) (LRR G & H) High Phains Depressions (F16) 3 7 yee X A Peptie	Hydrogen Sul	lfide (A4)			Loamyr	alMucky Minea ((F1)		High Plains Depression	5
Depicted Below Dark Surface (A11) X Redox Dark Surface (F6) Red Parent Material (F7) Thick Dark Surface (A12) Depicted Dark Surface (F7) V. Shallow Dark Surf. (F7) Sandy Mucky Meral (S1) (LRR O, S) Redox Depressions (F6) ³ Indicators of hydrophytic vegeta disturbed or problematic. S orm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F10) ³ Indicators of hydrophytic vegeta disturbed or problematic. Kartictive Layer (if observed): Type: Vestand Mydrology must be pressions (F10) Type: Depth (inches): Yes X Depth (inches): Soft Darameter met. Secondary Indicators (minimum of one is required), equation (A3) Math Deposits (B10) (LRR U) Surface Valaer (A1) Surface Va	Stratified Laye	ers (A5) (LRR F)			Loamy	Gleyed Martix (F	2)		(F16) (MLRA)	72 &73 LRR
Time Dark Surface (12) Depleted Dark Surface (F7) V. Shalow Dark Surf. (Tri 2) Sandy Mucky Mineral (S1) (LRR 0, S) Redox Depressions (F8) Other (Explain in Remarks) 2.5 cm Mucky Peat or Peat (S2) (LRR 6 & H) High Plains Depressions (F16) ³ Indicators of Hydrophytic vegate wetland hydrology must be prese disturbed or problematic. terrictive Layer (if observed): Type: Works Vest or Peat (S3) (LRR 7) Yes X Depth (inches): Depth (inches): Yes X X Record Dark Surf. (S1) Saturation (S16) Surface Soli Cracks (B6) Surface Soli Cracks (B6) Surface Water (A1) Aqueto Fauna (B13) Surface Soli Cracks (B6) Surface Soli Cracks (B6) Saturation (A3) Hydrogen Sulfide Odor (C1) Dosnage Patterns (B10) Divages on Living Roots (C3) Sediment Deposits (B3) Dory-Season Water Table (C2) Surface Soli Cracks (B7) X Algal Mat or Crust (B4) Presence of Reduction (To (C4)) X Saturation Visible on Aerial Imagery (C3) Algal Mat or Crust (B4) Presence of Reduction (To (S6)) Recent Iron Reduction (To (S6)) X Geomorphic Position (D2) Iron Deposits (B5) Recent Iron Reduction In Tiled Solis (C6) Fost Heave Hummocks (D7) (LRR F)	1 cm Muck (A	49) (LRR F, G, H)		X	Deplete	ed Matrix (F3)			Reduced Vertic (F18)	
Sandy Mucky Mineral (S1) (LRR O, S)	Depleted Belo	ow Dark Surface (A11)	Х	Redox	Dark Surface (F6	6)		Red Parent Material (TF	[:] 2)
2.5 cm Mucky Peat or Peat (S2) (LRR F) High Plains Depressions (F16) (MLRA 72 & 73 LRR H) **Indicators of hydrophytic vegeta welland hydrology must be preed disturbed or problematic: Strictive Layer (if observed): Type: Yes X Depth (inches): Wetrict Soils Present? Yes X ROLOGY Soil parameter met. Soil parameter met. Secondary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required) Surface Water (A1) Sall Crust (B11) Surface Soil Cracks (B6) Drainage Patterns (B10) Strate Water (A1) Hydrogen Sufface Odor (C1) Drainage Patterns (B10) Drainage Patterns (B10) Sediment Deposits (B1) Hydrogen Sufface Odor (C1) Drainage Patterns (B10) Drainage Patterns (B10) Water Marks (B1) Hydrogen Sufface Odor (C1) Drainage Patterns (B10) Saturation Visible on Aerials Imagery (C9) Adgi Mat or Crust (B4) Presence of Reduced from (C4) Saturation Visible on Aerials (B7) K Secondary Indicators (D2) Saturation (D2) Into Deposits (B5) Recent Iron Reductor in Tilled Soils (C6) Saturation Present? Yes X Water Table Present? Yes No X Depth (inches): >15 <	Thick Dark Su	urface (A12)			Deplete	ed Dark Surface	(F7)		V. Shallow Dark Surf. (1	F12)
S on Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) wetland hydrology must be prese disturbed or problematic. Hydric Soils Present? Yes <u>x</u> Perfinition of the sequired; check all that apply) Secondary Indicators (minimum of two required) Surface Soil parameter met. ROLOGY Wetland Hydrology Indicators: Yes	Sandy Mucky	Mineral (S1) (LRR O,	S)		Redox	Depressions (F8)		Other (Explain in Rema	rks)
S on Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) wetland hydrology must be prese disturbed or problematic. Hydric Soils Present? Yes <u>x</u> Perfinition of the sequired; check all that apply) Secondary Indicators (minimum of two required) Surface Soil parameter met. ROLOGY Wetland Hydrology Indicators: Yes	2.5 cm Mucky	Peat or Peat (S2) (LF	RRG&	H)	Hiah Pl	ains Depression	s (F16)		³ Indicators of hydrophytic	venetation a
disturbed or problematic. Retrictive Layer (if observed): Type: Depth (inches): Depth (inches): Remarks: Soil parameter met. Remarks: Soil parameter met. Retrictive Layer (if observed): Type: Depth (inches): Thmary Indicators (inimizum of one is required: check all that apply) Surface Water (A1) High Water Table (A2) Aquitic Fauna (B13) Saturation (A3) Mari Deposits (B15) (LRR U) Sediment Deposits (B2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Presence of Reduced iron (C4) Water Table Present? Yes Water Table Roots (B5) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water Table Present? Yes No Xater Table Present? Yes Yes No Xater Table Present? Yes Yes No		, ,,,		,	• •	•	• •			
Type: Yes X Depth (inches):	,	(- / (,		``		,		disturbed or problematic.	•
Depth (inches):	Retrictive Layer ((if observed):						Hydric	Soils Present?	
Remarks: Soll parameter met. RCLOGY Wetland Hydrology Indicators:	Туре:								Yes >	K No
PROLOGY Vestion Hydrology Indicators Primery Indicators (minimum of one is required; check all that apply)	Depth (inches	s):			-					_
ROLOSY Vetland Hydrology Indicators Timery Indicators (minimum of one is required; check all that apply)										
Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required) Sufface Water (A1) Salt Crust (B1) High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Crayfish Burrows (C8) Drift Deposits (B2) Dry-Season Water Table (C2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water Table Present? Yes Water Table Present? Yes Yes No X Saturation Present? Yes Yes No X Deprih (inches): Yes Water Table Present? Yes Yes No X Deprih (inches): Yes Water Table Present? Yes Yes No X Deprih (inches): Yes Saturation Present? Yes No	OROLOGY									
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Algal Mator Crust (B4) Presence of Reduced Iron (C4) X Geomorphic Position (D2) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) X FAC-Neutral Test (D5) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Heave Hummocks (D7) (LRR F) Water-Stained Leaves (B9) Other (Explain in Remarks) Frost Heave Hummocks (D7) (LRR F) Surface Water Present? Yes No X Depth (inches): >15 Saturation Present? Yes No X Depth (inches): >15 Saturation Present? Yes No X Depth (inches): >15 Includes capillary fringe) Depth (inches): >15 Yes X Secorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. .owest point in drainage swale. unteccedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest	Sediment Dep	posits (B2)								
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Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost Heave Hummocks (D7) (LRR F) Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydrology Present? Field Observations: Surface Water Present? Yes No Water Table Present? Yes No X Depth (inches): >15 Water Table Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X includes capillary fringe) Depth (inches): includes capillary fringe) Seconded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. .owest point in drainage swale. Autecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest	Algal Mat or C	Crust (B4)		Presence of F	Reduced	l Iron (C4)		X Geo	omorphic Position (D2)	
Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Yes No X Depth (inches): >15 Wetland Hydrology Present? Water Table Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. No expective present is a stream of the grand Forks area. PSDI indicated extreme drought. On-site observations suggest Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site obs	Iron Deposits	(B5)		Recent Iron R	Reduction	n in Tilled Soils (C6)	X FAG	C-Neutral Test (D5)	
Field Observations: No X Depth (inches): >15 Wetland Hydrology Present? Vater Table Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X includes capillary fringe) Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. wntecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest	Inundation Vis	sible on Aerials (B7)		Thin Muck Su	urface (C	(7)		Fro	st Heave Hummocks (D7) (LRR F)	
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Water Table Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches): >15 Yes X Saturation Present? Yes No X Depth (inches):										
Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. .owest point in drainage swale. Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest								wetland H		
includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. .owest point in drainage swale.	Vater Table Prese	ent? Yes	No	Deptl	h (inche	s):	>15		Yes _>	K No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. .owest point in drainage swale.	Saturation Presen	t? Yes	No	X Dept	h (inche	s):				
Remarks: Hydrology parameter met. .owest point in drainage swale. Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest	includes capillary	fringe)								
Lowest point in drainage swale.	Describe Recorde	d Data (stream gauge	, monito	oring well, aerial	photos,	previous inspec	tions), if av	ailable:		
cowest point in drainage swale.										
owest point in drainage swale.	Domoriko	Lludrology (noromoto	r mot							
Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest			er met.							
		amaye swale.								
	Antecedent Precip	vitation Tool (APT) rep	orted no	ormal rainfall cor	nditions	for the Grand Fo	rks area. F	SDI indicated ex	treme drought. On-site observations s	uggest drier
	al conditions.	、 <i>,</i> -F							<u> </u>	



DP-11-W: Depleted Matrix hydric soil indicator (F3), FLS-17

Project/Site: Applicant/Owner:	Grand Sky US Air Force, GFAFB		City/County:	Grand Forks	State: ND	Sampling Date: Sampling Point:	September 27, 2023 DP-12U
Investigators:	C. Lotts; M. Hayes; K. Erwin; M.	Correiro	Section, Tow	nship, Range:		Samping Form.	
Landform:	berm crest			concave,convex,r	none): convex	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Long		Datum:	NAD83
Soil Map Unit Name:	Antler-Mustinka silt loa		percent slopes	_	NWI classification:	_	
	itions on the site typical for this tim			Yes	No X	(If no, explain in R	emarks.)
Are Vegetation	Soil or Hydrology	sign	ficantly disturbe	ed? Are "I	Normal Circumstances" p	present? Y	es No X
Are Vegetation	Soil or Hydrology	natu	urally problemat	tic? (If ner	eded, explain any answe	rs in Remarks.)	
	NGS - Attach site map sho	wing sa	mpling poin	It locations,	transects, importar	nt features, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No <u>X</u>	Is the Sampled Are		
Hydric Soils Present?		Yes	-	No <u>X</u>	within a Wetland?	? ^Y	es <u> </u>
Wetland Hydrology Pres	sent?	Yes		No X			
Climatic/hydrologic weeks prior to the s (August and Septer phenology, soil indi	parameters not met. conditions are not typical for this i survey and normal rainfall conditio mber 2023) and moderate drough icators, and hydrology. thes. FLS-13b and FLS-07b.	ons the wee	ek prior and wee	ek of the field visi	it . However PSDI indicat	ted severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plants.					Sampling Point:	DP-12U
		Absolute	e Dominant	Indicator	Dominance Test work	ksheet:	
	ot size: 30' Radius)	<u>% Cover</u>	<u>Species</u>	<u>Status</u>	Number of Dominant S		
1.					Are OBL, FACW, or FA		(A)
					Total Number of Domir Across All Strata:	•	
3. 4.					Percent of Dominant S	necies That	(B)
4.		0%	= Total Cove	ar	Are OBL, FACW, or FA		% (A/B)
	50% of total cover: 0%		otal cover:	0%	,		
Sapling/Shrub Stratum	(Plot size: 15' Rad	-)		Prevalence Index wor	rksheet:	
1.	· · · · · · · · · · · · · · · · · · ·		-'		Total % Cover of:		
2.					OBL species	x 1 =	0
3					FACW species	0% x 2 =	0
4.					FAC species	3% x 3 =	0.09
5.					FACU species	<u>4%</u> x 4 =	0.16
		0%	= Total Cove		UPL species	<u>94%</u> x 5 =	4.7
Llash Stratum (Dla	50% of total cover: 0% ot size: 5' Radius)	_ 20% of to	otal cover:	0%	Column Totals:	$\frac{101\%}{100}$ (A)	4.95 (B)
<u>Herb Stratum</u> (Plo 1. <i>Bromus inermis</i>	ot size: 5' Radius)	90%	Y	UPL	Prevalence	Index = B/A =	4.90
2. Solidago canadens	sie	3%		FACU	Hydrophytic Vegetati	on Indicators:	
3. Grindelia squarrosa		3%		UPL		est for Hydrophytic Vege	tation
4. Euphorbia escula	<u>.</u>	1%		UPL		ice Test is >50%	
5. Apocynum cannabi	inum	1%		FAC	3 - Prevalen	ce Index is ≤3.0 ¹	
6. Sonchus arvensis		1%		FAC	4 - Problema	atic Hydrophytic Vegetat	ion ¹ (Explain)
7. Symphyotrichum er	ricoides	1%		FACU			
8. Eragrostis pectinac	;ea	1%		FAC	,	oil and wetland hydrolog	y must be present,
9.					unless disturbed or pro	blematic.	
10							
		101%	= Total Cove				
	50% of total cover: 51%	_ 20% of to	otal cover:	20%			
Woody Vine Stratum 1.	(Plot size: 15' Radius	_)			Hydrophytic Vegetat	tion Present? Yes	No <u>X</u>
2.							
Z		0%	= Total Cove				
	50% of total cover: 0%		otal cover:	0%			
% Bare Ground in Herb							
Remarks: Purple lovegra	ass.				-		
Vegetation parameter	eter not met.						

Type:	Sampling Point: DP-12
(inches) Color (moist) % Type ¹ Lod ² Texture 0-14 10YR 3/1 100 loam 14-16 10YR 3/2 10 loam 14-16 10YR 3/2 10 loam 14-16 10YR 3/2 10 loam ************************************	ators.)
0-14 10/R 3/1 100 1 Ioam 14-16 10/R 3/1 90 Ioam 14-16 10/R 3/1 90 Ioam 14-16 10/R 3/2 10 Ioam 14-16 10/R 3/2 10 Ioam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Type/Type/Type/Type/Type/Type/Type/Type/	
14-16 10YR 3/1 90 Ioam 14-16 10YR 3/2 10 Ioam 131 Sandy Mucky Matrix (St) Ioam Muck (St) (IRR F) Ioam Mucky (Mineral (St) (IRR O, S) Redox Depressions (F5) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) Redox Depressions (F16) KMLRA 72 &73 LRR H) Mucky Peat or Peat (S2) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if obser	Remarks
14-16 10YR 3/2 10 Loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. tydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histosol (A2) Sandy Redox (S5) Black Histic (A3) CharmyralMucky Minea (F1) Stratified Layers (A5) (LRR F) LoamyralMucky Minea (F1) Depleted Bow Dark Surface (A11) Depleted Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F2) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) MuRA 72 & 73 LRR H) Redox Dark Surface (F7) Soll parameter not met. /egelated berm between wetlands. DROLOGY Wetland Hydrology Indicators: Ouxidage Rizospheres on Living Roots (C3) Ouxidage Rizospheres on Living Roots (C3) </td <td></td>	
'Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 'tydric Soll Indicators:	
Hydric Soil Indicators:	
Hydric Soll Indicators:	
Hydric Soll Indicators:	² Location: PL=Pore Lining, M=Matrix
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffde (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) LoamyralMucky Minea (F1) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F2) Depleted Below Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): Type: Type:	Indicators for Prob. Hydric Soils ³ :
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) LoamyralMucky Minea (F1) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): Type: Type:	1 cm Muck (A9) (LRR I & J)
Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F2) Depleted Below Dark Surface (A12) Depleted Dark Surface (F7) Sandy Muck (Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) 5 cn Mucky Peat or Peat (S2) (LRR G & H) Mult Plains Depressions (F16) Sturface Water (A1) Saturation Fauna (B13) Sufface Water (A1) Saturation (A3) Mari Deposits (B15) (LRR U) Matrix Marks (B1) Hydrogen Suffide Odor (C1) Second Saturation (A3) Dry-Season Water Table (C2) Dry-Season Water Table (C2) <	Coast Prairie Redox (A16) (LRR F,
Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stattified Layers (A5) (LRR F, G, H) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Martix (F3) Depleted Below Dark Surface (A12) Depleted Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F1) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): mucky Type: Depleted barm between wetlands. Progenation Soli parameter not met. //egetated berm between wetlands. Progenation Primary Indicators (minimum of one is required: check all that apply) Second Surface Water (A1) Saturation (A3) Marti Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Second Sediment Deposits (B2) Dry-Season Water Table (C2) Doing Depressions (C3) Ordidzed Rhizospheres on Living Roots (C3) Adal Mat or Crust (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Adal Mat or Crust (B4) Presence	
Stratified Layers (A5) (LRR F) Loarny Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Martix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): r Type: Depleted Dark Surface (F7) Depth (inches): (MLRA 72 &73 LRR H) Retrictive Layer (if observed): (MLRA 72 &73 LRR H) Retrictive Layer (if observed): (MLRA 72 &73 LRR H) Retrictive Layer (if observed): (MLRA 72 &73 LRR H) Retrictive Layer (if observed): (MLRA 72 &73 LRR H) Retrictive Layer (if observed): (MLRA 72 &73 LRR H) Startation Check and the start on thet. Vegetated berm between wetlands. PROLOGY Saturation (B13) Saturation (B13) Surface Water (A1) Saturation (B13) Saturation (A3) Saturation (A3) Mari Deposits (B15) (LRR U) Second Sediment Deposits (B2) Dry-Season Wat	Dark Surface (S7) (LRR G)
1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Matrix (F3) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): Type: Depleted Dark Depth (inches):	High Plains Depressions
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): (MLRA 72 & 73 LRR H) Type: Depth (inches): Depth (inches):	(F16) (MLRA 72 &73 LRF
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): (MLRA 72 & 73 LRR H) Type: Depth (inches): Depth (inches): Remarks: Soli parameter not met. Vegetated berm between wetlands. DROLOGY Satt Crust (B11) Saturation (A3) Marl Deposits (B15) Saturation (A3) Marl Deposits (B15) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Yes Surface Water Present? Yes Yes No X Depth (inches): <td< td=""><td>Reduced Vertic (F18)</td></td<>	Reduced Vertic (F18)
Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): (MLRA 72 & 73 LRR H) Type: Depth (inches): Depth (inches): Image: Comparison of the transmission of the transmiss	Red Parent Material (TF2)
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Depth (inches):	V. Shallow Dark Surf. (TF12)
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches):	Other (Explain in Remarks)
Type:	³ Indicators of hydrophytic vegetation wetland hydrology must be present, u disturbed or problematic.
Type:	lydric Soils Present?
Depth (inches):	Yes No
Remarks: Soil parameter not met. //egetated berm between wetlands. PROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Second	fes No
Wetland Hydrology Indicators: Second Primary Indicators (minimum of one is required; check all that apply) Second Surface Water (A1) Salt Crust (B11) High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water Table Present? Yes Surface Water Present? Yes Yes No X Saturation Present? Yes Yes No X Depth (inches): >16 Saturation Present? Yes Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well,	
Primary Indicators (minimum of one is required; check all that apply) Second Surface Water (A1) Salt Crust (B11) High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water Table Present? Yes No X Depth (inches): Nater Table Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes Saturation Present? Yes No X De	
Surface Water (A1) Salt Crust (B11) High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: >16 Surface Water Present? Yes Water Table Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	ary Indicators (minimum of two required)
High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes Yes No X No X Depth (inches): Vater Table Present? Yes No Saturation Present? Yes No No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): Cincludes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Surface Soil Cracks (B6)
Saturation (A3) Marl Deposits (B15) (LRR U) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Yes Saturation Present? Yes No X Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes Saturation Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Sparsely Vegetated Concave Surface (B8)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes No X Depth (inches): Nater Table Present? Yes No X Depth (inches): Saturation Present? Yes No	Drainage Patterns (B10)
Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes No X Depth (inches): Nater Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Oxidized Rhizospheres on Living Roots (C3)
Overline (Deposite (Deposite (Deposite (Deposite (B3)) Oxidized Rhizospheres on Living Roots (C3) Drift Deposits (B3) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes No X Depth (inches): Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): Obscribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Crayfish Burrows (C8)
Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes No X Depth (inches): Water Table Present? Yes No X Depth (inches): Saturation Present? Yes Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Surface Water Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Geomorphic Position (D2)
Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface Water Present? Yes No X Depth (inches): >16 Surface Water Present? Yes No X Depth (inches): >16 Water Table Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	FAC-Neutral Test (D5)
Field Observations:	Frost Heave Hummocks (D7) (LRR F)
Surface Water Present? Yes No X Depth (inches): >16 Water Table Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 includes capillary fringe) Depth (inches): Depth (inches): >16 Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Water Table Present? Yes No X Depth (inches): >16 Saturation Present? Yes No X Depth (inches): >16 (includes capillary fringe) X Depth (inches): >16 Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	and Hydrology Present?
Saturation Present? Yes No X Depth (inches): (includes capillary fringe)	
includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Yes <u>No</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Hydrology parameter not met.	
Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indica	ted extreme drought. On-site observations suggest drie



DP-12-U: Non-hydric soils in upland data point

Project/Site: Applicant/Owner:	Grand Sky US Air Force, GFAFB	<u></u>	City/County:	Grand Forks	State:	ND	Sampling Date: Sampling Point:	September 27, 2023 DP-12W
Investigators:	C. Lotts; M. Hayes; K. Er	win; M. Correiro	Section, Tow	nship, Range:				
Landform:	ditch	<u> </u>	,	concave,conve	(none):	concave	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:	(Lor			Datum:	NAD83
Soil Map Unit Name:		silt loams, 0 to 2	nercent slones		-	ssification:	Datann	
Are climatic/hydrolgoic cond				Yes	No	X	(If no, explain in Re	emarks)
, ,			ficantly disturb			rcumstances" pres	v , 1	,
Are Vegetation	Soil or Hydrold Soil or Hydrold		ficantly disturbe rally problemat			lain any answers i		es NoX
Are Vegetation	Soil or Hydrold		irally problema		eeueu, exp	iain any answers i	i Remarks.)	
SUMMARY OF FINDIN		p showing sa	mpling poir	t locations,	, transec	ts, important f	ieatures, etc.	
Hydrophytic Vegetation	Present?	Yes X	-	No	Is th	e Sampled Area		
Hydric Soils Present?		Yes X	_	No	with	nin a Wetland?	Ye	es X No
Wetland Hydrology Pres	sent?	Yes X	_	No				
Climatic/hydrologic weeks prior to the s (August and Septe phenology, soil ind	parameters met. conditions are not typical f survey and normal rainfall of mber 2023) and moderate icators, and hydrology. e ditch, also representative	conditions the wee drought from May	k prior and wee to July 2023. C	ek of the field vi In-site observat	sit . Howev tions sugge	er PSDI indicated	severe drought for pr	eseeding two months
VEGETATION - Use so	cientific names of plar	its.					Sampling Point:	DP-12W
		Absolute	Dominant	Indicator	Domina	ance Test worksh	eet:	
Tree Stratum (Plo	t size: 30' Radius			Status		of Dominant Spec		
1. Fraxinus pennsylva		5%	Y	FAC		L, FACW, or FAC:		(A)
2.	anica	070		1710		umber of Dominan		(//)
3.						All Strata:	3 3	(B)
4.								(D)
4.		=0/	T / 1 0			of Dominant Spec L, FACW, or FAC:		(A/D)
		5%	= Total Cove		AIC ODI		679	<u>%</u> (A/B)
	50% of total cover:		otal cover:	1%				
Sapling/Shrub Stratum	(Plot size:	15' Radius	_)			nce Index works	neet:	
1						Cover of:		
2.					OBL sp	-	100% x 1 =	1
3.					FACW	-	2% x 2 =	0.04
4.					FAC sp	-	45% x 3 =	1.35
5.					FACU s	pecies	0% x 4 =	0
		0%	= Total Cove	er	UPL spe	ecies	50% x 5 =	2.5
	50% of total cover:	0% 20% of to	otal cover:	0%	Column	Totals:	197% (A)	4.89 (B)
Herb Stratum (Plo	t size: 5' Radius)				Prevalence Inc	lex = B/A =	2.48
1. Carex utriculata		85%	Y	OBL				
2. Euphorbia escula		50%	Y	UPL	Hydrop	hytic Vegetation	Indicators:	
3. Apocynum cannab	inum	20%		FAC		1 - Rapid Test f	or Hydrophytic Veget	ation
4. Sonchus arvensis		20%		FAC	Х	2 - Dominance	Test is >50%	
5. Typha X glauca		15%		OBL	Х	3 - Prevalence I	index is ≤3.0 ¹	
6. Phalaris arundinac	ea	2%		FACW		4 - Problematic	Hydrophytic Vegetati	ion ¹ (Explain)
7.						_	, , , , ,	
8					¹ Indicat	tora of hydria apil a	and wetland hydrolog	v must be present
						disturbed or proble	,	y must be present,
					uness c	isturbed of proble	mate.	
10		1000/	T () 0					
		192%	= Total Cove					
	50% of total cover:		otal cover:	38%				
Woody Vine Stratum	(Plot size: 15' Ra	dius)			Hydrop	phytic Vegetation	Present? Yes	X No
1.								
2.								
		0%	= Total Cove	er				
	50% of total cover:	0% 20% of to	otal cover:	0%				
% Bare Ground in Herb	Stratum							
Remarks: Not mowed.								
Vegetation parame	ter met.							

Profile Description: (Describe to the depth needed to document the indicator or confirm the absolution of the depth matrix redox Features Depth Matrix Redox Features (inches) Color (moist) % Color (moist) % Type ¹ Loc 0-8 10YR 3/1 100 8-15 10YR 7/2 80 8-15 10YR 3/1 20	² Texture Remarks loam loam loam
(inches) Color (moist) % Color (moist) % Type1 Loc 0-8 10YR 3/1 100 8-15 10YR 7/2 80 8-15 10YR 3/1 20 8-15 10YR 3/1 20	loam loam loam ins. 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, 4 Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
(inches) Color (moist) % Color (moist) % Type1 Loc 0-8 10YR 3/1 100 8-15 10YR 7/2 80 8-15 10YR 3/1 20 8-15 10YR 3/1 20 0 9	loam loam loam ins. 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, 4 Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
0-8 10YR 3/1 100 8-15 10YR 7/2 80 8-15 10YR 3/1 20 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Gra Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Z Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	loam loam loam ins. 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, 4 Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
8-15 10YR 7/2 80 8-15 10YR 3/1 20 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Gra Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	Ioam Ioam Ioam Ioam Ioam Ins. 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, 0 Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
8-15 10YR 3/1 20 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Gra Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	loam ins. 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) 0 coast Prairie Redox (A16) (LRR F, (Dark Surface (S7) (LRR G) 1 High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Gra Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Z Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	ins. 2 Location: PL=Pore Lining, M=Matrix Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, (Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) X Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	Indicators for Prob. Hydric Soils ³ : 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, G Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) X Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LRR F, 0 Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) X Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	Coast Prairie Redox (A16) (LRR F, (Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	High Plains Depressions (F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	(F16) (MLRA 72 &73 LRR Reduced Vertic (F18)
1 cm Muck (A9) (LRR F, G, H) X Depleted Matrix (F3) X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	Reduced Vertic (F18)
X Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	Red Parent Material (TE2)
Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8)	
	V. Shallow Dark Surf. (TF12)
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16)	Other (Explain in Remarks)
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H)	³ Indicators of hydrophytic vegetation a wetland hydrology must be present, ur
Retrictive Layer (if observed):	disturbed or problematic. Hydric Soils Present?
	-
Type:	Yes <u>X</u> No
Depth (inches):	
Netland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
Surface Water (A1)Salt Crust (B11)	Surface Soil Cracks (B6)
High Water Table (A2) X Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Marl Deposits (B15) (LRR U)	Drainage Patterns (B10)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2) Dry-Season Water Table (C2)	Crayfish Burrows (C8)
Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Presence of Reduced Iron (C4)	X Geomorphic Position (D2)
Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6)	X FAC-Neutral Test (D5)
Inundation Visible on Aerials (B7) Thin Muck Surface (C7)	Frost Heave Hummocks (D7) (LRR F)
X Water-Stained Leaves (B9) Other (Explain in Remarks)	
Field Observations:	
Surface Water Present? Yes <u>No X</u> Depth (inches):	Wetland Hydrology Present?
Water Table Present? Yes No X Depth (inches): >15	Yes X No
Saturation Present? Yes No X Depth (inches):	available:
Saturation Present? Yes No X Depth (inches):	
Saturation Present? Yes No X Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if a Remarks: Hydrology parameter met.	
Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if a Remarks: Hydrology parameter met.	
Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if a Remarks: Hydrology parameter met.	
Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if a	PSDI indicated extreme drought. On-site observations suggest drier

DP-12-W: Dominant vegetation *Carex utriculata* and *Euphorbia escula* in FLS-13b



DP-12-W: Depleted Matrix hydric soil indicator (F3) in FLS-13b



Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:	DP-13U
Investigators:	C. Lotts; M. Hayes; K. Erwin	; M. Correiro	Section, Tow	/nship, Range:				
Landform:	crest of berm		Local relief (concave,convex,r	none):	convex	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Long	:		Datum:	NAD83
Soil Map Unit Name:	Grimstad fine sand	ly loam, 0 to 2	percent slopes		NWI clas	ssification:		
Are climatic/hydrolgoic cond	itions on the site typical for thi			Yes	No	Х	(If no, explain in F	Remarks.)
Are Vegetation	Soil or Hydrology	sigr	nficantly disturb	ed? Are "N	Normal Cir	cumstances" pres	sent?	Yes No X
Are Vegetation	Soil or Hydrology	nati	urally problema	tic? (If nee	eded, expl	ain any answers i	n Remarks.)	
SUMMARY OF FINDI	NGS - Attach site map s	showing sa	mpling poir	nt locations, t	transect	ts, important f	features, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No X	lo the	Sampled Area		
Hydric Soils Present?		Yes		No X		in a Wetland?	١	Yes No X
Wetland Hydrology Pre	sent?	Yes	_	No X				
, , ,			_					
Climatic/hydrologic weeks prior to the (August and Septe	parameters not met. conditions are not typical for survey and normal rainfall con mber 2023) and moderate dro icators, and hydrology. I0a.	ditions the wee	ek prior and we	ek of the field visi	it . Howev	er PSDI indicated	severe drought for	preseeding two months
VEGETATION - Use s	cientific names of plants						Sampling Point:	DP-13U
		Absolute	e Dominant	Indicator	Domina	nce Test worksh	eet:	
Tree Stratum (Plo	ot size: 30' Radius)	<u>% Cove</u>	<u>species</u>	<u>Status</u>	Number	of Dominant Spee	cies That	
1.					Are OBL	, FACW, or FAC:		0 (A)
2.					Total Nu	mber of Dominan	t Species	
<u> </u>					Across A	All Strata:		2 (B)
4.					Percent	of Dominant Spec	cies That	
		0%	= Total Cove	er	Are OBL	, FACW, or FAC:	0)% (A/B)
	50% of total cover: 0	% 20% of t	otal cover:	0%				
Sapling/Shrub Stratum	(Plot size: 15'	Radius)		Prevale	nce Index works	heet:	
1. Symphoricarpos of	ccidentalis	20%	Y	UPL	Total %	Cover of:		
2.					OBL spe	ecies	0% x 1 =	= 0
3.					FACW s	pecies -	0% x 2 =	= 0
4.					FAC spe	cies	0% x 3 =	= 0
5.					FACU s	pecies	90% x 4 =	3.6
		20%	= Total Cove	er	UPL spe	cies	30% x 5 =	1.5
	50% of total cover: 10	20% of t	otal cover:	4%	Column	Totals:	120% (A)	5.1 (B)
Herb Stratum (Plo	ot size: 5' Radius)					Prevalence Inc	lex = B/A =	4.25
1. Elymus repens		90%	Y	FACU				
2. Bromus inermis		10%		UPL	Hydrop	hytic Vegetation	Indicators:	
3.						1 - Rapid Test f	or Hydrophytic Vege	etation
4.						2 - Dominance	Test is >50%	
~						3 - Prevalence	Index is ≤3.0 ¹	
6.						4 - Problematic	Hydrophytic Vegeta	ition ¹ (Explain)
7								
8.					¹ Indicate	ors of hydric soil a	and wetland hydrolog	gy must be present,
9.					unless d	isturbed or proble	matic.	
10.								
		100%	= Total Cove	er				
	50% of total cover: 50	0% 20% of t	otal cover:	20%				
Woody Vine Stratum	(Plot size: 15' Radiu	s)			Hydrop	hytic Vegetation	Present? Yes	No X
1.								
2.								
		0%	= Total Cove	er				
	50% of total cover: 0	20% of t	otal cover:	0%				
% Bare Ground in Herb	Stratum				_			
Remarks: (If observed,	list morphological adaptation	s below.)			_			
Vegetation parame	eter not met.							

IL						Sampling Point:	DP-13L
Profile Description: (Describe to the	e depth needed to	document the ir	ndicator or confir	m the abser	nce of indicators.)		
Depth Matrix		Bod	lox Features				
				Loc ²	Texture	Remarks	
(inches) Color (moist)		r (moist) %	Type ¹	LOC		Remarks	
0-12 10YR 2/1	100				loam		
12-19 10YR 4/2	100				sandy loam	no redox fea	atures
19-25 10YR 6/3	100				sandy loam		
¹ Type: C=Concentration, D=Depletic	on, RM=Reduced	Matrix, CS=Cove	ered or Coated S	Sand Grains		² Location: PL=Pore Lin	
Hydric Soil Indicators:						Indicators for Prob. Hy	dric Soils":
Histosol (A1)		Sandy	Gleyed Matrix (S	64)		1 cm Muck (A9) (LRR	(I&J)
Histic Epipedon (A2)		Sandy	Redox (S5)			Coast Prairie Redox (A16) (LRR F.
Black Histic (A3)			d Matrix (S6)			Dark Surface (S7) (LF	
			ralMucky Minea	(51)		High Plains Depressio	,
Hydrogen Sulfide (A4)						·	
Stratified Layers (A5) (LRR F)			Gleyed Martix (I	-2)			A 72 &73 LRR
1 cm Muck (A9) (LRR F, G, H)		Deplete	ed Matrix (F3)			Reduced Vertic (F18)	
Depleted Below Dark Surface (A	11)	Redox	Dark Surface (F	6)		Red Parent Material (TF2)
Thick Dark Surface (A12)		Deplete	ed Dark Surface	(F7)		V. Shallow Dark Surf.	(TF12)
Sandy Mucky Mineral (S1) (LRR	O, S)	Redox	Depressions (F8	3)		Other (Explain in Rem	narks)
2.5 cm Mucky Peat or Peat (S2)	-		lains Depression	,		³ Indicators of hydrophyt	,
5 cm Mucky Peat or Peat (S3) (L			MLRA 72 &73 LF			wetland hydrology must disturbed or problematic	be present, ur
Retrictive Layer (if observed):					Hydric Soil		·-
Туре:						Yes	No
Depth (inches):							
Deptil (illelles).							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of one is	required: check	all that apply)			Secondary Indicate	ors (minimum of two required)	
Surface Water (A1)		11 27				Soil Cracks (B6)	
		Crust (B11)				()	
High Water Table (A2)	!	itic Fauna (B13)			· · ·	Vegetated Concave Surface (B8)
Saturation (A3)		Deposits (B15) (e Patterns (B10)	
Water Marks (B1)		ogen Sulfide Od	()			Rhizospheres on Living Roots	(C3)
Sediment Deposits (B2)	Dry-S	Season Water Ta	able (C2)		,	Burrows (C8)	
Drift Deposits (B3)	Oxidi	zed Rhizosphere	es on Living Roc	ots (C3)	Saturatio	on Visible on Aerial Imagery (CS	9)
Algal Mat or Crust (B4)	Prese	ence of Reduced	d Iron (C4)		Geomor	phic Position (D2)	
Iron Deposits (B5)	 Rece	ent Iron Reductio	n in Tilled Soils	(C6)		utral Test (D5)	
				(00)			
Inundation Visible on Aerials (B7 Water-Stained Leaves (B9)		Muck Surface (0 r (Explain in Ren			FIUSI HE	ave Hummocks (D7) (LRR F)	
Field Observations:							
Surface Water Present? Ye	s No X	Depth (inche	s).		Wetland Hydro	logy Present?	
Water Table Present? Ye				>25		Yes	No
			·	20		100	
Saturation Present? Ye	s <u>No X</u>	Depth (inche	sj.				
(includes capillary fringe)							
Describe Recorded Data (stream gau	ge, monitoring we	ell, aerial photos,	previous inspec	tions), if ava	ailable:		
Remarks: Hydrology parame	eter not met.						
Antecedent Precipitation Tool (APT) r	eported normal ra	infall conditions	for the Grand Fo	orks area. F	SDI indicated extrem	e drought. On-site observations	s suggest drie
al conditions.							



DP-13-U: Non-hydric soils at upland data point

Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-13W
Investigators:	C. Lotts; M. Hayes; K. Erwin	; M. Correiro		nship, Range:		0	
Landform:	ditch bottom		Local relief (concave,convex,		Slope (%):	0-2
Subregion (LRR or MLRA): Soil Map Unit Name:	LRR F Grimstad fine sand	Lat:	paraant alanaa	Long	NWI classification:	Datum:	NAD83
1	itions on the site typical for thi			Yes	No X	(If no, explain in Re	emarks)
Are Vegetation	Soil or Hydrology	-	ficantly disturb		Normal Circumstances" pre		enans.) esNo_X_
Are Vegetation	Soil or Hydrology		rally problema		eded, explain any answers		
<u> </u>	IGS - Attach site map s			,			
	-	snowing sa		it locations,		leatures, etc.	
Hydrophytic Vegetation	Present?	Yes X		No	Is the Sampled Area		
Hydric Soils Present?		Yes X		No	within a Wetland?	Ye	es X No
Wetland Hydrology Pres	sent?	Yes X	_	No			
Climatic/hydrologic weeks prior to the s (August and Septer	varameters met. conditions are not typical for survey and normal rainfall con mber 2023) and moderate dro cators, and hydrology.	ditions the wee	k prior and we	ek of the field vis	sit . However PSDI indicated	d severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plants					Sampling Point:	DP-13W
		Absolute	Dominant	Indicator	Dominance Test works	heet:	
Tree Stratum (Plo	t size: 30' Radius)	<u>% Cover</u>		<u>Status</u>	Number of Dominant Spe		
1. Fraxinus pennsylva	· · · · · · · · · · · · · · · · · · ·	10%	Y	FAC	Are OBL, FACW, or FAC		(A)
2.					Total Number of Domina	nt Species	
3.					Across All Strata:	3	(B)
4.					Percent of Dominant Spe		
		10%	= Total Cove	er	Are OBL, FACW, or FAC	100	0% (A/B)
			otal cover:	2%			
Sapling/Shrub Stratum	(Plot size: 15'	Radius)		Prevalence Index works	sheet:	
1.					Total % Cover of:	900/ × 1 –	0.9
2. 3.					OBL species FACW species	80% x 1 = 60% x 2 =	0.8
					FAC species	10% x 3 =	0.3
5.					FACU species	1% x 4 =	0.04
		0%	= Total Cove	er	UPL species	0% x 5 =	0
	50% of total cover: 0	% 20% of to	otal cover:	0%	Column Totals:	151% (A)	2.34 (B)
Herb Stratum (Plo	t size: 5' Radius)				Prevalence Ir	ndex = B/A =	1.55
1. Carex utriculata		70%	Y	OBL			
2. Phalaris arundinace	ea	60%	Y	FACW	Hydrophytic Vegetation		
3. Typha angustifolia		10%		OBL		for Hydrophytic Veget	ation
4. Cirsium arvense		1%		FACU	X 2 - Dominance 3 - Prevalence		
5. 6.						c Hydrophytic Vegetati	ion ¹ (Evolain)
7							
°					¹ Indicators of hydric soil	and wetland bydrolog	v must be present
0					unless disturbed or probl	, ,	y must be present,
10.							
		141%	= Total Cove	er			
	50% of total cover: 7	1% 20% of to	otal cover:	28%			
Woody Vine Stratum	(Plot size: 15' Radiu	s)			Hydrophytic Vegetatio	n Present? Yes	X No
2.							
		0%	= Total Cove				
		20% of to	otal cover:	0%			
% Bare Ground in Herb					_		
	list morphological adaptations	s delow.)					
Vegetation parame	ter met.						

Death Maria Redox Forulates 00-3 Color (most) % Type Loc ¹ Texture Remarks 1 Color (most) % Type Loc ¹ Texture Remarks 1 Color (most) % Type Loc ¹ Texture Remarks 1 Type Color (most) % Type Loc ¹ Texture Remarks 1 Type Color (most) % Texture Remarks Remarks 1 Type Color (most) Sandy Eddox (S5) Image: Texture Image: Texture Image: Texture Image: Texture Texture Remarks Remarks Remarks Remarks Remarks Remarks Remarks Image: Texture Te	(inches) Calar (molet) % Type Loc ² Texture Remarks 0-3 10YR 2/1 00 sandy loam	L							Sampling Point: DP-	-13W
Image: solution of the	Image: solution in the solution of the	Profile Descriptio	n: (Describe to the d	lepth nee	eded to docume	ent the inc	dicator or confi	rm the abse	nce of indicators.)	
Image: solution of the	Image: solution in the solution of the									
102 1007R 4/2 100 joam 2-6 1007R 4/2 100 sandy loam 6-12 107R 7/2 97 107R 56 3 C M sandy loam Type: C-Concentration: D=Depletion: RM-Reduced Matrix, CS+Covered or Couled Sund Grains. * Location: PL-Devr Lining, M-Matrix Type: C-Concentration: D=Depletion (A2) Sandy Reducet (S5) - - 1 or McA/R0 (LRR 1.4.1) Helster Explane (A2) Sandy Reducet (S5) - - 1 or McA/R0 (LRR 1.4.1) - Dark Strates (S7) (LRR 0.5) - - Casat Pariar Reducet (S1) (LRR 7.10) (LRR 7.10	102 1007R 4/2 100 John 2-6 1007R 4/2 97 1007R 5/6 3 C M sundy loam 6-12 107R 7/2 97 107R 5/6 3 C M sundy loam Type: C-Concentration: D=Depletion; RM=Reduced Matrix, CS=Covered or Coaled Sand Grains. * Location: PL=Pure Lining, M=Matrix, Yuget Sail Indicators: Indicators: Indicators: Indicators for Prob. Hydric Soils Helsce (A) Sandy Reduct; (SS) 1 1 ch(A) (A) (LRR 1.4.1) Helsce (A) Sandy Reduct; (SS) 1 ch(A) (A) (LRR 1.4.1) Cocat Pariat Reduct; (A) (LRR 1.4.2) Hydrog (A) (LRR F, G, I) Learry Gloped Matrix (S3)	•						-		
3.4 10/R 4/2 100 andy loam 6-12 10/R 7/2 pr 10/R 5/6 3 C M sendy loam Type: C=Concentualion: D=Depletion: RM=Reduced Matrix, CS=Covered or Coalad Sand Grains ? Locator: PL=Pare Lining, M=Matrix Type: C=Concentualion: D=Depletion: RM=Reduced Matrix, CS=Covered or Coalad Sand Grains ? Locator: PL=Pare Lining, M=Matrix Histoc (A1)	3.4 10/R 4/2 100 asandy loam 6-12 10/R 7/2 97 10/R 5/6 3 C M seandy loam Type: C 10/R 7/2 97 10/R 5/6 3 C M seandy loam Type: C=Concentration 97 10/R 5/6 3 C M seandy loam Type: C=Concentration D=Depletion R/A Red		. ,	%	Color (moist)	%	Type ¹	Loc ²		
6-12 10/VR 7/2 97 10/VR 56 3 C M sandy loam Type: Chockentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Dove Lining, M-Matrix Type: Chockentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. * Location: PL=Dove Lining, M-Matrix Histor Call Sandy Reduct (SS) * or MAck A(A) (LRR 1, A) Coate Phain Reduct (N) (LRR 7, A) Black Hule (A) Sandy Reduct (SS) - or Mack A(A) (LRR 1, A) Coate Phain Reduct (N) (LRR 7, A) Hydrogen Suffice (A) Loarry/Makod Matrix (S) Red Parent Materix (TP) Red Parent Materix (TP) To Mack (A) LRR 7, C, B) Loarry/Makod Matrix (F2) Red Parent Materix (TP) Red Parent Materix (TP) Sandy Mack Water (A1) Reduce Depresions (F16) Parent Materix (TP) Reduce Materix (F17) Sandy Mack Water (A1) Mack Depletion Device (F16) Parent Materix (TP) Parent Materix (TP) Sandy Mack Water (A1) Mack Depletion Device (F16) Parent Materix (TP) Parent Materix (TP) Sandy Mack Water (A1) Mack Depletion Device (F16) Parent Materix (TP) ParentMaterix (TP) Sand Mac	6-12 10/VR 7/2 97 10/VR 56 3 C M samely loam Type: C 0.0 3.0 M samely loam * Location: * Location: PL PL <td< td=""><td>0-3</td><td>10YR 2/1</td><td>100</td><td></td><td></td><td></td><td></td><td>loam</td><td></td></td<>	0-3	10YR 2/1	100					loam	
Type: C=Concentration. D=Depletion. RM=Reduced Matrix. CS=Covered or Coaled Sand Grains. ² Location: PL=Pote Lining. M=Matrix yten Soil Indicators: Histosoil (A1) Sandy Redox (S5) Indicators for Prob. Hydric Soils* Histosoil (A1) Sandy Redox (S5) Dot Matrix (S4) Strate (A2) Sandy Redox (S5) Dot Matrix (S4) Strate (S7) (LRR F) LoamyralMucky Miner (F1) Tint (Back Surface (S7) (LRR G) Depleted Belov Dark Surface (S1) Depleted Matrix (F3) Redox Oark Surface (S7) (LRR G) Depleted Belov Dark Surface (S1) Redox Dark Surface (S1) Redox Oark Surface (S1) 2.5 cm Mucky Mineral (S1) (LRR C A H) Depleted Matrix (F3) Redox Oark Surface (F1) 2.5 cm Mucky Peat or Peat (S2) (LRR C A H) High Paints Depressions (F16) ³ Indicators of ryborphic segatation a weillamt Hydrology musk to present, un dischorts of hydrophic segatation a weillamt Hydrology musk to present, un dischorts of hydrophic segatation a weillamt Hydrology Indicators: Type: Deplete Uning Matrix (S4) Surface Strates (S1) Yets X No Surface View (S1) Matrix (S1) Surface Strates (S1) Surface View (S1) High Paints Depleted Strates (S1) Surface Strates (S1) Yets Surface View (S1)	Type: C=Concentration. D=Deptetion. RM=Reduced Matix. CS=Covered or Coaled Sand Grains. ¹ Location: PL=Pore Lining. M=Matrix. Match Solution (A1) ¹ Location: PL=Pore Lining. M=Matrix. Match Solution (A2) match Solution (A1) Coale Matrix Solution (S0) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matrix Solution (A1) Coale Matri	3-6	10YR 4/2	100					sandy loam	
Hydric Soll Indicators: Indicators for Prob. Hydric Solls*: Histocol (A1) Sandy Redox (S5) - Coast Praine Redox (A16) (LRR 16, 1) Histocol (A2) Sandy Redox (S5) - Coast Praine Redox (A16) (LRR 16, 1) Hydrogen Suttide (A3) Stratiged Layers (A5) (LRR 16, 1) - Dark Surface (S7) (LRR 6) Hydrogen Suttide (A3) - Loamy Glayer Martix (S3) - Dark Surface (S7) (LRR 6) Depicted Barks (A12) Depicted Martix (F2) - Redox Dark Matcina (F1) Sandy Mickly OLRR 5, G, H) - Depicted Martix (F3) - Redox Dark Matcina (F1) Sandy Mickly Micral (S1) (LRR 0, S) - Redox Dark Surface (F7) - V. Shallow Dark Surface (F1) Sandy Mickly Micral (S3) (LRR 6) - Mickly Paat or Peat (S3) (LRR F) - Mickly Paat or Peat (S3) (LRR F) Secondary Indicators (minimum of one is required; check all that apply) - Vest X No Secondary Indicators (minimum of one is required; check all that apply) Sarface Soll Cocave Surface (B8) - Spatial Darks Marke (B1) Surface Marke (B1) - Mickla Phicespheres on Living Robis (C3) - Spatial Darks Marke (B2) - Spatial Darks Marke (B2) Sarface Water (A1) Sattroce of Reduced Iron (C1) - Spatial Darke Marke (B3) - Spatiame Marke (B3) </td <td>Hydric Soll Indicators: Indicators for Prob. Hydric Solls?: Histocol (A1) Sandy Redox (S5) </td> <td>6-12</td> <td>10YR 7/2</td> <td>97</td> <td>10YR 5/6</td> <td>3</td> <td>С</td> <td>М</td> <td>sandy loam</td> <td></td>	Hydric Soll Indicators: Indicators for Prob. Hydric Solls?: Histocol (A1) Sandy Redox (S5)	6-12	10YR 7/2	97	10YR 5/6	3	С	М	sandy loam	
Hydric Soll Indicators: Indicators for Prob. Hydric Solls*: Haicesol (A1) Sandy Gleyed Matix (S4) - tor Muck (A9) (LRR 1 & 1) Haicesol (A2) Sandy Redox (S5) - Coast Praine Redox (A16) (LRR F, 6) Hydrogen Sulfide (A4) Loamyrablucky Minea (F1) - Balox Haite (A2) - Dark Surface (A72) Statilide Layers (A5) (LRR F, 5, H) Loamyrablucky Minea (F2) - (F16) (MLRA 72 X73 LRR F) - Coast Praine Redox (A17) Depleted Beark Surface (A12) Depleted Matix (F2) - Redox Dark Surface (A17) - Redox Dark Surface (F7) - V. Shallow Dark Surface (A17) Sandy Mucky Part or Peat (S3) (LRR 6) High Plains Depresentions (F16) - Other (Edgalan in Remarks) 2.5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 873 LRR H) - Vest X is No Vest X No - Secondary Indicators (minimum of one is required) - Secondary Indicators (minimum of two required) Surface Water (A1) Sati Crust (B11) - Secondary Indicators (minimum of two required) - Secondary Indicators (minimum of two required) Surface Water (A1) Sati Crust (B11) - Secondary Indicators (minimum of two required) - Secondary Indicators (minimum of two required) Surface Water (A1) Sati Crust (B11) <	Hydric Soll Indicators: Indicators for Prob. Hydric Solls ¹ : Halcesol (A1) Sandy Redox (S5) - f cm Muck (A9) (LRR I & J) Halcesol (A2) Sandy Redox (S5) - Coast Prain Redox (A16) (LRR I, 6) Hydrogen Sulfide (A4) LoamyraMucky Mines (F1) - High Plants Depressions Stratified Layers (A5) (LRR F, 5, H) Depressions (F1) - Redox Dark Surface (A12) Depleted Beak (Hard (S1) (LRR C, 5) - Redox Dark Surface (A12) - Depleted Dark Surface (F7) Sandy Mucky Paut or Peaul (S2) (LRR C, 5) - Redox Dark Surface (F7) - V, shallow Dark Surface (A12) Som Mucky Peat or Peaul (S2) (LRR C, 5) - Redox Dark Surface (F7) - V, shallow Dark Surface (A12) Som Mucky Peat or Peaul (S2) (LRR C, 5) - Redox Dark Surface (F7) - V, shallow Dark Surface (A12) Som Mucky Peat or Peaul (S2) (LRR C, 5) - Redox Dark Surface (F7) - V, shallow Dark Surface (A12) Som Mucky Peat or Peaul (S2) (LRR C, 5) - Redox Dark Surface (A12) - Other (CB2) Som Mucky Peat or Peaul (S2) (LRR C) - Muck A12 - Other (CB2) Surface Mark (A11) - Saft Chart (B11) - Saft Chart (B11) Surface Mark (A12) - Saft Chart (B11) - Saft Chart (B11) <									
Halsos (A1)	Halace (A1)			RM=Re	duced Matrix, C	S=Cove	red or Coated	Sand Grains		•
Histic Epipedon (A2) Bandy Redox (S5) Coast Praine Redox (A16) (LRR R) Hydrogen Suffide (A4) Stripped Matrix (S2) Coast Praine Redox (A16) (LRR R) Stratified Layers (A3) (LRR R) Loamy Gleyed Matrix (F2) (F16) (LRR R) Depleted Below Dark Surface (A11) Redox Dark Surface (F7) Redox Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR R, S) High Plains Depressions (F16) Stratile Uayers (F3) (LRR G) S om Mucky Meter (F3) (LRR G, S) High Plains Depressions (F16) Stratile Uayers (F3) (LRR G) S om Mucky Peat or Peat (S2) (LRR G) High Plains Depressions (F16) Stratile Uayers (F3) (LRR G) S om Mucky Peat or Peat (S2) (LRR G) High Plains Depressions (F16) Stratice Vatice (F12) S om Mucky Peat or Peat (S2) (LRR G) High Plains Depressions (F16) Stratice Vatice (F12) S om Mucky Peat or Peat (S2) (LRR G A) High Plains Depressions (F16) Stratice Vatice (F12) Stratice Vatice (A1) Satice (A11) Stratice Vatice (A11) Stratice Vatice (A11) Suffice Soil Cracks (B1) Mucky Peat or Paint (S2) Yes X No Suffice Vatice (A1) Satic Crus (B11) Stratifice Vatice (A1) Stratifice Vatice (A1) Hydrology Indicators High Plains (B12) <t< td=""><td>Histic Epipedon (A2) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Black Histic (A3) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Stratified Layers (A3) (LRR F, M) Loamy Glayed Matrix (F2) (F16) (LBR F, M) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Redox Dark Surface (F6) Depleted Below Dark Surface (A12) Sangh Mucky Mineral (S1) (LRR C, S) Redox Dark Surface (F6) Sond Mucky Meter (F3) (LRR G, S) High Plains Depressions (F8) "Indicators of hydrophytic vagetation a wetland hydrology must be prostent, un disturbed or problematic. 25 om Mucky Peat or Peat (S2) (LRR G A) High Plains Depressions (F18) "Indicators (minimum of one is required; check all that apply) Yee: </td><td>Hydric Soil Indica</td><td>itors:</td><td></td><td></td><td></td><td></td><td></td><td>Indicators for Prob. Hydric Soils</td><td>s":</td></t<>	Histic Epipedon (A2) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Black Histic (A3) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Stratified Layers (A3) (LRR F, M) Loamy Glayed Matrix (F2) (F16) (LBR F, M) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Redox Dark Surface (F6) Depleted Below Dark Surface (A12) Sangh Mucky Mineral (S1) (LRR C, S) Redox Dark Surface (F6) Sond Mucky Meter (F3) (LRR G, S) High Plains Depressions (F8) "Indicators of hydrophytic vagetation a wetland hydrology must be prostent, un disturbed or problematic. 25 om Mucky Peat or Peat (S2) (LRR G A) High Plains Depressions (F18) "Indicators (minimum of one is required; check all that apply) Yee:	Hydric Soil Indica	itors:						Indicators for Prob. Hydric Soils	s":
Histic Epipedon (A2) Bandy Redox (S5) Coast Praine Redox (A16) (LRR R) Hydrogen Suffide (A4) Stripped Matrix (S2) Coast Praine Redox (A16) (LRR R) Stratified Layers (A3) (LRR R) Loamy Gleyed Matrix (F2) (F16) (LRR R) Depleted Below Dark Surface (A11) Redox Dark Surface (F7) Redox Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR R, S) High Plains Depressions (F16) Stratile Uayers (F3) (LRR G) S om Mucky Meter (F3) (LRR G, S) High Plains Depressions (F16) Stratile Uayers (F3) (LRR G) S om Mucky Peat or Peat (S2) (LRR G) High Plains Depressions (F16) Stratile Uayers (F3) (LRR G) S om Mucky Peat or Peat (S2) (LRR G) High Plains Depressions (F16) Stratice Vatice (F12) S om Mucky Peat or Peat (S2) (LRR G) High Plains Depressions (F16) Stratice Vatice (F12) S om Mucky Peat or Peat (S2) (LRR G A) High Plains Depressions (F16) Stratice Vatice (F12) Stratice Vatice (A1) Satice (A11) Stratice Vatice (A11) Stratice Vatice (A11) Suffice Soil Cracks (B1) Mucky Peat or Paint (S2) Yes X No Suffice Vatice (A1) Satic Crus (B11) Stratifice Vatice (A1) Stratifice Vatice (A1) Hydrology Indicators High Plains (B12) <t< td=""><td>Histic Epipedon (A2) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Black Histic (A3) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Stratified Layers (A3) (LRR F, M) Loamy Glayed Matrix (F2) (F16) (LBR F, M) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Redox Dark Surface (F6) Depleted Below Dark Surface (A12) Sangh Mucky Mineral (S1) (LRR C, S) Redox Dark Surface (F6) Sond Mucky Meter (F3) (LRR G, S) High Plains Depressions (F8) "Indicators of hydrophytic vagetation a wetland hydrology must be prostent, un disturbed or problematic. 25 om Mucky Peat or Peat (S2) (LRR G A) High Plains Depressions (F18) "Indicators (minimum of one is required; check all that apply) Yee: </td><td></td><td></td><td></td><td></td><td></td><td></td><td>.</td><td></td><td></td></t<>	Histic Epipedon (A2) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Black Histic (A3) Bandy Redox (S5) Coast Praine Redox (A16) (LBR F, M) Stratified Layers (A3) (LRR F, M) Loamy Glayed Matrix (F2) (F16) (LBR F, M) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Redox Dark Surface (F6) Depleted Below Dark Surface (A12) Sangh Mucky Mineral (S1) (LRR C, S) Redox Dark Surface (F6) Sond Mucky Meter (F3) (LRR G, S) High Plains Depressions (F8) "Indicators of hydrophytic vagetation a wetland hydrology must be prostent, un disturbed or problematic. 25 om Mucky Peat or Peat (S2) (LRR G A) High Plains Depressions (F18) "Indicators (minimum of one is required; check all that apply) Yee:							.		
Bisck Hale (A3) Excepted Matrix (S3) Dark Surface (S7) (LRR G) Hydrogen Suffide (A4) LoamyralMudxy Mines (F1) High Plains Depressions Stratified Layers (A5) (LRR F) LoamyralMudxy Mines (F1) Reducous (F1) Depleted Buttix (F2) Reducous Surface (A12) Reducous Surface (F6) Sandy Mudxy Mines (S1) (LRR O, S) Reducous Surface (F7) Reducous Surface (F7) Sandy Mudxy Mines (S1) (LRR O, S) Depleted Dark Surface (F7) Reducous Pressions (F16) Som Mudxy Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) -* Indicators of hydrophytic vegetation a disturbed of probernatic. Type:	Bitsch Halte (A3) Stripped Matrix (R3) Dark Surface (77) (LRR G) Hydrogen Suffide (A4) LoamyraMucky Mines (F1) High Plains Depressions Stratified Layers (A5) (LRR F) LoamyraMucky Mines (F1) Reduc Dark Surface (78) Depleted Burks Varface (A12) Reduc Dark Surface (F6) Reduc Dark Surface (77) Sandy Mucky Mines (31) (LRR 0, S) Reduc Dark Surface (F7) Reduc Dark Surface (77) Sond Mucky Peat or Peat (S2) (LRR 6 & H) High Plains Depressions (F16)		(1.2)					54)		
Hydrogen Sulidie (A)	Hydrogen Sulide (A)								_	₹ F, (
Stratified Layers (A5) (LRR F) Laarmy Gleyed Matrix (F2) C (F6) (MLRA 72 A73 LRR 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Materia (F12) Sandy Mucky (A12) Depleted Dark Surface (F13) Red Parent Materia (F12) Sandy Mucky (Mneral (S1) (LRR O, S) Redox Dark Surface (F17) W. Shallow Dark Surface (F17) Sandy Mucky (Near O Peat (S2) (LRR O S H) High Plains Depressions (F16)	Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) C (F6) (MLRA 7.2 A73 LRR 1 cm Muck (A9) (LRR F, G, H) C Depleted Boko Dark Surface (F1) Redox Dark Surface (F1) Sandy Mucky (Mneral (S1) (LRR O, S) Redox Dark Surface (F7) No Bepression (F6) Sandy Mucky (Mneral (S1) (LRR O, S) Redox Dark Surface (F7) No Bepression (F6) So m Mucky Peat or Peat (S2) (LRR O S H) High Plains Depressions (F16) The Marka Surface (F7) So m Mucky Peat or Peat (S2) (LRR O S H) High Plains Depressions (F16) The Marka Surface (F7) So m Mucky Peat or Peat (S2) (LRR O S H) (MLRA 72 873 LRR H) The Marka Surface (F7) So m Mucky Peat or Peat (S2) (LRR O S H) High Plains Depressions (F16) The Marka Surface (F7) Part Layer (If observed): (MLRA 72 873 LRR H) The Marka Surface (F7) Type: Depth (inches): Yes X No Part Layer (If observed): (MLRA 72 873 LRR H) Surface (F7) Surface (F7) No Sourdaon (Inchaster: Yes X No No No No Surface (K1) Hydrolog Mucka Plains (K1) Surface (K1) Surface (K1) Surface (K1) Surface (K1) Surface (K1) Surface (K2	Black Histic (A	43)			Stripped	d Matrix (S6)		Dark Surface (S7) (LRR G)	
Image: Appleted Below Dark Surface (A11) Redox Dark Surface (F6) Redox Dark Surface (F6) Depleted Below Dark Surface (A12) Redox Dark Surface (F7) Redox Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) -'Dther (Explain in Remarks) 2.5 cm Mucky Peat or Peat (S2) (LRR S & H) High Plains Depressions (F16) -'Dther (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR F) (MLRA 72 & 73 LRR H) -'Dther (Explain in Remarks) Remarks: Soll parameter met. Remarks: Soll parameter met. Water Marks (B1) -'Dysecond (B1) Sandworks (B1) -'Dysecond (B1) Sandworks (B1) -'Dysecond (B2) Water Marks (B1) -'Dysecond (B1) Sandworks (B1) -'Dysecond (B1) Sandworks (B1) -'Dysecond (B1) Sandwork (B1) -'Dysecond (B2) <td>Image: Contract (Ap) (LRR F (G, H) Image: Contract (Ap) Peducad Vertic (F18) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Peducad Vertic (F18) Sandy Mucky Mineral (S1) (LRR O, S) Redox Dark Surface (F7) Peducad Vertic (F18) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) Image: Contract (S1) Sond Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) Image: Contract (S1) Sond Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) Image: Contract (S1) Sond Mucky Peat or Peat (S2) (LRR G & H) (MLRA 72 & 73 LRR H) Image: Contract (S1) Retrictive Layer (If observed): Yes X No Type: </td> <td>Hydrogen Sul</td> <td>fide (A4)</td> <td></td> <td></td> <td>Loamyr</td> <td>alMucky Minea</td> <td>(F1)</td> <td>High Plains Depressions</td> <td></td>	Image: Contract (Ap) (LRR F (G, H) Image: Contract (Ap) Peducad Vertic (F18) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Peducad Vertic (F18) Sandy Mucky Mineral (S1) (LRR O, S) Redox Dark Surface (F7) Peducad Vertic (F18) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) Image: Contract (S1) Sond Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) Image: Contract (S1) Sond Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) Image: Contract (S1) Sond Mucky Peat or Peat (S2) (LRR G & H) (MLRA 72 & 73 LRR H) Image: Contract (S1) Retrictive Layer (If observed): Yes X No Type:	Hydrogen Sul	fide (A4)			Loamyr	alMucky Minea	(F1)	High Plains Depressions	
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Depided Bolow Dark Surface (A1) Redx Dark Surface (FP) Red Parent Material (TF2) Sandy Mucky Meral (S1) (LRR O, S) Redx Depressions (FB) -V. Shallow Dark Surf. (TF12) Sandy Mucky Meat or Peat (S2) (LRR G & H) High Plains Depressions (FB) -V. Shallow Dark Surf. (TF12) S cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (FB) -V. Shallow Dark Surf. (TF12) S cm Mucky Peat or Peat (S2) (LRR G & H) MULRA 72 & 73 LRR H) -V. Shallow Dark Surf. (TF12) Verticitive Layer (if observed): Type: -Verticitive Layer (if observed): -Verticitive Layer (if observed): Type: Depth (inches): -Verticitive Layer (if observed): Yes X No Renarks: Soil parameter met. Secondary Indicators (minimum of two required). Surface Warks (B1) Surface Warks (B1) Surface Warks (B1) Surface Warks (B1) Doxidige Platteres (B1)	Depicted Below Dark Surface (A1) Bepicted Dark Surface (FP) Fed Parent Material (TF2) Sandy Mucky Meral (S1) (LRR O, S) Redox Depressions (FB) -0. There (Explain In Remarks) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (FB) -0. There (Explain In Remarks) 3 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (FB) -0. There (Explain In Remarks) 3 cm Mucky Peat or Peat (S2) (LRR G & H) Muck Peat or Peat (S2) (LRR G & H) Muck Peat or Peat (S3) (LRR F) Kerictive Layer (if observed): Type:		. , . ,		x		,	-	Reduced Vertic (F18)	
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Remarks: Soil parameter met. ROLOGY Vefland Hydrology Indicators:	Remarks: Soil parameter met. ROLOGY Vefland Hydrology Indicators:		;);			-				
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Water Table Present? Yes No X Depth (inches): >12 Yes X No Saturation Present? Yes No X Depth (inches): >12 Yes X No Saturation Present? Yes No X Depth (inches): >12 Yes X No Saturation Present? Yes No X Depth (inches):	Water Table Present? Yes No X Depth (inches): >12 Yes X No Saturation Present? Yes No X Depth (inches): >12 Yes X No Saturation Present? Yes No X Depth (inches): >12 Yes X No Saturation Present? Yes No X Depth (inches):			No	X Denti	h (inches	s).		Wetland Hydrology Present?	
Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. Intecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier	Saturation Present? Yes No X Depth (inches): includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. Intecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier					•		>12		
includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met.	includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met.				·		-	- 14		10
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. Intecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier	Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology parameter met. Intecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier		•			i (incries	»)			
Remarks: Hydrology parameter met.	Remarks: Hydrology parameter met.									
Intecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier	Intecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier	Jescribe Recorded	a Data (stream gauge	e, monito	rıng well, aerial	pnotos,	previous inspe	cuons), if av	aliadie:	
Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier	Antecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extreme drought. On-site observations suggest drier									
		Remarks:	Hydrology paramete	er met.						
al conditions.	al conditions.		itation Tool (APT) rep	orted no	rmal rainfall cor	nditions f	or the Grand F	orks area. F	PSDI indicated extreme drought. On-site observations suggest	drier
		al conditions.								



DP-13-W: Depleted Matrix hydric soil indicator (F3) in FLS-10a

Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:	DP-14U
Investigators:	C. Lotts; M. Hayes; K. E	rwin; M. Correiro	Section, Towr					
Landform:	level plain LRR F		Local relief (c	oncave,convex,		none	Slope (%):	0 - 2 NAD83
Subregion (LRR or MLRA): Soil Map Unit Name:		Lat: a silt loams, 0 to 2 p	ercent slones	- Long		ssification:	Datum:	NAD65
Are climatic/hydrolgoic cond			ercent slopes	Yes	No	X	(If no, explain in R	emarks.)
Are Vegetation	Soil or Hydrol		icantly disturbe			cumstances" pres		es No X
Are Vegetation	Soil or Hydrol	ogy natur	rally problemati	c? (If ne	eded, expl	ain any answers ir	n Remarks.)	
SUMMARY OF FINDIN	NGS - Attach site ma	ap showing sar	npling poin	t locations,	transect	ts, important f	eatures, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No X	lo th	Compled Area		
Hydric Soils Present?		Yes	_	No <u>X</u>		e Sampled Area iin a Wetland?	Y	es No X
Wetland Hydrology Pres	sent?	Yes	-	No <u>X</u>				
Climatic/hydrologic weeks prior to the s (August and Septe	parameters not met. conditions are not typical survey and normal rainfall mber 2023) and moderate icators, and hydrology. 0d.	conditions the week	c prior and wee	k of the field vis	sit . Howeve	er PSDI indicated	severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of pla	nts.					Sampling Point:	DP-14U
		Absolute	Dominant	Indicator	Domina	nce Test worksh	eet:	
	ot size: 30' Radius) <u>% Cover</u>	Species	<u>Status</u>		of Dominant Spec	cies That	
1.						, FACW, or FAC:	2	(A)
2. 3.						imber of Dominant All Strata:	t Species 2	(B)
4.					Percent	of Dominant Spec		
		0%	= Total Cove	r		, FACW, or FAC:	100)% (A/B)
	50% of total cover:	0% 20% of to	tal cover:	0%				
Sapling/Shrub Stratum	(Plot size:	15' Radius)			nce Index works! Cover of:	neet:	
1. 2.					OBL spe		0% x 1 =	0
3.					FACW s		0% x 2 =	0
4.					FAC spe	ecies	70% x 3 =	2.1
5.					FACU s	· -	50% x 4 =	2
	50% of total anyon	<u>0%</u>	= Total Cove		UPL spe	—	5% x 5 =	0.25
Herb Stratum (Plo	50% of total cover: ot size: 5' Radius	0% 20% of to	tal cover:	0%	Column	Prevalence Ind	125% (A) lex = B/A =	4.35 (B) 3.48
1. Cirsium flodmanii		70%	Y	FAC				0.10
2. Sorghastrum nutar	IS	50%	Y	FACU	Hydrop	hytic Vegetation	Indicators:	
3. Euphorbia escula		5%		UPL			or Hydrophytic Vege	tation
4. E					X	2 - Dominance - 3 - Prevalence I		
5. 6.							Hydrophytic Vegetat	ion ¹ (Explain)
7						_	5 1 5 5	
8.						ors of hydric soil a listurbed or proble	nd wetland hydrolog matic.	y must be present,
10.								
		125%	= Total Cove					
	50% of total cover:	63% 20% of to	tal cover:	25%	Hudron	hytic Vegetation	Brocont?	
<u>Woody Vine Stratum</u> 1.	(Plot size: 15' Ra	, '			nyurop	mytic vegetation	Present? Yes	No
2.								
		0%	= Total Cove	r				
	50% of total cover:	0% 20% of to	tal cover:	0%				
% Bare Ground in Herb	Stratum list morphological adaptat	tiona holow)						
Vegetation parame		lions below.)						
r ogotation paramo								

Profile Description: (Describe to the Depth Matrix (inches) Color (moist)					Sampling Point:	DP-14U
	depth needed to do	cument the indicate	or or confirm the abse	nce of indicators.)		
(inches) Color (moist)		Redox Fe	atures			
, ,	% Color (m	ioist) % 1	Type ¹ Loc ²	Texture	Remarks	
0-7 10YR 2/1	100			loam		
7-10.5 10YR 4/1	100			sandy loam	no redox	
10.5-13 10YR 3/1	100			sandy loam		
13-16 10YR 6/3	60			sandy loam	not fully reduc	ced
13-16 10YR 8/1	40			sandy loam		
				_	2.	
¹ Type: C=Concentration, D=Depletior Hydric Soil Indicators:	i, RM=Reduced Mat	trix, CS=Covered c	or Coated Sand Grains	•	² Location: PL=Pore Linir Indicators for Prob. Hyd	
Histosol (A1)		Sandy Gleve	d Matrix (S4)		1 cm Muck (A9) (LRR I	& I)
Histic Epipedon (A2)	-	Sandy Gleye			Coast Prairie Redox (A	
Black Histic (A3)	-	Stripped Mat	· ,		Dark Surface (S7) (LRF	, (
Hydrogen Sulfide (A4)	-	' ' '	cky Minea (F1)		High Plains Depression	
	-		- , ,		_	
Stratified Layers (A5) (LRR F)	-		ed Martix (F2)		(F16) (MLRA	12 &13 LRR I
1 cm Muck (A9) (LRR F, G, H)		Depleted Ma			Reduced Vertic (F18)	50)
Depleted Below Dark Surface (A1)	1) -	Redox Dark	. ,		Red Parent Material (T V. Shallow Dark Surf. (
Thick Dark Surface (A12)	- -		rk Surface (F7)		_ `	,
Sandy Mucky Mineral (S1) (LRR C	-	Redox Depre			Other (Explain in Rema	-
2.5 cm Mucky Peat or Peat (S2) (L	· · ·		Depressions (F16)		³ Indicators of hydrophytic	
5 cm Mucky Peat or Peat (S3) (LR	(RF)	(MLRA	72 &73 LRR H)		wetland hydrology must b disturbed or problematic.	e present, un
Retrictive Layer (if observed):				Hydric Soils Pres	sent?	
Туре:					Yes	No
Depth (inches):						
DROLOGY						
Wetland Hydrology Indicators: Primary Indicators (minimum of one is	roquired: check all t	hat apply)		Secondary Indicators (m	inimum of two required)	
Surface Water (A1)	Salt Cru	1121		Surface Soil C	· /	
		. ,			. ,	2)
High Water Table (A2)		Fauna (B13) posits (B15) (LRR	LD.		etated Concave Surface (B8	5)
Saturation (A3)		n Sulfide Odor (C1		Drainage Patte	ospheres on Living Roots (C3)
Water Marks (B1)		son Water Table (•	Crayfish Burro		00)
Sediment Deposits (B2)		Rhizospheres on	,	•	ible on Aerial Imagery (C9)	
		e of Reduced Iron			ible en / tenar intagery (ee)	
Drift Deposits (B3)				Coomorphio D	esition (D2)	
Drift Deposits (B3) Algal Mat or Crust (B4)		ran Daduatian in T		Geomorphic P		
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	Recent I	ron Reduction in T		FAC-Neutral T	est (D5)	
Drift Deposits (B3) Algal Mat or Crust (B4)	Recent I Thin Mu	ron Reduction in T ck Surface (C7) xplain in Remarks	illed Soils (C6)	FAC-Neutral T		
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9)	Recent I Thin Mu	ck Surface (C7)	illed Soils (C6)	FAC-Neutral T	est (D5)	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9)	Recent I Thin Mu	ck Surface (C7)	illed Soils (C6)	FAC-Neutral T	est (D5) lummocks (D7) (LRR F)	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9)	Recent I Thin Mu Other (E	ck Surface (C7) xplain in Remarks	illed Soils (C6)	FAC-Neutral T Frost Heave H	est (D5) lummocks (D7) (LRR F)	No
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Water Table Present? Yes	Recent I Thin Mu Other (E	ck Surface (C7) xplain in Remarks Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H	rest (D5) lummocks (D7) (LRR F) Present?	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Water Table Present? Yes Saturation Present? Yes	Recent I Thin Mu Other (E	ck Surface (C7) xplain in Remarks Depth (inches): Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H	rest (D5) lummocks (D7) (LRR F) Present?	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Water Table Present? Yes	No X No X No X No X	ck Surface (C7) xplain in Remarks Depth (inches): Depth (inches): Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H Wetland Hydrology	rest (D5) lummocks (D7) (LRR F) Present?	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Nater Table Present? Yes Saturation Present? Yes Saturation Present? Yes Describe Recorded Data (stream gaug	No X No X No X No X No X No X No X	ck Surface (C7) xplain in Remarks Depth (inches): Depth (inches): Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H Wetland Hydrology	rest (D5) lummocks (D7) (LRR F) Present?	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Nater Table Present? Yes Saturation Present? Yes includes capillary fringe) Describe Recorded Data (stream gaug	No X No X No X No X No X No X No X	ck Surface (C7) xplain in Remarks Depth (inches): Depth (inches): Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H Wetland Hydrology	rest (D5) lummocks (D7) (LRR F) Present?	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Nater Table Present? Yes Saturation Present? Yes includes capillary fringe) Describe Recorded Data (stream gaug	No X No X No X No X No X No X No X	ck Surface (C7) xplain in Remarks Depth (inches): Depth (inches): Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H Wetland Hydrology	rest (D5) lummocks (D7) (LRR F) Present?	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerials (B7) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Nater Table Present? Yes Saturation Present? Yes includes capillary fringe) Describe Recorded Data (stream gaug	No X No X No X No X No X No X No X	ck Surface (C7) xplain in Remarks Depth (inches): Depth (inches): Depth (inches):	illed Soils (C6)	FAC-Neutral T Frost Heave H Wetland Hydrology	rest (D5) lummocks (D7) (LRR F) Present?	

DP-14-U: Dark surface with chroma too high to be considered reduced



Project/Site:	Grand S	ky			City/County:	Grand Fo	rks			Sampling I	Date:	Septe	mber 27, 202	23
Applicant/Owner:	_	orce, GFAFB			, ,	-		State:	ND	Sampling I	Point:		DP-14W	
Investigators:	C. Lotts:	M. Haves: K. E	Erwin; M. Correir	0	Section, Tow	nship. Ran	ae:	-		-				
Landform:	depressi	-			Local relief (c	• • •	•	one):	concave	Slope (%):		0 - 2		
Subregion (LRR or MLRA):		LRR F	Lat:				Long:	,		Datum:		NAD8	3	-
Soil Map Unit Name:			ka silt loams, 0 to	n 2 ne	rcent slopes	-			ssification:	-			-	-
Are climatic/hydrolgoic cond	litions on th			· ·		Yes		- No	X	(If no, expl	ain in Rer	narks)		-
Are Vegetation	Soil	or Hydro			antly disturbe		Are "N	-	cumstances" pre		Yes	,	No	x
Are Vegetation X	_	or Hydro		-	illy problemat				ain any answers		100			<u>~</u>
	_									,				
SUMMARY OF FINDI	NGS - At	tach site m	ap snowing	sam	pling poin	it locatio	ons, t	ransec	ts, important	teatures, e	etC.			
Hydrophytic Vegetation	Present?		Yes	Х		No		ls th	e Sampled Area					
Hydric Soils Present?			Yes	Х		No			nin a Wetland?		Yes	<u>x</u>	No	
Wetland Hydrology Pre	sent?		Yes	Х		No								
Remarks: All Climatic/hydrologio weeks prior to the		s are not typica							<i>,</i> ,					
(August and Septe phenology, soil ind FLS-10d.	mber 2023) and moderate									•			
VEGETATION - Use s	cientific r	names of pla	ants.							Sampling I	Point:		DP-14W	
			Abso	lute	Dominant	Indicator		Domina	nce Test works	heet:				
Tree Stratum (Plo	ot size:	30' Radius) <u>% Co</u>		Species	Status			of Dominant Spe					
1. Fraxinus pennsylv	anica		209	%	Y	FAC		Are OBL	, FACW, or FAC		2		(A)	
2.									umber of Domina	nt Species				
3.								Across /	All Strata:	_	4		(B)	
4.									of Dominant Spe					
			209	%	= Total Cove	er		Are OBL	, FACW, or FAC		50%		(A/B)	
	50% of to	otal cover:	10% 20%	of tota	al cover:	4%								
Sapling/Shrub Stratum		(Plot size:	15' Radius)			Prevale	nce Index works	sheet:				
1. Rosa arkansana			159	%	Y	FACU		Total %	Cover of:					
2.								OBL spe	ecies	2%	x 1 =		0.02	
3.								FACW s	species	1%	x 2 =		0.02	
4.								FAC spe	ecies	2%	x 3 =		0.06	
5.								FACU s	pecies	2%	x 4 =		0.08	
			159	%	= Total Cove	er		UPL spe	ecies	1%	x 5 =		0.05	
	50% of t	otal cover:			al cover:	3%		Column		8%	(A)	-		(B)
Herb Stratum (Plo	ot size:	5' Radius)			070		Column	Prevalence Ir		(/ ()	2.88	0.20	υ,
1. Typha X glauca				%	Y	OBL								
2. Euphorbia escula			509		Ý	UPL		Hydron	hytic Vegetatior	Indicators:				
3. Cirsium arvense			409		•	FACU		ingalop	1 - Rapid Test		ic Voqotal	tion		
			40			OBL			2 - Dominance	, , ,	0			
4. Carex utriculata								X	_					
5. Symphyotrichum la		1	2%			FACW		X	3 - Prevalence			1 /=		
 Apocynum cannab 7. 	binum		1%	6		FAC			4 - Problemation	c Hyaropnytic	vegetatio	n (Exp	ain)	
								¹ Indicat	ors of hydric soil	and wetland h	vdrology	muet be	nresent	
<u> </u>									listurbed or probl		, a ology		, prosent,	
10.														
			213	%	= Total Cove	er								
	50% of to	otal cover:	107% 20%	of tota	al cover:	43%								
Woody Vine Stratum	(Plot size	e: 15' R	adius)					Hydrop	ohytic Vegetatio	n Present?	Yes	х	No	
1	`		/						-				_	
2.														
			0%	6	= Total Cove	er 📃								
	50% of t	otal cover:	0% 20%	of tota	al cover:	0%								
% Bare Ground in Herb	Stratum							_						
									rex utriculate. Se					

Vegetation parameter met.

L								Sampling Point:	DP-14
Profile Description	on: (Describe to the d	epth nee	eded to docume	ent the in	dicator or confi	rm the absei	nce of indicators.)		
Depth	Matrix			Red	ox Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-13	10YR 2/1	100					loam		
13-18	10YR 3/1	100					loam		
18-25	10YR 5/2	97	10YR 4/4	3	С	М	sandy loam	distinct red	ox features
Type: C=Conce	entration, D=Depletion,	RM=Re	educed Matrix, (CS=Cove	ered or Coated	Sand Grains	 	² Location: PL=Pore Li	ning, M=Matrix
lydric Soil Indic	ators:							Indicators for Prob. Hy	ydric Soils ³ :
Histosol (A1)				Sandy (Gleyed Matrix (S4)		1 cm Muck (A9) (LRF	R I & J)
Histic Epiped	lon (A2)				Redox (S5)			Coast Prairie Redox	
Black Histic ((A3)			-	d Matrix (S6)			Dark Surface (S7) (L	
Hydrogen Su				-	alMucky Minea	a (F1)		High Plains Depressi	ons
	vers (A5) (LRR F)				Gleyed Martix				A 72 &73 LRF
	A9) (LRR F, G, H)				ed Matrix (F3)	· -/		Reduced Vertic (F18)	
	ow Dark Surface (A11)			Dark Surface (F	=6)		Red Parent Material	
X Thick Dark S	,	/		-	ed Dark Surface (r	,		V. Shallow Dark Surf	
	y Mineral (S1) (LRR O,	S)			Depressions (F			Other (Explain in Rer	
				-		,			,
	y Peat or Peat (S2) (Lf Peat or Peat (S3) (LRF		н)		ains Depressio /ILRA 72 &73 L	· · /		³ Indicators of hydrophy wetland hydrology must	tic vegetation be present, u
		,		(disturbed or problemation	
Retrictive Layer	(if observed):						Hydric Soi	ils Present?	Y No
Туре:	· · · · · · · · · · · · · · · · · · ·			-				Yes	X No
Depth (inches	s):			_					
ROLOGY									
-	s (minimum of one is re	auirad.	check all that a	(vlaat			Secondary Indicat	tors (minimum of two required)	
Surface Wate		squireu,	Salt Crust (B					e Soil Cracks (B6)	
	()		Aquatic Faur	,				ly Vegetated Concave Surface (00)
High Water T			Marl Deposit	. ,					00)
Saturation (A	,		Hydrogen Su					ge Patterns (B10) d Rhizospheres on Living Roots	c (C3)
Water Marks	. ,		Dry-Season		. ,			h Burrows (C8)	(00)
Sediment De	,		_ `		es on Living Ro	ote (C3)		ion Visible on Aerial Imagery (C	0)
Drift Deposits			_	-	-	013 (00)			5)
Algal Mat or (Presence of		· ,			rphic Position (D2)	
Iron Deposits	. ,		_		n in Tilled Soils	(C6)		eutral Test (D5)	
	isible on Aerials (B7)		Thin Muck S	urface (C	7)		Frost He	eave Hummocks (D7) (LRR F)	
X Water-Staine	ed Leaves (B9)		Other (Explai	in in Rem	narks)				
ield Observatio									
Surface Water Pre	esent? Yes	No		h (inches			Wetland Hydro	ology Present?	
Vater Table Pres	ent? Yes	No	Dept	h (inches	s):	>25		Yes	X No
Saturation Presen	nt? Yes	No	X Dept	h (inches	s):				
includes capillary	/ fringe)								
Describe Recorde	ed Data (stream gauge	, monito	ring well, aerial	photos,	previous inspe	ctions), if ava	ailable:		
Remarks:	Hydrology paramete	er met.							
	oitation Tool (APT) rep	orted no	ormal rainfall co	nditions f	or the Grand F	orks area. F	SDI indicated extrem	ne drought. On-site observation	s suggest drie
al conditions.									

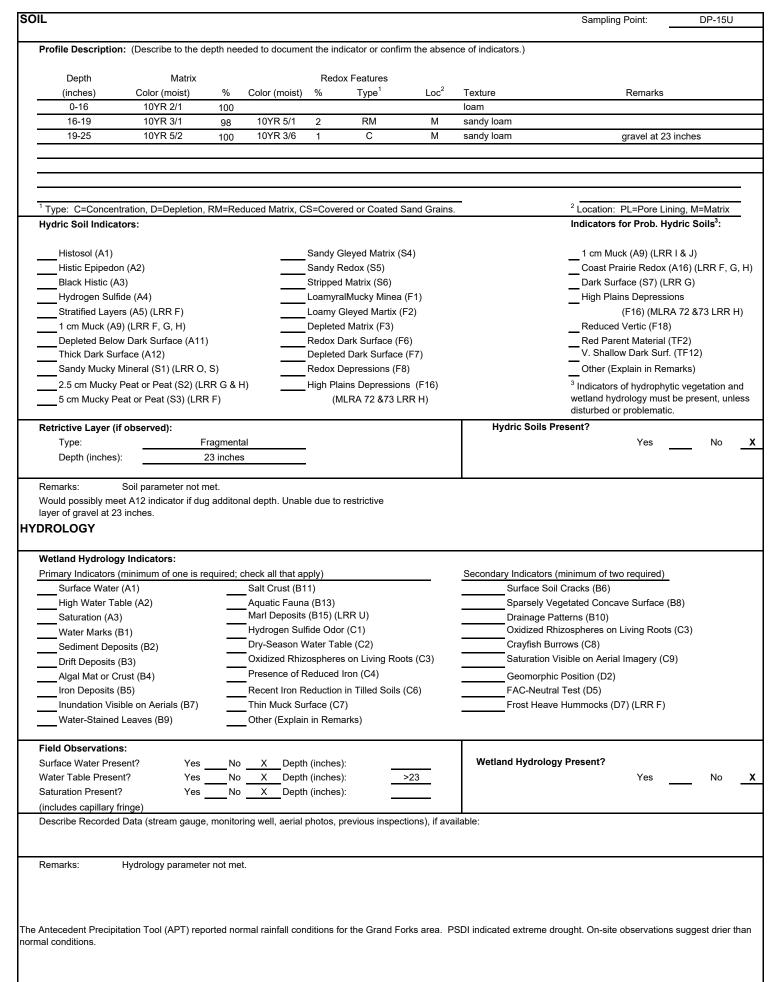
DP-14-W: Mix of vegetation with varying indicator status within FLS-10d



DP-14-W: Hydric soil indicator (Thick Dark Surface – A12)



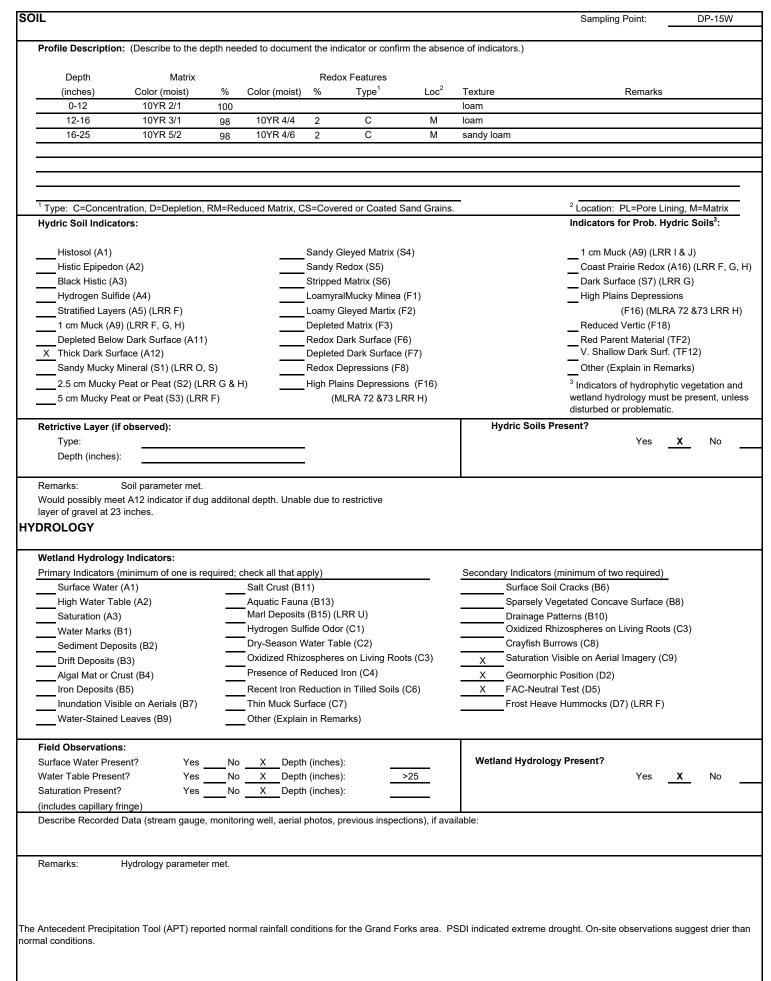
Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 27, 2023
Applicant/Owner: Investigators:	US Air Force, GFAFB C. Lotts; M. Hayes; K. En	win: M. Correiro	Section Tow	nship, Range:	State: ND	Sampling Point:	DP-15U
Landform:	level plain	win, w. coneiro		concave,convex,	none): none	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Long	· ·	Datum:	NAD83
Soil Map Unit Name:		silt loams, 0 to 2	percent slopes	-	NWI classification:	-	
Are climatic/hydrolgoic condi				Yes	No X	(If no, explain in R	emarks.)
Are Vegetation	Soilor Hydrolo	ygy sign	ficantly disturbe	ed? Are "I	Normal Circumstances" pre	esent? Y	es No X
Are Vegetation	Soil or Hydrolo	vgy natu	rally problemat	tic? (If ne	eded, explain any answers	in Remarks.)	
SUMMARY OF FINDIN	IGS - Attach site ma	p showing sa	mpling poin	nt locations,	transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes	_	No X	Is the Sampled Area		
Hydric Soils Present?		Yes	_	No <u>X</u>	within a Wetland?		es No X
Wetland Hydrology Pres	sent?	Yes	_	No X			
Climatic/hydrologic weeks prior to the s (August and Septer phenology, soil indi	survey and normal rainfall o	conditions the wee drought from May	k prior and wee to July 2023. O	ek of the field visi	Tool (APT) reported below it . However PSDI indicated ons suggest drier than norm	d severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plan	ıts.				Sampling Point:	DP-15U
		Absolute	Dominant	Indicator	Dominance Test works	heet:	
	t size: 30' Radius) <u>% Cover</u>	Species	Status	Number of Dominant Spe		
1.					Are OBL, FACW, or FAC		(A)
2. 3.					Total Number of Domina Across All Strata:	nt Species 2	(B)
4.					Percent of Dominant Spe		(D)
		0%	= Total Cove	er	Are OBL, FACW, or FAC		% (A/B)
	50% of total cover:	0% 20% of to	otal cover:	0%			
Sapling/Shrub Stratum	(Plot size:	15' Radius)		Prevalence Index works	sheet:	
1					Total % Cover of:		
					OBL species	<u> 0% </u>	0
					FACW species	0% x 2 = 0% x 3 =	0
4. 5.					FAC species FACU species	0% x 3 = 50% x 4 =	2
J		0%	= Total Cove	2r	UPL species	<u>45%</u> x 5 =	2.25
	50% of total cover:		otal cover:	0%	Column Totals:	95% (A)	4.25 (B)
Herb Stratum (Plo	t size: 5' Radius)			Prevalence Ir		4.47
1. Bromus inermis		40%	Y	UPL			
2. Sorghastrum nutan	S	30%	Y	FACU	Hydrophytic Vegetation		
3. Helianthus maximili	iani	10%		FACU		for Hydrophytic Vege	tation
4. Rosa arkansana		10%		FACU	2 - Dominance		
5. Euphorbia escula		5%		UPL	3 - Prevalence	e Index is ≤3.0° c Hydrophytic Vegetat	ion ¹ (Evaloin)
6. 7.					4 - Flobleman		
					¹ Indicators of hydric soil	and wetland hydrolog	v must be present
0					unless disturbed or probl	, ,	y must be present,
10.							
		95%	= Total Cove	er			
	50% of total cover:	48% 20% of to	otal cover:	19%			
Woody Vine Stratum	(Plot size: 15' Rad	dius)			Hydrophytic Vegetatio	n Present? Yes	No X
1.							
2.							
		0%	= Total Cove				
	50% of total cover:	0% 20% of to	otal cover:	0%			
% Bare Ground in Herb					_		
	list morphological adaptati	ons below.)					
Vegetation paramet	ter not met.						

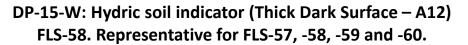


DP-15-U: Dark surface with low chroma but not enough Redox Features to be considered reduced matrix



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-15W
Investigators:	C. Lotts; M. Hayes; K. Erwin; M	. Correiro	Section, Tow	nship, Range:			
Landform:	depression	_	Local relief (o	concave,conve	x,none): concave	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Lo	ng:	Datum:	NAD83
Soil Map Unit Name:	Antler-Mustinka silt loa	ams, 0 to 2 p	percent slopes		NWI classification:		
Are climatic/hydrolgoic cond	itions on the site typical for this tir	ne of year?		Yes	No X	(If no, explain in F	Remarks.)
Are Vegetation	Soil or Hydrology	sign	ficantly disturbe	ed? Are	"Normal Circumstances" pre	esent? Y	'es <u>No X</u>
Are Vegetation	Soil or Hydrology	natu	rally problemat	tic? (If ı	needed, explain any answers	in Remarks.)	
SUMMARY OF FINDIN	NGS - Attach site map sho	owing sar	npling poir	t locations	, transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes X	_	No	Is the Sampled Area		
Hydric Soils Present?		Yes X	_	No	within a Wetland?	Υ	res X No
Wetland Hydrology Pres	sent?	Yes X	_	No			
			-				
weeks prior to the s (August and Septe phenology, soil ind	conditions are not typical for this survey and normal rainfall condition mber 2023) and moderate drough icators, and hydrology. tative for FLS-57, -58, -59 and -60	ons the weel at from May	k prior and wee	ek of the field v	risit . However PSDI indicated	d severe drought for p	reseeding two months
VEGETATION - Use se	cientific names of plants.					Sampling Point:	DP-15W
		Absolute	Dominant	Indicator	Dominance Test works	heet:	
Tree Stratum (Plo	ot size: 30' Radius)	% Cover	Species	Status	Number of Dominant Sp	ecies That	
1.	,		<u> </u>		Are OBL, FACW, or FAC		3 (A)
2.					Total Number of Domina	nt Species	
2					Across All Strata:	•	3 (B)
4.					Percent of Dominant Spe	ecies That	
		0%	= Total Cove	ar	Are OBL, FACW, or FAC		0% (A/B)
	50% of total cover: 0%	-		0%	, ,	10	<u>(</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Sapling/Shrub Stratum	(Plot size: 15' Ra	-		0 70	Prevalence Index work	abaat:	
<u>Saping/Shiub Shatum</u> 1.	(Flot size. 13 Ra	ulus	_)		Total % Cover of:	Sheet.	
2.						1E00/ x 1 -	1 5
					OBL species	<u>150%</u> x 1 =	
3.					FACW species	<u>81%</u> x 2 =	
4.					FAC species	<u>3%</u> x 3 =	
5.					FACU species	<u> 0% </u>	
		0%	= Total Cove		UPL species	<u>1%</u> x 5 =	
	50% of total cover: 0%	_ 20% of to	otal cover:	0%	Column Totals:	<u>235%</u> (A)	<u>3.26</u> (B)
	ot size: 5' Radius)				Prevalence In	dex = B/A =	1.39
1. Phalaris arundinac	ea	80%	Y	FACW			
2. Carex utriculata		80%	Y	OBL	Hydrophytic Vegetation		
3. Typha angustifolia		70%	Y	OBL		for Hydrophytic Vege	etation
4. Plantago major		2%		FAC	X 2 - Dominance		
5. Cirsium flodmanii		1%		FAC	X 3 - Prevalence		. 1
6. Mentha arvensis		1%		FACW	4 - Problemati	c Hydrophytic Vegeta	tion' (Explain)
7. Euphorbia escula		1%		UPL			
8.					¹ Indicators of hydric soil	and wetland hydrolog	gy must be present,
9.					unless disturbed or prob	ematic.	
10.							
		235%	= Total Cove	er			
	50% of total cover: 118%	20% of to	tal cover:	47%			
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrophytic Vegetatio	n Present? Yes	X No
1.		-					
2.							
		0%	= Total Cove	er			
	50% of total cover: 0%	20% of to	tal cover:	0%			
% Bare Ground in Herb							
	list morphological adaptations be	low.)					
Vegetation parame							







Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:	DP-16U
Investigators:	C. Lotts; M. Hayes; K. Erwin; N	l. Correiro	,	nship, Range:				
Landform:	level plain		Local relief (c	oncave,convex,r	· -	none	Slope (%):	0-2
Subregion (LRR or MLRA):	LRR F	Lat:		- Long:		<u> </u>	Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2 per	-		Yes	_NWI classi		(If a sum lain in D	
Are Vegetation	itions on the site typical for this ti Soil or Hydrology	-	ficantly disturbe			X Imstances" pres	(If no, explain in R	emarks.) es No X
Are Vegetation	Soil or Hydrology		rally problemat			n any answers in		
							,	
SUMMARY OF FINDIN	IGS - Attach site map sh	owing sa	mpling poin	it locations, t	transects,	, important f	eatures, etc.	
Hydrophytic Vegetation	Present?	Yes X	_	No	Is the S	ampled Area		
Hydric Soils Present?		Yes	_	No <u>X</u>	within	a Wetland?	Y	es No X
Wetland Hydrology Pres	sent?	Yes	_	No <u>X</u>				
Climatic/hydrologic weeks prior to the s (August and Septer	varameters not met. conditions are not typical for this survey and normal rainfall conditi mber 2023) and moderate droug cators, and hydrology.	ons the wee	ek prior and wee	ek of the field visi	it . However	PSDI indicated	severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plants.						Sampling Point:	DP-16U
		Absolute	Dominant	Indicator	Dominanc	e Test workshe	et:	
Tree Stratum (Plo	t size: 30' Radius)	<u>% Cover</u>		<u>Status</u>	Number of	Dominant Spec	ies That	
1.					Are OBL, F	FACW, or FAC:	1	(A)
					Total Numl Across All	ber of Dominant	•	
3. 4.						Dominant Speci	ios That	(B)
4		0%	= Total Cove	r		FACW, or FAC:	100 nes)% (A/B)
	50% of total cover: 0%			0%				(//////
Sapling/Shrub Stratum	(Plot size: 15' Ra)		Prevalenc	e Index worksh	eet:	
1.					Total % Co	over of:		
2.					OBL speci	es _	0% x 1 =	0
3.					FACW spe		0% x 2 =	0
					FAC specie		<u>65%</u> x 3 =	1.95
5.		0.01			FACU spe		<u>35%</u> x 4 =	1.4
	C00/ -ft-t-l 00/	0%	_ = Total Cove		UPL specie		<u>0%</u> x 5 = 100% (A)	<u> </u>
Herb Stratum (Plo	50% of total cover: 0% t size: 5' Radius)	20% of t	otal cover:	0%	Column To	Prevalence Ind	()	3.35 (B)
1. Solidago gigantea	(0.20) 0 Hadiao (60%	Y	FAC				
2. Andropogon gerard	fii	15%		FACU	Hydrophy	tic Vegetation I	ndicators:	
3. Sorghastrum nutan	s	10%		FACU		1 - Rapid Test fo	or Hydrophytic Vege	tation
4. Solidago canadens	is	5%		FACU	X	2 - Dominance T	est is >50%	
5. Apocynum cannabi	inum	5%		FAC		3 - Prevalence Ir		
6. Symphyotrichum ei	ricoides	3%		FACU	"	4 - Problematic I	Hydrophytic Vegetat	ion' (Explain)
7. <u>Rosa arkansana</u>		2%		FACU	1			
8. 9.						s of hydric soil a urbed or probler	nd wetland hydrolog	y must be present,
9 10							natio.	
		100%	= Total Cove	r				
	50% of total cover: 50%		otal cover:	20%				
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrophy	tic Vegetation	Present? Yes	X No
1.								
2.								
		0%	= Total Cove					
% Data Cround in Llath	50% of total cover: 0%	20% of t	otal cover:	0%				
% Bare Ground in Herb	list morphological adaptations b	elow)			-			
Vegetation parame		510 W.)						
regenation parame								

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Surface Water (A1) Salt Crust (B11) Surface High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Marl Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geomoder Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Frost H	Sampling Point: DP-16
(inches) Color (moist) % Color (moist) % Type ¹ Loc ² Texture 0-10 10YR 2/1 100 Ioam Ioam <tdioan< td=""> Ioam Ioam <t< th=""><th></th></t<></tdioan<>	
(inches) Color (moist) % Color (moist) % Type ¹ Loc ² Texture 0-10 10YR 2/1 100 Ioam Ioam <tdioan< td=""> Ioam Ioam <t< th=""><th></th></t<></tdioan<>	
0-10 10YR 2/1 100 Ioam 10-19 10YR 4/2 100 Ioam 19-21 10YR 5/1 100 Ioam 21-30 10YR 5/2 100 Ioam 21-30 10YR 5/2 100 Ioam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Type: yrict Soil Indicators: Sandy Redox (S6) Sandy Redox (S6) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Usamy Gleyad Matrix (S6) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F7) Depleted Matrix (F3) Straffied Layers (A5) (LRR C, G, H) Depleted Matrix (F3) Depleted Dark Surface (F7) Sandy Mucky Mneral (S1) (LRR O, S) Redox Depressions (F16) Straffied Sol Depressions (F16) 2 5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) Sturface Sol Depressions (F16) 5 cm Mucky Deat or Peat (S3) (LRR F) Matrix Deposits (B13) Sparse Solicators (minimum of one is required; check all that apply) Secondary Indicators Soliparamete	Demorte
10-19 10YR 4/2 100 Ioam 19-21 10YR 5/1 100 Ioam 21-30 10YR 5/2 100 sandy loam 21-30 10YR 5/2 100 sandy loam Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. grain Sandy Gleyd Matrix (S4) Histosol (A1)	Remarks
19-21 10YR 5/1 100 learn 21-30 10YR 5/2 100 sandy loarn Fype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ydric Soil Indicators: Histosol (A1)	
21-30 10YR 5/2 100 sandy loam Fype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. fvfic Soil Indicators:	no redox
Fype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ydric Soil Indicators:	
ydric Soil Indicators:	
ydric Soil Indicators:	² Location: PL=Pore Lining, M=Matrix
Histosol (A1)	Indicators for Prob. Hydric Soils ³ :
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffde (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) strictive Layer (if observed): Type: Depleted Matrix (F2) Depleted Matrix (F10) Secondary Indicators: surface Water (A1) Soil parameter not met. ROLOGY etaind Hydrology Indicators: imary Indicators (minimum of one is required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Sparse High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Mart Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfdee Cdor (C1) Oxidized Rhizospheres on Living Roots (C3) Satura Sofiment Deposits (B3) Oxidized R	
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffde (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) strictive Layer (if observed): Type: Depleted Matrix (F2) Depleted Matrix (F10) Secondary Indicators: surface Water (A1) Soil parameter not met. ROLOGY etaind Hydrology Indicators: imary Indicators (minimum of one is required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Sparse High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Mart Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfdee Cdor (C1) Oxidized Rhizospheres on Living Roots (C3) Satura Sofiment Deposits (B3) Oxidized R	1 cm Muck (A9) (LRR I & J)
Black Histic (A3) Stripped Matrix (S6) Hydrogen Suffide (A4) LoamyralMucky Minera (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) strictive Layer (if observed): Type:	Coast Prairie Redox (A16) (LRR F,
Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martx (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Bole Dark Surface (A11) Depleted Bole Dark Surface (A12) Depleted Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F6) 2.5 cm Mucky Peat or Peat (S2) (LRR F) (MLRA 72 & 73 LRR H) etrictive Layer (if observed): (MLRA 72 & 73 LRR H) peptid (inches):	Dark Surface (S7) (LRR G)
Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Martix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Hydric So trictive Layer (if observed): Type: Depth (inches): Bepth (inches): Soil parameter not met. Secondary Indicators: imary Indicators (minimum of one is required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Surface Sparse High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Hydrogen Sulfide Odor (C1) Oxidizz Drift Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Quidized Rhizospheres on Living Roots (C3) Saturation in C104) Georm Iron Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) FAC-N Iron Deposits (B5) Recent Iron Reduction in Rema	
1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F8) 2.5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 LRR H) Hydric So trictive Layer (if observed): Type: Depth (inches): Depth (inches):	High Plains Depressions
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 2.5 cm Mucky Peat or Peat (S3) (LRR F) MURRA 72 & 73 LRR H) Hydric So Type: Depleted Dark Surface (F7) Depth (inches): MURRA 72 & 73 LRR H) Hydric So Soil parameter not met. ROLOGY Soil parameter not met. Soil parameter not met. Soil parameter not met. Soil parameter not met. Soll parameter for the found (B13) Soll parameter not met.	(F16) (MLRA 72 &73 LRR
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Hydric So trictive Layer (if observed): Type: Depth (inches): Depth (inches): Hydric So Soil parameter not met. ROLOGY Secondary Indicators: imary Indicators (minimum of one is required; check all that apply) Secondary Indica Surface Water (A1) Salt Crust (B11) Synface High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Marl Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Drift Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Georm Innudation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Heatand Hydric Sole (C6)	Reduced Vertic (F18)
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Hydric So trictive Layer (if observed): Type: Depth (inches): Depth (inches): Hydric So Soil parameter not met. ROLOGY Secondary Indicators: imary Indicators (minimum of one is required; check all that apply) Secondary Indica Surface Water (A1) Salt Crust (B11) Synface High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Marl Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Drift Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Georm Innudation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Heatand Hydric Sole (C6)	Red Parent Material (TF2)
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) High Plains Depressions (F16) Strictive Layer (if observed): Type: Depth (inches):	V. Shallow Dark Surf. (TF12)
2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) High Plains Depressions (F16) Strictive Layer (if observed): Type: Depth (inches):	Other (Explain in Remarks)
s cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) strictive Layer (if observed): Type: Depth (inches):	³ Indicators of hydrophytic vegetation
Type: Depth (inches):	wetland hydrology must be present, u disturbed or problematic.
Type: Depth (inches):	
Depth (inches):	
emarks: Soil parameter not met. ROLOGY etland Hydrology Indicators: imary Indicators (minimum of one is required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Surface High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Marl Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidize Drift Deposits (B2) Dry-Season Water Table (C2) Crayfits Dift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Saturation Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geomod Iron Deposits (B5) Recent Iron Reduction in Tilled Solis (C6) Frost H Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydi eld Observations: No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 eld Observations: ves No X Depth (inches): >30 e	Yes <u>No</u>
imary Indicators (minimum of one is required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Surface High Water Table (A2) Aquatic Fauna (B13) Sparse Saturation (A3) Marl Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geomodian Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydromic aturation Present? eld Observations: Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present?? Yes	
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Saturation (A3) Marl Deposits (B15) (LRR U) Draina Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geometric Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost F Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydric eld Observations: Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No <td>ce Soil Cracks (B6)</td>	ce Soil Cracks (B6)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidized Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geometric Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost F Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hyde eld Observations: Incrace Water Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 Secure Active Activ	ely Vegetated Concave Surface (B8)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Oxidizet Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geometric Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydric eld Observations: Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No X Depth (inches): >30 escribe Recorded	age Patterns (B10)
Sediment Deposits (B2) Dry-Season Water Table (C2) Crayfis Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satura Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geometric Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hyde eld Observations: Ves No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No X Depth (inches): includes capillary fringe) escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Sections) Sections) Sections)	ed Rhizospheres on Living Roots (C3)
Oxidized Rhizospheres on Living Roots (C3) Satural Drift Deposits (B3) Oxidized Rhizospheres on Living Roots (C3) Satural Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geomodian Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydri eld Observations: Ves No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No X Depth (inches): >30 <td< td=""><td>sh Burrows (C8)</td></td<>	sh Burrows (C8)
Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Geomody Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Wetland Hydr eld Observations: Ves No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No X Depth (inches): inchudes capillary fringe) escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Secribar (Stream gauge, monitoring well, aerial photos, previous inspections), if available:	ation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-N Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Frost H eld Observations: urface Water Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 No aturation Present? Yes No X Depth (inches): >30 No aturation Present? Yes No X Depth (inches): >30 No acturation Present? Yes No X Depth (inches): >30 No acturation Present? Yes No X Depth (inches): >30 No acturation Present? Yes No X Depth (inches): >30 No acturation Present? Yes No X Depth (inches): >30 No acturation Present? Yes No X Depth (inches): >30 No acturation Present?	
Inundation Visible on Aerials (B7) Thin Muck Surface (C7) Frost H Water-Stained Leaves (B9) Other (Explain in Remarks) Frost H eld Observations: Other (Explain in Remarks) Wetland Hydrometric Hydrometr	orphic Position (D2)
Water-Stained Leaves (B9) Other (Explain in Remarks) eld Observations:	Neutral Test (D5)
eld Observations:	Heave Hummocks (D7) (LRR F)
urface Water Present? Yes No X Depth (inches): Wetland Hydr 'ater Table Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 includes capillary fringe) Depth (inches): >30 escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
ater Table Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No X Depth (inches):	
ater Table Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 aturation Present? Yes No X Depth (inches): >30 acturation Present? Yes No X Depth (inches):	Irology Present?
aturation Present? Yes No X Depth (inches): Includes capillary fringe) escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Yes No
ncludes capillary fringe) escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	···· ···
escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
emarks: Hydrology parameter not met.	
emarks: Hydrology parameter not met.	
ntecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area. PSDI indicated extre	me drought. On-site observations suggest drie
conditions.	

DP-16-U: Dominant vegetation Solidago gigantea and upland grasses



DP-16-U: Dark surface with low chroma but not enough Redox Features to be considered reduced matrix



Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	September 27, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:	DP-16W
Investigators:	C. Lotts; M. Hayes; K. Erwin; M.		,	nship, Range:				
Landform:	basin		.ocal relief (c	oncave,convex,r	,	concave	Slope (%):	0-2
Subregion (LRR or MLRA):	LRR F	Lat:		Long	-	ssification:	Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2 perce itions on the site typical for this tim			Yes	- NVI clas No	X	(If no, explain in R	omarke)
Are Vegetation	Soil or Hydrology		antly disturbe		-	cumstances" pres		enans.) esNo_X_
Are Vegetation	Soil or Hydrology		lly problemati			ain any answers in		
	IGS - Attach site map show			,			,	
Hydrophytic Vegetation	-	Yes X		No	T	,		
Hydric Soils Present?	Fiesent!	Yes X				Sampled Area	V	
-	aant?			No	with	in a Wetland?	T	es <u>X</u> No
Wetland Hydrology Pres	sent?	Yes X		No				
Climatic/hydrologic weeks prior to the s (August and Septer	parameters met. conditions are not typical for this t survey and normal rainfall condition mber 2023) and moderate drought cators, and hydrology.	ns the week p	prior and wee	k of the field visi	it . Howeve	er PSDI indicated	severe drought for p	reseeding two months
VEGETATION - Use so	cientific names of plants.						Sampling Point:	DP-16W
		Absolute	Dominant	Indicator	Domina	nce Test workshe	et:	
Tree Stratum (Plo	t size: 30' Radius)	% Cover	Species	<u>Status</u>	Number	of Dominant Spec	ies That	
1. Salix amygdaloides		5%	Y	FACW	Are OBL	, FACW, or FAC:	3	(A)
2. Salix pentandra		6%	Y	FACW		mber of Dominant	Species	
3.						All Strata:	3	(B)
4.		4.40/	T 1 1 0			of Dominant Speci ., FACW, or FAC:		00/ (A/D)
	50% of total cover: 6%	<u>11%</u> 20% of tota	= Total Cove	r 2%	ALC ODE	., 17(000, 0117(0.	100	0% (A/B)
Sapling/Shrub Stratum	(Plot size: 15' Radi			2 /0	Prevale	nce Index worksh	eet:	
1.	(1.101.01201 1.011.001	/				Cover of:		
2.					OBL spe	ecies	0% x 1 =	0
3.					FACW s	pecies	111% x 2 =	2.22
4.					FAC spe	ecies	0% x 3 =	0
5.					FACU s	pecies	0% x 4 =	0
			= Total Cove	r	UPL spe		0% x 5 =	0
	50% of total cover: 0%	20% of tota	l cover:	0%	Column		<u>111%</u> (A)	<u>2.22</u> (B)
	t size: 5' Radius)	4000/	V	FACW		Prevalence Ind	ex = B/A =	2.00
1. Phalaris arundinace	ea	100%	ř	FACVV	Hudrop	hytic Vegetation I	ndiastora	
3.					Х		or Hydrophytic Veget	tation
1					X	2 - Dominance T		auon
						3 - Prevalence Ir		
6						4 - Problematic I	-lydrophytic Vegetat	ion ¹ (Explain)
7						_		
0					¹ Indicat	ors of hydric soil a	nd wetland hydrolog	y must be present,
0					unless d	isturbed or probler	matic.	
10.								
		100%	= Total Cove	r				
	50% of total cover: 50%	20% of tota	l cover:	20%				
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrop	hytic Vegetation	Present? Yes	<u>X</u> No
1. 2.								
Z		0%	= Total Cove					
	50% of total cover: 0%	20% of tota		0%				
% Bare Ground in Herb		2070 01 1014		0.10				
-	list morphological adaptations belo	ow.)			-			
Vegetation paramet		,						

DIL								Sampling Point:	DP-16W
Profile Description	on: (Describe to the de	epth ne	eded to docum	ent the in	dicator or confin	m the abse	nce of indicators.)		
Depth	Matrix				lox Features				
(inches)	Color (moist)	%	Color (moist)) %	Type ¹	Loc ²	Texture	Remarks	
0-10	10YR 2/1	100					loam		
10-18	10YR 2/1	50					loam		
10-18	10YR 3/1	50		-		-	sandy loam	with gravel	approx. 50%
18-23	10YR 4/1	98	10YR 3/6	2	С	М	sandy loam	v	
23-28	2.5 Y 6/2	95	10YR 6/8	5	C	M	sandy loam		
							C		
¹ Type: C=Conce	entration, D=Depletion,		duced Matrix (ared or Coated S	Pand Grain		² Location: PL=Pore Lir	ning M=Matrix
Hydric Soil Indica				30-0000	Teu or Coalea C		».	Indicators for Prob. Hy	-
Hyuric Son mules	ators:							IIIUICalors for From ing	and sons .
Lister of (A4)				Cdu (Charles - Masteine /C				
Histosol (A1)				-	Gleyed Matrix (S	(4)		1 cm Muck (A9) (LRF	
Histic Epipedo					Redox (S5)			Coast Prairie Redox	
Black Histic (A	(A3)			Stripper	d Matrix (S6)			Dark Surface (S7) (LI	RR G)
Hydrogen Sul	ılfide (A4)			Loamyr	ralMucky Minea ((F1)		High Plains Depressi	ons
	/ers (A5) (LRR F)			Loamy	Gleved Martix (F	F2)			A 72 &73 LRR
	A9) (LRR F, G, H)			- '	ed Matrix (F3)	2,		Reduced Vertic (F18)	
					. ,				,
	low Dark Surface (A11))			Dark Surface (F6			Red Parent Material (· · ·
X Thick Dark Su	· · ·				ed Dark Surface			V. Shallow Dark Surf.	. ,
Sandy Mucky	y Mineral (S1) (LRR O,	, S)		Redox [Depressions (F8	3)		Other (Explain in Ren	narks)
2.5 cm Muck	y Peat or Peat (S2) (LF	RRG&	H)	- Hiah Pl:	ains Depression	ıs (F16)		³ Indicators of hydrophy	tic vegetation a
	Peat or Peat (S3) (LRR		.,		MLRA 72 &73 LF	. ,		wetland hydrology must	
0 011 10.0000, 1		(1)		(NY 19		disturbed or problematic	
Retrictive Layer ((if observed):						Hydric Soil	s Present?	
	(II Observer).								× No
Type:				-				Yes	X No
Depth (inches	s):			_					
Remarks:	Soil parameter met.								
DROLOGY									
Wetland Hydrolog	••								
•	s (minimum of one is re	equired;					· · · · · ·	ors (minimum of two required)	
Surface Wate	er (A1)	_	Salt Crust (B	11)			Surface	Soil Cracks (B6)	
High Water Ta	able (A2)		Aquatic Faun	าa (B13)			Sparsely	y Vegetated Concave Surface ((B8)
Saturation (A3	. ,		Marl Deposite	, ,	LRR U)		` `	e Patterns (B10)	
Water Marks			Hydrogen Su					d Rhizospheres on Living Roots	* (C3)
	()	—	Dry-Season \		. ,			Burrows (C8)	,(00,
Sediment Dep	,				()	(00)		· · ·	
Drift Deposits	s (B3)	_		-	es on Living Roo	its (C3)	Saturatio	on Visible on Aerial Imagery (C	9)
Algal Mat or C	Crust (B4)		Presence of	Reduced	Iron (C4)		X Geomor	phic Position (D2)	
Iron Deposits	(B5) د		Recent Iron F	Reductior	n in Tilled Soils ((C6)	X FAC-Ne	utral Test (D5)	
	isible on Aerials (B7)		Thin Muck Su			. ,		eave Hummocks (D7) (LRR F)	
		—			-				
X Water-Stained	d Leaves (B9)	—	Other (Explai	in in Rem	larks)				
<u></u>									
Field Observation	ns:								
Surface Water Pre	resent? Yes	No	o <u>X</u> Dept	th (inches	s):		Wetland Hydro	ology Present?	
Water Table Prese	sent? Yes	No	D X Dept	th (inches	s)::	>28		Yes	X No
Saturation Present	nt? Yes	No	D X Dept	th (inches	s):			-	
(includes capillary	-								
	ed Data (stream gauge	monite	vring well aeria	hhotos	previous inspec	tions) if av	vailable:		
Describe Records	u Dala (Sireani guugo)	, 1101.113	The work across	μιοιου,	previous mapes	101157, 11 4			
Remarks:	Hydrology paramete	r met.							
Nemano.	Tiyurology parameter	T mot.							
t i stant Drooir	'' '' T! (ADT) rom	1	fall as	"ti-ne (C . II . Orand Ec	1 I	DODU : Baata di autrom	the state of the approximation	
	Sitation Tool (APT) repu	ortea no	rmai raintaii co	naltions i	or the Granu Fo	rks area. r	SDI Indicated extrem	ne drought. On-site observation	s suggest uner
nal conditions.									

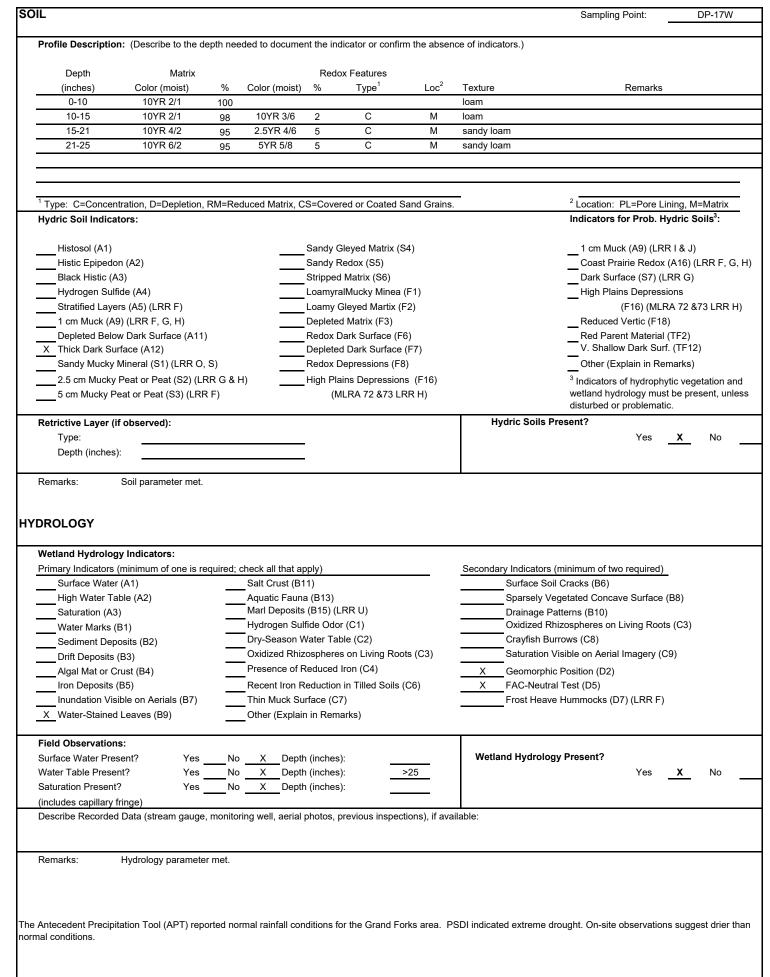
DP-16-W: Dominant vegetation *Phalaris arundinacea* at FLS-07b



DP-16-W: Hydric soil indicator (Thick Dark Surface – A12) in FLS-07b



Project/Site:	Grand Sky		City/County:	Grand Forks			Sampling Date:	September 28, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:	DP-17W
Investigators:	C. Lotts; M. Hayes; K. Erwin;	M. Correiro	Section, Tow	nship, Range:				
Landform:	depression		Local relief (c	oncave,convex,	none):	concave	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		_ Long			Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2 p				NWI cla	ssification:		
	tions on the site typical for this	-		Yes	No	X	(If no, explain in R	
Are Vegetation	Soil or Hydrology		ficantly disturbe			cumstances" prese		es No X
Are Vegetation	Soil or Hydrology	natu	rally problemat	ic? (If ne	eded, exp	ain any answers in	Remarks.)	
SUMMARY OF FINDIN	IGS - Attach site map s	howing sa	mpling poin	t locations,	transec	ts, important f	eatures, etc.	
Hydrophytic Vegetation	Present?	Yes X	_	No	Is the	e Sampled Area		
Hydric Soils Present?		Yes X	_	No		nin a Wetland?	Y	es X No
Wetland Hydrology Pres	sent?	Yes X	_	No				
Climatic/hydrologic weeks prior to the s (August and Septer phenology, soil indi	parameters met. conditions are not typical for the survey and normal rainfall cond mber 2023) and moderate drou cators, and hydrology. Ind drains to wetland FLS-02 bu	itions the wee ght from May	k prior and wee to July 2023. O	ek of the field vis n-site observation	it . Howev ons sugge	er PSDI indicated s st drier than norma	evere drought for pr	reseeding two months
VEGETATION - Use so	cientific names of plants.						Sampling Point:	DP-17W
		Absolute	Dominant	Indicator	Domina	nce Test workshe	et:]
Tree Stratum (Plo	t size: 30' Radius)	% Cover		Status		of Dominant Spec		
1. Salix pentandra	,	10%	Y	FACW		, FACW, or FAC:	2	(A)
2.					Total Nu	umber of Dominant	Species	
3.					Across	All Strata:	2	(B)
4.					Percent	of Dominant Speci	es That	
		10%	= Total Cove	r	Are OBI	, FACW, or FAC:	100	0% (A/B)
	50% of total cover: 59	6 20% of to	otal cover:	2%				
Sapling/Shrub Stratum	(Plot size: 15' F	Radius)		Prevale	nce Index worksh	eet:	
1.					Total %	Cover of:		
2.					OBL spe	ecies	15% x 1 =	0.15
3.					FACW s	pecies	85% x 2 =	1.7
4.					FAC spe	ecies	0% x 3 =	0
5.					FACU s	pecies	10% x 4 =	0.4
		0%	= Total Cove	r	UPL spe	ecies	<u>0%</u> x 5 =	0
	50% of total cover: 09	6 20% of to	otal cover:	0%	Column		110% (A)	2.25 (B)
· · · ·	t size: 5' Radius)					Prevalence Ind	ex = B/A =	2.05
1. Phalaris arundinace	ea	60%	Y	FACW				
2. Carex utriculata		15%		OBL		hytic Vegetation I		
3. Symphyotrichum la	nceolatum	10%		FACW	X	_ '	r Hydrophytic Vege	ation
4. Elymus repens		10%		FACU	X	2 - Dominance T		
5. Spartina pectinata		5%		FACW	Х	3 - Prevalence Ir		·1 (
6.						4 - Problematic i	Hydrophytic Vegetat	on (Explain)
					1			
							nd wetland hydrolog	y must be present,
					uniess c	listurbed or probler	natic.	
10								
		100%	= Total Cove					
	50% of total cover: 50		otal cover:	20%	Lindada		Descent 0	
Woody Vine Stratum	(Plot size: 15' Radius)			пуагор	ohytic Vegetation	Present? Yes	<u>X</u> No
1.								
2.		00/	- Tatal Cause					
	CO 0/ - f t - t -	0%	= Total Cove					
% Para Cround in Harb	50% of total cover: 09	<u>20% of to</u>	otal cover:	0%				
% Bare Ground in Herb		helow)			_			
	list morphological adaptations	DelOW.)						
Vegetation paramet	lei mel.							



DP-17-W: Dominant vegetation *Phalaris arundinacea* at FLS-62



DP-17-W: Hydric soil indicator (Thick Dark Surface – A12)



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 28, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-17U
Investigators:	C. Lotts; M. Hayes; K. Erwir	<u>n; M. Correiro</u>	Section, Tow	nship, Range:			
Landform:	level plain		Local relief (concave,conve	k,none): concave	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Lon		Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2	· ·			NWI classification:		
, ,	itions on the site typical for th			Yes	<u>No X</u>	(If no, explain in R	·
Are Vegetation	Soilor Hydrology		ficantly disturb		"Normal Circumstances" pre		es No X
Are Vegetation	Soil or Hydrology	nati	urally problema	tic? (If n	eeded, explain any answers	in Remarks.)	
SUMMARY OF FINDIN	NGS - Attach site map	showing sa	mpling poir	nt locations,	, transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes X	_	No	Is the Sampled Area		
Hydric Soils Present?		Yes	_	No X	within a Wetland?	Y	es No X
Wetland Hydrology Pres	sent?	Yes X	_	No			
Climatic/hydrologic weeks prior to the (August and Septe phenology, soil ind	parameters not met. conditions are not typical for survey and normal rainfall cor mber 2023) and moderate dro icators, and hydrology. 2. This data point was taken	nditions the wee bught from May	ek prior and we to July 2023. (ek of the field vi On-site observat	isit . However PSDI indicated tions suggest drier than norm	l severe drought for p nal conditions that affe	preseeding two months
VEGETATION - Use se	cientific names of plants	i.				Sampling Point:	DP-17U
		Absolute	e Dominant	Indicator	Dominance Test works	neet:	
Tree Stratum (Plo	ot size: 30' Radius)	<u>% Cover</u>		<u>Status</u>	Number of Dominant Spe	cies That	
1.	·		-		Are OBL, FACW, or FAC	: 2	2 (A)
					Total Number of Dominar	nt Species	
					Across All Strata:	2	2 (B)
4.					Percent of Dominant Spe		
		0%	= Total Cove		Are OBL, FACW, or FAC	. 100	0% (A/B)
Sopling/Shrub Stratum		<u>)%</u> 20% of t 'Radius	otal cover:	0%	Prevalence Index works	haat	
<u>Sapling/Shrub Stratum</u> 1.	(Plot size: 15	Radius	_)		Total % Cover of:	sneet:	
2.					OBL species	40% x 1 =	0.4
3.					FACW species	30% x 2 =	0.6
4.					FAC species	0% x 3 =	0
5.					FACU species	30% x 4 =	1.2
· · · ·		0%	= Total Cove	er	UPL species	0% x 5 =	0
	50% of total cover: (otal cover:	0%	Column Totals:	100% (A)	2.2 (B)
Herb Stratum (Plo	t size: 5' Radius)			070	Prevalence In		2.20
1. Carex utriculata		40%	Y	OBL			
2. Phalaris arundinac	ea	30%	Y	FACW	Hydrophytic Vegetation	Indicators:	
3. Sorghastrum nutar	IS	10%		FACU	1 - Rapid Test	for Hydrophytic Vege	tation
4. Solidago canadens	sis	10%		FACU	X 2 - Dominance	Test is >50%	
5. Andropogon gerard	dii	5%		FACU	3 - Prevalence	Index is ≤3.0 ¹	
6. Helianthus maximil	liani	3%		FACU	4 - Problematio	Hydrophytic Vegetat	ion ¹ (Explain)
7. Symphyotrichum e	ricoides	2%		FACU			
8.					¹ Indicators of hydric soil	and wetland hydrolog	y must be present,
9.					unless disturbed or proble	ematic.	
10.							
		100%	= Total Cove	er			
	50% of total cover: 5	0% 20% of t	otal cover:	20%			
Woody Vine Stratum	(Plot size: 15' Radiu	<u>s</u>)			Hydrophytic Vegetation	n Present? Yes	<u>X</u> No
2.							
	500/ 51 1 1	0%	= Total Cove				
% Dana Onavination I lash		20% of t	otal cover:	0%			
% Bare Ground in Herb		a halaw \					
	list morphological adaptation	s DeIOW.)					
Vegetation parame	aler met.						

-								· · · · ·	
Profile Description	1: (Describe to the d	enth nee	eded to docume	nt the inc	licator or confirm	m the abse	nce of indicator	e)	
Tome Description	I. (Describe to the d	epuined						5.)	
Depth	Matrix			Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-12	10YR 2/1	100		,0	1300	200	loam	Komano	
12-16	10YR 4/1		10YR 4/4	4	С	М	loam		
-		99		1	C				
16-22	10YR 6/2	99	10YR 4/4	1	C	М	loam		
Type: C=Concent	tration, D=Depletion,	RM=Re	duced Matrix, C	S=Cove	red or Coated S	and Grains	S.	² Location: PL=Pore Lining	, M=Matrix
lydric Soil Indicat	ors:							Indicators for Prob. Hydri	c Soils ³ :
Llistees (A1)				Sandy	Neved Metrix (C	A		1 am Musk (AQ) /I DD I 8	D.
Histosol (A1)				-	Bleyed Matrix (S	64)		1 cm Muck (A9) (LRR I 8	
Histic Epipedor	n (A2)			Sandy F	Redox (S5)			Coast Prairie Redox (A1	
Black Histic (A	3)			Stripped	l Matrix (S6)			Dark Surface (S7) (LRR	G)
Hydrogen Sulfi	de (A4)			Loamyra	alMucky Minea ((F1)		High Plains Depressions	
	rs (A5) (LRR F)				Gleyed Martix (F				2 &73 I RR
	9) (LRR F, G, H)				,	-,			
	, ,				d Matrix (F3)	•		Reduced Vertic (F18)	
	w Dark Surface (A11))			Dark Surface (F6	,		Red Parent Material (TF	,
Thick Dark Sur	face (A12)			Deplete	d Dark Surface	(F7)		V. Shallow Dark Surf. (T	,
Sandy Mucky N	Vineral (S1) (LRR O,	S)		Redox D	Depressions (F8	3)		Other (Explain in Remark	(s)
2.5 cm Mucky I	Peat or Peat (S2) (LF	RR G & I	H)	High Pla	ins Depression	s (F16)		³ Indicators of hydrophytic v	regetation a
-	eat or Peat (S3) (LRF		,	-	ILRA 72 &73 LF			wetland hydrology must be	
								disturbed or problematic.	
Retrictive Layer (if	observed):						Hydri	ic Soils Present?	
								Yes	No
Туре:									
Depth (inches) Remarks: The 12-16 inch laye Irought may have a	: Soil parameter not m er does not have eno affected soil conditior	ugh redo	ox features to be	e conside	ered reduce, lon	ng-term			
Depth (inches) Remarks: The 12-16 inch laye	Soil parameter not m or does not have eno	ugh redo	ox features to be	e conside	ered reduce, lon	ng-term			
Depth (inches) Remarks: The 12-16 inch laye Irought may have a	Soil parameter not m er does not have eno affected soil conditior	ugh redo	ox features to be	e conside	ered reduce, lon	ng-term			
Depth (inches) Remarks: The 12-16 inch laye Irought may have a ROLOGY Vetland Hydrology	Soil parameter not n er does not have eno affected soil condition y Indicators:	ugh redo ıs.			ered reduce, lon	ıg-term	Secondary I	ndicators (minimum of two required)	
Depth (inches) Remarks: The 12-16 inch laye Irought may have a ROLOGY Vetland Hydrology Primary Indicators (Soil parameter not n er does not have eno affected soil condition y Indicators: minimum of one is re	ugh redo ıs.	check all that ap	oply)	ered reduce, lon	ıg-term		ndicators (minimum of two required)	
Depth (inches) Remarks: The 12-16 inch laye Irought may have a ROLOGY Vetland Hydrology Primary Indicators (Surface Water	Soil parameter not mer for does not have enough ffected soil condition y Indicators: (minimum of one is re (A1)	ugh redo ıs.	check all that ap Salt Crust (B1	oply) 1)	ered reduce, lon	ng-term	Su	urface Soil Cracks (B6)	
Depth (inches) Remarks: The 12-16 inch laye Irought may have a ROLOGY Vetland Hydrology Primary Indicators (Surface WaterHigh Water Tal	Soil parameter not mer for does not have enou affected soil condition y Indicators: (minimum of one is re (A1) ble (A2)	ugh redo ıs.	<u>check all that ap</u> Salt Crust (B1 Aquatic Fauna	oply) 1) a (B13)		ng-term	Sı	urface Soil Cracks (B6) parsely Vegetated Concave Surface (B8)	
Depth (inches) Remarks: The 12-16 inch laye Irought may have a ROLOGY Vetland Hydrology Primary Indicators (Surface Water	Soil parameter not mer for does not have enou affected soil condition y Indicators: (minimum of one is re (A1) ble (A2)	ugh redo ıs.	check all that ap Salt Crust (B1 Aquatic Fauna Marl Deposits	oply) 1) a (B13) (B15) (L	RR U)	ng-term	Sı Sı Dı	urface Soil Cracks (B6) parsely Vegetated Concave Surface (B8) rainage Patterns (B10)	
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DP-17-U: Vegetation and hydrology meets wetland indicators with dominant *Carex utriculata* and *Phalaris arundinacea* and non-dominant facultative upland species present at Wetland FLS-62



DP-17-U: Dark surface with low chroma but not enough Redox Features to be considered reduced matrix



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 28, 2023
Applicant/Owner:	US Air Force, GFAFB	Ma	0 ^{(''} T		State: ND	Sampling Point:	DP-18U
Investigators:	C. Lotts; M. Hayes; K. Erwin hillslope	n; M. Correiro		nship, Range:		Slope (%):	0 - 2
Landform: Subregion (LRR or MLRA):	LRR F	Lat:	Local relief (concave,conve Lon	· · ·	Slope (%): Datum:	0-2 NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2				NWI classification:	Datum.	INADOS
•	litions on the site typical for th			Yes	No X	(If no, explain in Re	emarks)
Are Vegetation	Soil or Hydrology		nficantly disturb		"Normal Circumstances" pre		es No X
Are Vegetation	Soil or Hydrology		urally problema		eeded, explain any answers		
SUMMARY OF FINDIN	NGS - Attach site map	showing sa	mpling poir	nt locations	, transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes		No X			
Hydric Soils Present?		Yes		No X	Is the Sampled Area	Y	es No X
Wetland Hydrology Pre	cont?		_		within a Wetland?		
	sent?	Yes	_				
Climatic/hydrologic weeks prior to the (August and Septe phenology, soil ind	parameters not met. conditions are not typical for survey and normal rainfall co mber 2023) and moderate dre licators, and hydrology. De of large vegetated ditch. Si	nditions the wee ought from May	ek prior and we r to July 2023. C	ek of the field v Dn-site observa	isit . However PSDI indicated tions suggest drier than norm	severe drought for p	reseeding two months
VEGETATION - Use se	cientific names of plants	6.				Sampling Point:	DP-18U
		Absolute	e Dominant	Indicator	Dominance Test worksh		
Tree Stratum (Plo	ot size: 30' Radius)	% Cover		Status	Number of Dominant Spe		
1.	, <u>, , , , , , , , , , , , , , , , , , </u>				Are OBL, FACW, or FAC	. 0	(A)
0					Total Number of Dominar Across All Strata:	nt Species 1	(B)
4.					Percent of Dominant Spe	cies That	
		0%	= Total Cove	er	Are OBL, FACW, or FAC	: 0%	6 (A/B)
	50% of total cover:	0% 20% of t	otal cover:	0%			
Sapling/Shrub Stratum	(Plot size: 15	' Radius)		Prevalence Index works	heet:	
1.					Total % Cover of:		
					OBL species	0% x 1 =	0
					FACW species	<u>3%</u> x 2 =	0.06
					FAC species	<u>2%</u> x 3 =	0.06
5.		00/	T 1 1 0		FACU species	<u>13%</u> x 4 =	0.52
		0%	= Total Cove		UPL species Column Totals:	<u>80%</u> x 5 = 98% (A)	4 4.64 (B)
Herb Stratum (Plo	50% of total cover: (ot size: 5' Radius)	<u>0%</u> 20% of t	otal cover:	0%	Prevalence In		4.64 (B)
1. Festuca trachyphy	,	80%	Y	UPL			1.10
2. Melilotus officinalis		10%	-	FACU	Hydrophytic Vegetation	Indicators:	
3. Medicago lupulina		2%		FACU		for Hydrophytic Veget	ation
4. Sonchus arvensis		2%		FAC	2 - Dominance	Test is >50%	
5. Hordeum jubatum		2%		FACW	3 - Prevalence	Index is ≤3.0 ¹	
6. Helianthus maximi	liani	1%		FACU	4 - Problematic	: Hydrophytic Vegetati	ion ¹ (Explain)
7. Symphyotrichum la	anceolatum	1%		FACW			
8.					¹ Indicators of hydric soil		y must be present,
9.					unless disturbed or proble	ematic.	
10							
		98%	= Total Cove				
			otal cover:	20%	I hadron hadio Monototion	- Descent O	
<u>Woody Vine Stratum</u> 1.	(Plot size: 15' Radiu	/			Hydrophytic Vegetation	n Present? Yes	No <u>X</u>
2.							
<u> </u>		0%	= Total Cove				
	50% of total cover:		otal cover:	0%			
% Bare Ground in Herb							
	, list morphological adaptation	s below.)					
Vegetation parame		,					

Profile Description: (Describe to the depth needed to document the indicator or confirm the abs Depth Matrix Redox Features (inches) Color (moist) % Type1 Loc2 0-10 10YR 5/4 80 0 10 Color (moist) % Type1 Loc2 10-12 10YR 5/4 80 0 10 C M 12-18 10YR 5/4 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 0 Color (moist) % Sandy Gleyed Matrix (S4) 12-18 10YR 5/1 45 0 Sandy Gleyed Matrix (S4) Sandy Redox (S5) Black Histic (A3)	2 ² Texture Remarks clay loam clay loam clay loam clay loam clay loam clay loam 2 Location: PL=Pore Lining, M=I Indicators for Prob. Hydric Sol 	Dills ³ : _RR F, 73 LRR) ≥tation :
Inchast Color (moist) % Type1 Loc2 0-10 10YR 5/4 80 0 0 0 10YR 5/4 80 0-10 10YR 2/1 100 10 <th>clay loam loam clay loam clay loam clay loam clay loam ains. 2 Location: PL=Pore Lining, M=1 Indicators for Prob. Hydric Soi </th> <th>ERR F, 73 LRR) etation a sent, u</th>	clay loam loam clay loam clay loam clay loam clay loam ains. 2 Location: PL=Pore Lining, M=1 Indicators for Prob. Hydric Soi 	ERR F, 73 LRR) etation a sent, u
0-10 10YR 5/4 80 0-10 10YR 4/2 20 10-12 10YR 5/4 45 10YR 3/6 10 C M 12-18 10YR 5/4 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 5 5 M 12-18 10YR 5/1 45 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain tydric Soil Indicators: Histosol (A1)	clay loam loam clay loam clay loam clay loam clay loam ains. 2 Location: PL=Pore Lining, M=1 Indicators for Prob. Hydric Soi 	ERR F, 73 LRR) etation a sent, u
0-10 10YR 4/2 20 10-12 10YR 2/1 100 12-18 10YR 5/4 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 45 10YR 3/6 10 C M Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain 44 5 5 Histosol (A1)	loam clay loam clay loam clay loam ains. 2 Location: PL=Pore Lining, M=1 Indicators for Prob. Hydric Soi 	ERR F, 73 LRR) etation a sent, u
10-12 10YR 2/1 100 12-18 10YR 5/4 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 10 1	clay loam clay loam clay loam ains. 2 Location: PL=Pore Lining, M=1 Indicators for Prob. Hydric Soi 	ERR F, 73 LRR) etation a sent, u
12-18 10YR 5/4 45 10YR 3/6 10 C M 12-18 10YR 5/1 45 45 45 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain Hydric Soil Indicators:	clay loam clay loam ains. 2 Location: PL=Pore Lining, M=I Indicators for Prob. Hydric Soi 	ERR F, 73 LRR) etation a sent, u
12-18 10YR 5/1 45 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain Hydric Soil Indicators:	clay loam ains. 2 Location: PL=Pore Lining, M=I Indicators for Prob. Hydric Soi 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LF Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 & 73) Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) 3 Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present?	ERR F, 73 LRR) etation a sent, u
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain Hydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Type:	ins. ² Location: PL=Pore Lining, M=I Indicators for Prob. Hydric Soi 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LF Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) 3 Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present?	ERR F, 73 LRR) etation a sent, u
Hydric Soil Indicators: Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met. DROLOGY Soil parameter not met.	Indicators for Prob. Hydric Soi 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LF Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present?	ERR F, 73 LRR) etation a sent, u
Hydric Soil Indicators: Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met. PROLOGY Soil parameter not met.	Indicators for Prob. Hydric Soi 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LF Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present?	ERR F, 73 LRR) etation a sent, u
Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) LoamyralMucky Minea (F1) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met. PROLOGY Soil parameter not met.	 1 cm Muck (A9) (LRR I & J) Coast Prairie Redox (A16) (LF Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 & 73) Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present? 	-RR F, 73 LRR) etation a sent, u
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Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met.	Dark Surface (S7) (LRR G) High Plains Depressions (F16) (MLRA 72 &73 Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present?	73 LRR) sent, u
Hydrogen Sulfide (A4) LoamyralMucky Minea (F1) Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met.	High Plains Depressions (F16) (MLRA 72 &73 Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be press disturbed or problematic. Hydric Soils Present?) etation sent, u
Stratified Layers (A5) (LRR F) Loamy Gleyed Martix (F2) 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met.	(F16) (MLRA 72 &73) etation a sent, ur
1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type:	Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be prese disturbed or problematic. Hydric Soils Present?) etation a sent, ur
1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type:	Reduced Vertic (F18) Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be prese disturbed or problematic. Hydric Soils Present?) etation a sent, ur
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Soil parameter not met.	Red Parent Material (TF2) V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be prese disturbed or problematic. Hydric Soils Present?	etation sent, u
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) (LRR O, S) Redox Depressions (F8) 2.5 cm Mucky Peat or Peat (S2) (LRR G & H) High Plains Depressions (F16) 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter not met.	V. Shallow Dark Surf. (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic veget wetland hydrology must be prese disturbed or problematic. Hydric Soils Present?	etation sent, u
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5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter not met. ROLOGY	wetland hydrology must be prese disturbed or problematic. Hydric Soils Present?	sent, u
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 &73 LRR H) Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter not met. ROLOGY	wetland hydrology must be prese disturbed or problematic. Hydric Soils Present?	sent, u
Retrictive Layer (if observed): Type: Depth (inches): Remarks: Soil parameter not met. ROLOGY	disturbed or problematic. Hydric Soils Present?	
Type: Depth (inches): Remarks: Soil parameter not met.	-	No
Depth (inches): Remarks: Soil parameter not met. ROLOGY	Yes	No
Remarks: Soil parameter not met.		
ROLOGY		
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)	
Surface Water (A1) Salt Crust (B11)	Surface Soil Cracks (B6)	
High Water Table (A2) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)	
Saturation (A3) Marl Deposits (B15) (LRR U)	Drainage Patterns (B10)	
	Oxidized Rhizospheres on Living Roots (C3)	
	Crayfish Burrows (C8)	
	Saturation Visible on Aerial Imagery (C9)	
	Geomorphic Position (D2)	
Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6)	FAC-Neutral Test (D5)	
Inundation Visible on Aerials (B7) Thin Muck Surface (C7)	Frost Heave Hummocks (D7) (LRR F)	
Water-Stained Leaves (B9) Other (Explain in Remarks)		
ield Observations:		
Surface Water Present? Yes <u>No X</u> Depth (inches):	Wetland Hydrology Present?	
Vater Table Present? Yes No X Depth (inches): >18	Yes	No
Saturation Present? Yes No X Depth (inches):		
includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if a	available:	
Remarks: Hydrology parameter not met.		
ntecedent Precipitation Tool (APT) reported normal rainfall conditions for the Grand Forks area.		

DP-18-U: View of typical boundary between wetland and upland along Wetland FLS-01



DP-18-U: Non-hydric soils in upland data point



Project/Site:	Grand Sky		City/County:	Grand Forks		Sampling Date:	September 28, 2023
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-18W
Investigators:	C. Lotts; M. Hayes; K. Erwin; M. C	Correiro	Section, Tow	nship, Range:			
Landform:	hillslope		Local relief (c	concave,convex,r	none): concave	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Long	:	Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2 perce	nt slopes			NWI classification:		
Are climatic/hydrolgoic cond	itions on the site typical for this time	e of year?		Yes	No X	(If no, explain in Re	emarks.)
Are Vegetation	Soil or Hydrology	signf	icantly disturbe	ed? Are "N	Normal Circumstances" pres	sent? Ye	es No X
Are Vegetation	Soil or Hydrology	natur	ally problemat	ic? (If nee	eded, explain any answers i	n Remarks.)	
SUMMARY OF FINDIN	NGS - Attach site map show	wing san	npling poin	nt locations, t	ransects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes X		No			
Hydric Soils Present?		Yes X	-	No	Is the Sampled Area within a Wetland?	Ye	es X No
Wetland Hydrology Pres	sent?	Yes X	-	No			
Welland Hydrology 110		103 X	-				
weeks prior to the s (August and Septe phenology, soil ind	conditions are not typical for this ti survey and normal rainfall condition mber 2023) and moderate drought icators, and hydrology. getated ditch and primary stormwa	ns the week from May t	c prior and wee to July 2023. C	ek of the field visi	t . However PSDI indicated	severe drought for p	reseeding two months
VEGETATION - Use se	cientific names of plants.					Sampling Point:	DP-18W
		Absolute	Dominant	Indicator	Dominance Test worksh	eet:	
Tree Stratum (Plo	ot size: 30' Radius)	<u>% Cover</u>	Species	<u>Status</u>	Number of Dominant Spe	cies That	
1.					Are OBL, FACW, or FAC:	1	(A)
2.					Total Number of Dominan	It Species	
2					Across All Strata:	1	(B)
4.					Percent of Dominant Spec	cies That	
		0%	= Total Cove	er	Are OBL, FACW, or FAC:	100	% (A/B)
	50% of total cover: 0%	20% of to	tal cover:	0%			
Sapling/Shrub Stratum	(Plot size: 15' Radi	us)		Prevalence Index works	heet:	
1.			-		Total % Cover of:		
2.					OBL species	70% x 1 =	0.7
3.					FACW species	15% x 2 =	0.3
4					FAC species	8% x 3 =	0.24
5.					FACU species	7% x 4 =	0.28
		0%	= Total Cove	er	UPL species	0% x 5 =	0
	50% of total cover: 0%	20% of to	tal cover:	0%	Column Totals:	100% (A)	1.52 (B)
Herb Stratum (Plo	ot size: 5' Radius)				Prevalence In		1.52
1. Eleocharis palustri	s	60%	Y	OBL			
2. Carex utriculata		10%		OBL	Hydrophytic Vegetation	Indicators:	
3. Phalaris arundinac	ea	10%		FACW	X 1 - Rapid Test f	or Hydrophytic Veget	ation
4. Elymus repens		5%		FACU	X 2 - Dominance		
5. Solidago gigantea		5%		FAC	3 - Prevalence	Index is ≤3.0 ¹	
6. Hordeum jubatum		3%		FACW	4 - Problematic	Hydrophytic Vegetati	on ¹ (Explain)
7. Cirsium flodmanii		3%		FAC			
8. Symphyotrichum la	anceolatum	2%		FACW	¹ Indicators of hydric soil a	and wetland bydrolog	v must be present
9. Symphyotrichum e		2%		FACU	unless disturbed or proble		, must be present,
10.							
····	50% of total cover: 50%	100% 20% of to	= Total Cove	er 20%			
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrophytic Vegetation	Present? Yes	X No
1.	(,					
2.							
		0%	= Total Cove	ar			
	50% of total cover: 0%	20% of to	-	0%			
% Bare Ground in Herb		20 /0 01 10	tai cover.	070			
		N44)			-		
	list morphological adaptations belo	JVV.)					
Vegetation parame	eter met.						

-								Sampling Point:	DP-1
Profile Description	: (Describe to the d	epth nee	eded to docume	ent the ind	licator or confir	rm the abser	nce of indicators.)		
•	,						,		
Depth	Matrix			Redo	x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-3	2.5Y 4/3	100	()		51		loam		
3-13	10YR 2/1	100					clay loam		
13-20	10YR 2/1						clay loam		
		30	401/0 4/0	10	-				
13-20	10YR 5/1	60	10YR 4/6	10	С	М	clay loam		
Type: C=Concent	ration, D=Depletion,	RM=Re	duced Matrix, C	S=Cover	ed or Coated S	Sand Grains		² Location: PL=Pore Lir	-
lydric Soil Indicat	ors:							Indicators for Prob. Hy	/dric Soils ³ :
Histosol (A1)					leyed Matrix (S	54)		1 cm Muck (A9) (LRF	
Histic Epipedor	ו (A2)			Sandy R	edox (S5)			Coast Prairie Redox	(A16) (LRR I
Black Histic (A3	3)			Stripped	Matrix (S6)			Dark Surface (S7) (L	RR G)
Hydrogen Sulfi	de (A4)			Loamvra	Mucky Minea	(F1)		High Plains Depressi	ons
Stratified Layer					Jeyed Martix (I				A 72 &73 LF
-						FZ)			
1 cm Muck (A9) (LRR F, G, H)			Depleted	d Matrix (F3)			Reduced Vertic (F18)
Depleted Belov	v Dark Surface (A11)		Redox D	ark Surface (F	6)		Red Parent Material	(TF2)
X Thick Dark Sur	face (A12)			Depleted	Dark Surface	(F7)		V. Shallow Dark Surf	. (TF12)
Sandy Mucky M	/lineral (S1) (LRR O,	S)			epressions (F8	. ,		Other (Explain in Rer	narks)
				•	•	,		```	,
-	Peat or Peat (S2) (LF eat or Peat (S3) (LRF				ins Depressior LRA 72 &73 LI	. ,		³ Indicators of hydrophy wetland hydrology must	be present,
								disturbed or problemation	D.
Retrictive Layer (if	observed):						Hydric Sc	oils Present?	
Type:				-				Yes	X No
	Soil parameter met. 12. Delineated line u	sed F3 ir	ndicator on foot	of side sl	lope.				
Remarks: Data point meets A ²	Soil parameter met. 12. Delineated line u	sed F3 ir	ndicator on foot	of side sl	lope.				
Remarks: Data point meets A ROLOGY Vetland Hydrology	Soil parameter met. 12. Delineated line u y Indicators:				lope.		Secondary Indica	ators (minimum of two required)	
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (i	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re		check all that a	pply)	lope.			ators (minimum of two required)	
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (i X_Surface Water	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1)		check all that a _Salt Crust (B [^]	pply) 11)	lope.		Surfac	ce Soil Cracks (B6)	
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (i	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1)		check all that a	pply) 11)	lope.		Surfac	· · · · ·	(B8)
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (i X_Surface Water	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ple (A2)		check all that a _Salt Crust (B [^]	pply) 11) a (B13)			Surfac Sparse	ce Soil Cracks (B6)	B8)
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (i X Surface Water X High Water Tat X Saturation (A3)	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ple (A2)		check all that a Salt Crust (B ⁷ Aquatic Faun	pply) 11) a (B13) s (B15) (L	RR U)		Surfac Sparse Draina	e Soil Cracks (B6) ely Vegetated Concave Surface (. ,
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (r X Surface Water X High Water Tat X Saturation (A3) Water Marks (E	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ole (A2) 31)	equired; (check all that a Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Sul	pply) 11) a (B13) s (B15) (L Ifide Odor	RR U) (C1)		Surfac Sparse Draina Oxidiz	ee Soil Cracks (B6) ely Vegetated Concave Surface (age Patterns (B10) ed Rhizospheres on Living Roots	. ,
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (r X Surface Water X High Water Tal X Saturation (A3) Water Marks (E Sediment Depo	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ole (A2) 31) ssits (B2)	equired; (check all that a Salt Crust (B ⁴ Aquatic Faun Marl Deposits Hydrogen Sul Dry-Season V	pply) 11) a (B13) s (B15) (L lfide Odor Vater Tab	RR U) r (C1) ole (C2)		Surfac Sparse Draina Oxidize Crayfis	ee Soil Cracks (B6) ely Vegetated Concave Surface (age Patterns (B10) ed Rhizospheres on Living Roots sh Burrows (C8)	s (C3)
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (r X Surface Water X High Water Tat X Saturation (A3) Water Marks (E	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ole (A2) 31) ssits (B2)	equired; (check all that a Salt Crust (B Aquatic Faun Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz	pply) 11) a (B13) ₅ (B15) (L lfide Odor Vater Tab zospheres	RR U) r (C1) ole (C2) s on Living Roc		Surfac Sparse Draina Oxidize Crayfis	ee Soil Cracks (B6) ely Vegetated Concave Surface (age Patterns (B10) ed Rhizospheres on Living Roots	s (C3)
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (r X Surface Water X High Water Tal X Saturation (A3) Water Marks (E Sediment Depo	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ole (A2) 31) ssits (B2) B3)	equired; (check all that a Salt Crust (B ⁴ Aquatic Faun Marl Deposits Hydrogen Sul Dry-Season V	pply) 11) a (B13) ₅ (B15) (L lfide Odor Vater Tab zospheres	RR U) r (C1) ole (C2) s on Living Roc		Surfac Sparse Draina Oxidiz Crayfis Satura	ee Soil Cracks (B6) ely Vegetated Concave Surface (age Patterns (B10) ed Rhizospheres on Living Roots sh Burrows (C8)	s (C3)
Remarks: Data point meets A PROLOGY Vetland Hydrology Primary Indicators (i X Surface Water X High Water Tal X Saturation (A3) Water Marks (E Sediment Depo Drift Deposits (Algal Mat or Cr	Soil parameter met. 12. Delineated line u y Indicators: minimum of one is re (A1) ole (A2) 31) osits (B2) B3) ust (B4)	equired; (check all that a Salt Crust (B' Aquatic Faun Marl Deposits Hydrogen Sul Dry-Season V Oxidized Rhiz Presence of F	pply) 11) a (B13) s (B15) (L Ifide Odor Vater Tab zospheres Reduced I	RR U) r (C1) ole (C2) s on Living Roc		Surfac Sparse Draina Oxidiz Crayfis Satura X Geome	e Soil Cracks (B6) ely Vegetated Concave Surface (age Patterns (B10) ed Rhizospheres on Living Roots sh Burrows (C8) ation Visible on Aerial Imagery (C	s (C3)
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DP-18-W: Dominant vegetation *Eleocharis palustris* in Wetland FLS-01b

DP-18-W: Hydric soil indicator (Thick Dark Surface – A12) in Wetland FLS-01b; the Depleted Matrix indicator (F3) was used for delineating



Project/Site:	Grand Sky	_	City/County:	Grand Forks			Sampling Date:	September 28, 2023
Applicant/Owner:	US Air Force, GFAFB				State:	ND	Sampling Point:	DP-19W
Investigators:	C. Lotts; M. Hayes; K. Erwin; M. Co	orreiro	Section, Towr	nship, Range:				
Landform:	ditch bottom		Local relief (co	oncave,convex,n	ione):	concave	Slope (%):	0 - 2
Subregion (LRR or MLRA):		Lat:		Long:			Datum:	NAD83
Soil Map Unit Name:	Gilby loam, 0 to 2 percen				-	ssification:		
, ,	itions on the site typical for this time	•		Yes	No	<u>X</u>	(If no, explain in R	,
Are Vegetation	Soil or Hydrology Soil or Hydrology	Ŭ	cantly disturbe ally problemati			rcumstances" prese lain any answers in		es <u>No X</u>
	- Of Hydrology			,	•		,	
	105 - Allach Sile map show	ing san	ipining point	t locations, t		is, important is		
Hydrophytic Vegetation		Yes X		No	Is the	e Sampled Area		A No.
Hydric Soils Present?		Yes X	•	No	with	nin a Wetland?	Ye	es X No
Wetland Hydrology Pres	sent?	Yes X		No				
Climatic/hydrologic weeks prior to the (August and Septe phenology, soil ind	parameters met. conditions are not typical for this tim survey and normal rainfall conditions mber 2023) and moderate drought fr icators, and hydrology. s swale. Area is regularly mowed. Thi	the week om May to	prior and wee o July 2023. Or	k of the field visit n-site observatio	t . Howeve ons sugge	er PSDI indicated s st drier than norma	evere drought for pr I conditions that affe	eseeding two months acted vegetation
VEGETATION - Use se	cientific names of plants.						Sampling Point:	DP-19W
		Absolute	Dominant	Indicator	Domina	ince Test workshe	et:	
Tree Stratum (Plo		% Cover	Species	Status		of Dominant Spec		
1.	, ,		<u> </u>		Are OBL	, FACW, or FAC:	1	(A)
2. 3.						umber of Dominant All Strata:	Species 2	(B)
3. 4.								(B)
4.		0%	= Total Cover	-		of Dominant Speci _, FACW, or FAC:	es That 50'	% (A/B)
	50% of total cover: 0%	20% of tot	•	0%		-, ,		
Sapling/Shrub Stratum		vetland)	U 70	Prevale	nce Index worksh	eet:	
1.	(101111	.)			Cover of:		
2.					OBL spe		1% x 1 =	0.01
3.					FACW s	species	1% x 2 =	0.02
4.					FAC spe	ecies	0% x 3 =	0
5.					FACU s	pecies	0% x 4 =	0
		0%	= Total Cover	r	UPL spe	ecies	1% x 5 =	0.05
		20% of tot	al cover:	0%	Column		3% (A)	0.08 (B)
	ot size: entire wetland)					Prevalence Inde	ex = B/A =	0.38
1. Eleocharis palustri		70%	Y	OBL				
2. Festuca trachyphy	lla	30%	Y	UPL	Hydrop	hytic Vegetation I		
3. Suaeda sp.		10%		FACW			r Hydrophytic Veget	ation
						2 - Dominance T 3 - Prevalence Ir		
5. 6.					Х	_	luex is ≤5.0 Iydrophytic Vegetat	ion ¹ (Explain)
7					^		iyalopiiyao vegetat	
					¹ Indicat	ors of bydric soil a	nd wetland hydrolog	v must be present
0						listurbed or probler	, ,	y must be present,
10.						·		
		110%	= Total Cover	r				
	50% of total cover: 55%	20% of tot	al cover:	22%				
Woody Vine Stratum	(Plot size: entire wetland)				Hydrop	ohytic Vegetation	Present? Yes	X No
1.								
2.								
		0%	= Total Cover	r				
	50% of total cover: 0%	20% of tot	al cover:	0%				
% Bare Ground in Herb					_			
	eoliformis is FACW, Suaeda nigra is (OBL. Area	a is a mowed la	awn. Area in ditcl	h has dist	inctly different vege	etation community.	
Vegetation parame	iter met.							

IL								Sampling Point:	DP-19W
Profilo Doscrintic		anth nee	dad to docume	ant the ir	diantar or confir	the abeer	and of indicators)		
Profile Description	on: (Describe to the de	epth need	Jed to docume	ent the m	dicator or comm	in the absen	ice of indicators.		
Depth	Matrix			Red	lox Features				
(inches)	Color (moist)	%	Color (moist)		Type ¹	Loc ²	Texture	Remarks	
0-4	10YR 4/1	95	10YR 4/4	5	C	M	silty loam		
4-12	10YR 5/1	95 60	10YR 3/6	5	C	M	loam		
4-12	10YR 5/3	35	101110/0				loam		
7-14	10111.0,0	- 30					loan		
¹ Type: C=Conce	entration, D=Depletion,	RM=Rec	Juced Matrix, (CS=Cove	ered or Coated {	Sand Grains	 2.	² Location: PL=Pore Lin	ing, M=Matrix
Hydric Soil Indica	ators:							Indicators for Prob. Hy	
Histosol (A1)				Sandy '	Gleyed Matrix (S	34)		1 cm Muck (A9) (LRR	I & J)
Histic Epipede	on (A2)			Sandy	Redox (S5)			Coast Prairie Redox (A16) (LRR F, C
Black Histic (A	A3)			Strippe	d Matrix (S6)			Dark Surface (S7) (LR	
Hydrogen Sul					ralMucky Minea	(F1)		High Plains Depressio	
	rers (A5) (LRR F)				Gleyed Martix (F			•	A 72 &73 LRR
-						2)			
	A9) (LRR F, G, H)				ed Matrix (F3)			Reduced Vertic (F18)	
	ow Dark Surface (A11))		-	Dark Surface (F	,		Red Parent Material (
Thick Dark Su	()				ed Dark Surface			V. Shallow Dark Surf.	. ,
Sandy Mucky	/ Mineral (S1) (LRR O,	S)		Redox	Depressions (F8	3)		Other (Explain in Rem	arks)
2.5 cm Mucky	y Peat or Peat (S2) (LF	R G & F	1)	- High Pl	lains Depression	ıs (F16)		³ Indicators of hydrophyti	ic vegetation a
	Peat or Peat (S3) (LRR		, <u> </u>		MLRA 72 &73 LF			wetland hydrology must	
								disturbed or problematic.	
Retrictive Layer ((if observed):						Hydric Soils	Present?	
Туре:				_				Yes	X No
Depth (inches	s):			-					
				-					
DROLOGY									
Wetland Hydrolog	gy Indicators:								
Primary Indicators	s (minimum of one is re	equired; c	heck all that a	ipply)			Secondary Indicators	s (minimum of two required)	
X Surface Wate	er (A1)		Salt Crust (B	,11)			Surface So	oil Cracks (B6)	
X High Water Ta	()		Aquatic Faun	,				/egetated Concave Surface (E	38)
X Saturation (A3			Marl Deposits	• •				Patterns (B10)	,0,
			Hydrogen Su					Rhizospheres on Living Roots	(03)
Water Marks		<u> </u>	Dry-Season V		()			Burrows (C8)	(00)
Sediment Dep		<u></u>				· (00)			
Drift Deposits			_	•	es on Living Roo	ts (C3)	Saturation	Visible on Aerial Imagery (C9	0
Algal Mat or C	Crust (B4)		Presence of F	Reduced	Iron (C4)		X Geomorph	nic Position (D2)	
Iron Deposits	; (B5)		Recent Iron F	Reductio	n in Tilled Soils ((C6)	X FAC-Neutr	ral Test (D5)	
Inundation Vi	isible on Aerials (B7)		Thin Muck Su	urface (C	27)		Frost Heav	ve Hummocks (D7) (LRR F)	
X Water-Stained			Other (Explai						
			•		·				
Field Observation		Y No	Dont	11- (inabo	١.	4	Wotland Hydrolo	Drocont?	
Surface Water Pre		X No		th (inches	·	1	Wetland Hydrolo		
Water Table Prese		X No		th (inches	-	>12		Yes	X No
Saturation Present	t? Yes	X No	Dept	th (inches	s):				
(includes capillary	fringe)								
Describe Recorde	ed Data (stream gauge,	, monitori	ing well, aerial	photos,	previous inspec	tions), if av <i>e</i>	ailable:		
Remarks:	Hydrology paramete	r met							
Remarks.	Нушоюду рагашете	r mei.							
Antecedent Precir									
al conditions.	pitation Tool (APT) repo	orted nor	mal rainfall cor	nditions i	for the Grand Fo	vrks area. P	SDI indicated extreme	drought. Un-site observations	suddest drier
a conditions.	pitation Tool (APT) repo	orted nor	mal rainfall co	nditions	for the Grand Fc	orks area. F	SDI indicated extreme	drought. On-site observations	suggest drier
	bitation Tool (APT) repu	orted nor	mal rainfall co	nditions	for the Grand Fc	orks area. F	SDI indicated extreme	drought. On-site observations	suggest drier
	bitation Tool (APT) rep	orted nor	mal rainfall co	onditions	for the Grand Fc	orks area. F	SDI indicated extreme	arougnt. On-site observations	suggest drier

DP-19-W: Problematic vegetation in mowed lawn swale, Presence of lawn grass *Festuca trachyphylla* as a dominant prevents meeting vegetation indicators; many hydrology indicators present



DP-19-W: Hydric soil indicator (Depleted matrix – F3)



ct/Site:	Grand Sk	. <u>,</u>			City/County:	Grand Forks			Sampling Date	s. <u>Sep</u>	tember 28, 20
cant/Owner:	US Air Fo	orce, GFAFB					State:	ND	Sampling Poin	nt:	DP-20W
tigators:	C. Lotts;	M. Hayes; K. I	Erwin; M. (Correiro	Section, Tow	nship, Range:					
form:	depressio	วท			Local relief (c	concave,convex,	,none):	concave	Slope (%):	0 - 2	
egion (LRR or MLRA	.):	LRR F		Lat:		Long	g:		Datum:	NAC	083
Map Unit Name:		Antler-Mustin	ka silt loar	ns, 0 to 2 p	ercent slopes		NWI cla	ssification:			
limatic/hydrolgoic co	nditions on th	e site typical f	or this time	•		Yes	No	X	(If no, explain i		.)
/egetation	Soil	or Hydro	•••		icantly disturbe			rcumstances" pres		Yes	No
/egetation	Soil	or Hydro	ology .	natur	ally problemat	ic? (If ne	eded, expl	lain any answers i	in Remarks.)		
	DINGS - Att	tach site m	ap show	wing sar	npling poin	nt locations,	transec	ts, important	features, etc.		
-lydrophytic Vegetati	on Present?			Yes X	_	No	I. 4h				
Hydric Soils Present?	?			Yes X		No		e Sampled Area		Yes X	No
Wetland Hydrology P	Present?			Yes X	-	No					
Climatic/hydrolog weeks prior to th (August and Sep phenology, soil i	ne survey and otember 2023 ndicators, and	are not typica normal rainfa) and moderat d hydrology.	II conditior te drought	ns the week from May t	c prior and wee o July 2023. O	ek of the field vis n-site observati	sit . Howev ons sugge	F) reported below er PSDI indicated st drier than norm a that is not regula	severe drought f al conditions that	for preseedi	ng two month
GETATION - Use	scientific n	ames of pl	ants.						Sampling Poin	nt:	DP-20W
				Absolute	Dominant	Indicator	Domina	Ince Test worksh	leet:		
Tree Stratum (I	Plot size:	30' Radius)	<u>% Cover</u>	Species	Status		of Dominant Spe			
1. Populus tremulo		00 110000	_'	40%	Y	FAC		_, FACW, or FAC:		3	(A)
				20%	Y	FACW		umber of Dominan		-	
							1 Otal 140				
2. Salix bebbiana	des			-		FACW	Across /	All Strata:		4	(B)
				5% 65%	_ = Total Cove		Percent	All Strata: of Dominant Spec _, FACW, or FAC:		4 75%	(B) (A/B)
 Salix bebbiana Salix amygdaloid 	50% of to	otal cover: (Plot size:	<u>33%</u> 15' Radi	5% 65% 20% of to			Percent Are OBI Prevale	of Dominant Spe			
2. <u>Salix bebbiana</u> 3. <u>Salix amygdaloid</u> 4. <u>Sapling/Shrub Stratu</u> 1.	50% of to			5% 65% 20% of to		er	Percent Are OBI Prevale Total % OBL spe	of Dominant Spec ., FACW, or FAC: nce Index works Cover of: ecies	heet: 	1 =	(A/B) 0
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1.	50% of to <u>m</u>	(Plot size:	15' Radi	5% 65% 20% of to ius		er 13%	Percent Are OBI Prevale Total %	of Dominant Spec ., FACW, or FAC: nce Index works Cover of: ecies	heet: 0% x 65% x	75%	(A/B) 0 1.3
2. <u>Salix bebbiana</u> 3. <u>Salix amygdaloid</u> 4. <u>Sapling/Shrub Stratu</u> 1.	50% of to <u>m</u>	(Plot size:	15' Radi	5% 65% 20% of to ius	tal cover: _)	er 13%	Percent Are OBI Prevale Total % OBL spe	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species	heet: 0% x 65% x	1 =	(A/B) 0
2. <u>Salix bebbiana</u> 3. <u>Salix amygdaloid</u> 4. <u>Sapling/Shrub Stratu</u> 1.	50% of to <u>m</u>	(Plot size:	15' Radi	5% 65% 20% of to ius	tal cover: _)	er 13%	Percent Are OBI Prevale Total % OBL spe FACW s	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies	heet: 0% x 65% x 41% x	75% 1 = 2 =	(A/B) 0 1.3
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. 2	50% of to <u>m</u>	(Plot size:	15' Radi	5% 65% 20% of to ius	tal cover: _)	er 	Percent Are OBI Prevale Total % OBL spe FACW s	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies	0% x 65% x 41% x 31% x	75% 1 = 2 = 3 =	(A/B) 0 1.3 1.23
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. 2. 3. 4. 5. Salix amygdaloid	50% of to <u>m</u> 50% of to	(Plot size:	15' Radi	5% 65% 20% of to ius	tal cover:) = Total Cove	er 	Percent Are OBI Prevale Total % OBL spe FACW s FAC spe FACU s	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies totals:	0% x 65% x 41% x 31% x 1% x 138% (75% 1 = 2 = 3 = 4 = 5 = A)	(A/B) 0 1.3 1.23 1.24 0.05 3.82
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. 2. 3. 4. 5. Herb Stratum (1)	50% of to <u>m</u> 50% of to Plot size:	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to	tal cover:) = Total Cover tal cover:	er 13% er 0%	Percent Are OBI Prevale Total % OBL spe FACW s FAC spe FACU s UPL spe	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies	0% x 65% x 41% x 31% x 1% x 138% (75% 1 = 2 = 3 = 4 = 5 =	(A/B) 0 1.3 1.23 1.24 0.05 3.82
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. Salix amygdaloid 2. Sapling/Shrub Stratu 3. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 1. Hordeum jubatu	50% of to <u>m</u> 50% of to Plot size: m	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40%	tal cover: _) _ = Total Cove tal cover: Y	er 13% er FACW	Percent Are OBI Total % OBL spe FACW s FAC spe FACU s UPL spe Column	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies totals: Prevalence Ind	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A = (75% 1 = 2 = 3 = 4 = 5 = A)	(A/B) 0 1.3 1.23 1.24 0.05 3.82
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. Sapling/Shrub Stratu 2. Sapling/Shrub Stratu 3. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 6. Sapling/Shrub Stratu 7. Hordeum jubatu 2. Melilotus officina	50% of to <u>m</u> 50% of to Plot size: m alis	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20%	tal cover:) = Total Cover tal cover:	er 13% er FACW FACU	Percent Are OBI Total % OBL spe FACW s FAC spe FACU s UPL spe Column	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A =	75% 1 = 2 = 3 = 4 = 5 = (A) 2.77	(A/B) 0 1.3 1.23 1.24 0.05 3.82
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. Salix amygdaloid 2. Sapling/Shrub Stratu 3. Sapling/Shrub Stratu 1. Sapling/Shrub Stratu 3. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 6. Sapling/Shrub Stratu 7. Sapling/Shrub Stratu 6. Sapling/Shrub Stratu 7. Sapling/Shrub Stratu 7. Sapling/Shrub Stratu 7. Sapling/Shrub Stratu 8. Hordeum jubatu 7. Sapling/Shrub Stratu 8. Elymus trachyca	50% of to <u>m</u> 50% of to Plot size: m alis	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% 10%	tal cover: _) _ = Total Cove tal cover: Y	er 13% 	Percent Are OBI Total % OBL spe FACW s FACU s UPL spe Column	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind hytic Vegetation _ 1 - Rapid Test 1	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A =	75% 1 = 2 = 3 = 4 = 5 = (A) 2.77	(A/B) 0 1.3 1.23 1.24 0.05 3.82
2. Salix bebbiana 3. Salix amygdaloid 4. Salix amygdaloid 5. Salix amygdaloid 4. Sapling/Shrub Stratu 1. Sapling/Shrub Stratu 2. Sapling/Shrub Stratu 3. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 4. Sapling/Shrub Stratu 5. Sapling/Shrub Stratu 4. Hordeum jubatu 2. Melilotus officina 3. Elymus trachyca 4. Bromus inermis	50% of to <u>m</u> 50% of to Plot size: m alis	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% 10% 1%	tal cover: _) _ = Total Cove tal cover: Y	er 13% 	Percent Are OBI Total % OBL spe FACW s FAC spe FACU s UPL spe Column	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind hytic Vegetation 1 - Rapid Test f 2 - Dominance	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A =	75% 1 = 2 = 3 = 4 = 5 = (A) 2.77	(A/B) 0 1.3 1.23 1.24 0.05 3.82
2. Salix bebbiana 3. Salix amygdaloid 4. Salix amygdaloid 5. Salix amygdaloid 4. Salix amygdaloid 5. Salix amygdaloid 4. Salix amygdaloid 5. Salix amygdaloid 6. Salix amygdaloid 7. Hordeum jubatul 7. Helilotus officina 7. Elymus trachyca 8. Bromus inermis 5. Plantago major	50% of to <u>m</u> 50% of to Plot size: m alis aulus	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% 10% 1% 1%	tal cover: _) _ = Total Cove tal cover: Y	er 13% 13% FACW FACW FACU FACU UPL FAC	Percent Are OBI Total % OBL spe FACW s FACU s UPL spe Column	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind hytic Vegetation 1 - Rapid Test f 2 - Dominance 3 - Prevalence	0% x 65% x 41% x 31% x 138% (dex = B/A =	$ \begin{array}{c} 1 = \\ 2 = \\ 3 = \\ 4 = \\ 5 = \\ (A) \\ 2.77 \end{array} $	(A/B) 0 1.3 1.23 1.24 0.05 3.82
Salix bebbiana Salix amygdaloid Salix	50% of to <u>m</u> 50% of to Plot size: m alis aulus	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% 10% 1%	tal cover: _) _ = Total Cove tal cover: Y	er 13% 	Percent Are OBI Total % OBL spe FACW s FACU s UPL spe Column	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind hytic Vegetation 1 - Rapid Test f 2 - Dominance 3 - Prevalence	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A =	$ \begin{array}{c} 1 = \\ 2 = \\ 3 = \\ 4 = \\ 5 = \\ (A) \\ 2.77 \end{array} $	(A/B) 0 1.3 1.23 1.24 0.05 3.82
 Salix bebbiana Salix amygdaloid Salix amygdaloid Sapling/Shrub Stratu Sapling/Shrub Stratu Bapling/Shrub Stratu Meliotus officina Hordeum jubatu Melilotus officina Elymus trachyca Bromus inermis Plantago major Artemisia bienni 	50% of to m 50% of to Plot size: m alis aulus	(Plot size:	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% 10% 1% 1%	tal cover: _) _ = Total Cover tal cover: Y Y	er 13% 13% FACW FACW FACU FACU UPL FAC	Percent Are OBI Total % OBL spe FACW s FAC spe FACU s UPL spe Column Hydrop	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind hytic Vegetation 1 - Rapid Test f 2 - Dominance 3 - Prevalence	heet: $ \begin{array}{c} 0\% & x\\ 65\% & x\\ 41\% & x\\ 31\% & x\\ 138\% & (\\ 138\% & (\\ dex = B/A = \\ \hline Indicators: \\ for Hydrophytic V-Test is >50% \\ Index is <3.0^1 \\ Hydrophytic Veg \\ and wetland hydrophytic Veg \\ \hline $	75% 1 = 2 = 3 = 4 = 5 = (A) 2.77 regetation regetation	(A/B) 0 1.3 1.23 1.24 0.05 3.82 (plain)
2. Salix bebbiana 3. Salix amygdaloid 4. Salix amygdaloid 5. Herb Stratum (I 1. Hordeum jubatu 2. Salix amygdaloid 4. Bromus informis 5. Plantago major 6. Artemisia bienni. 7. Salix amygdaloid 9. Salix amygdaloid 10. Salix amygdaloid 1. Salix amygdaloid	50% of to <u>50% of to</u> 50% of to Plot size: m alis aulus s 50% of to (Plot size)	(Plot size: Dtal cover: 5' Radius 5' Radius	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% 10% 1% 1%	tal cover: _) _ = Total Cover tal cover: Y Y 	er 13% 13% FACW FACW FACU FACU FACU FACU FACU FACU	Percent Are OBI Total % OBL spe FACW s FAC spe FACU s UPL spe Column Hydrop X	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind 1 - Rapid Test f 2 - Dominance 3 - Prevalence 4 - Problematic	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A =	75% 1 = 2 = 3 = 4 = 5 = (A) 2.77 regetation regetation	(A/B) 0 1.3 1.23 1.24 0.05 3.82 (plain)
2. Salix bebbiana 3. Salix amygdaloid 4. Sapling/Shrub Stratu 1. 2. 3. Herb Stratum (I 1. Hordeum jubatu 2. Melilotus officina 3. Elymus trachyca 4. Bromus inermis 5. Plantago major 5. Artemisia bienni 7. 3. 10. Woody Vine Stratum	50% of to <u>50% of to</u> 50% of to Plot size: m alis aulus s 50% of to (Plot size)	(Plot size: btal cover: 5' Radius 5' Radius btal cover: 2: 15' F	15' Radi	5% 65% 20% of to ius 0% 20% of to 40% 20% of to 40% 10% 1% 1% 1%	tal cover: _) _ = Total Cover tal cover: Y Y 	Pr 13% 13% FACW FACW FACU FACU FACU FACU FACU FACU FACU FACU FACU FACU	Percent Are OBI Total % OBL spe FACW s FAC spe FACU s UPL spe Column Hydrop X	of Dominant Spec , FACW, or FAC: nce Index works Cover of: ecies species ecies pecies ecies Totals: Prevalence Ind 1 - Rapid Test f 2 - Dominance 3 - Prevalence 4 - Problematic tors of hydric soil a disturbed or proble	0% x 65% x 41% x 31% x 1% x 138% (dex = B/A =	75% 1 = 2 = 3 = 4 = 5 = (A) regetation regetation ¹ (Ex- ology must	(A/B) 0 1.3 1.23 1.24 0.05 3.82 (plain) be present,

-								Sampling Point:	DP-20V
rofile Description	n: (Describe to the d	epth nee	eded to docume	nt the in	dicator or confiri	m the abse	nce of indicators.)		
Depth	Matrix				ox Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-8	10YR 3/2	90	10YR 7/1	5	RM	М	loam		
0-8			10YR 5/6	5	С	М	loam		
8-14	10YR 7/2	95	10YR 5/6	5	С	М	sandy loam		
Turney C=Cencer	tration, D=Depletion,	DM-Da	duard Matrix C	6 - C ava	rad ar Caatad S	and Crains		² Location: PL=Pore Lin	ing M-Matrix
		RIVI-RE		3-00ve	red of Coaled 3).	Indicators for Prob. Hy	
lydric Soil Indicat	lors.							indicators for Frob. Hy	unc 30115 .
Historal (A1)				Sandy	Cloved Matrix (S	24)		1 om Musk (A0) (LPR	1.9 1)
Histosol (A1)	- (40)			-	Gleyed Matrix (S	⁵⁴)		1 cm Muck (A9) (LRR	
Histic Epipedo	. ,			-	Redox (S5)			Coast Prairie Redox (/	
Black Histic (A	,				d Matrix (S6)			Dark Surface (S7) (LR	
Hydrogen Sulf	ide (A4)			Loamyra	alMucky Minea	(F1)		High Plains Depression	ons
Stratified Laye	rs (A5) (LRR F)			Loamy (Gleyed Martix (F	=2)		(F16) (MLRA	4 72 &73 LRR
1 cm Muck (A9	9) (LRR F, G, H)		Х	Deplete	d Matrix (F3)			Reduced Vertic (F18)	
Depleted Belov	w Dark Surface (A11))	X	Redox [Dark Surface (F	6)		Red Parent Material (TF2)
Thick Dark Su	· · ·	,			d Dark Surface	,		V. Shallow Dark Surf.	
	Mineral (S1) (LRR O,	S)		•	Depressions (F8	. ,		Other (Explain in Rem	. ,
						,			,
	Peat or Peat (S2) (LF eat or Peat (S3) (LRF		-)	•	ains Depression /ILRA 72 &73 LF	. ,		³ Indicators of hydrophyti wetland hydrology must	
								disturbed or problematic	
Retrictive Layer (in	f observed):						Hydric Soils	s Present?	
Type:								Yes	X No
Depth (inches)):							-	
Remarks:	Soil parameter met.								
RoLOGY	Soil parameter met.								
ROLOGY Vetland Hydrolog	y Indicators:								
ROLOGY Vetland Hydrolog		equired;	check all that ap	oply)			Secondary Indicato	ors (minimum of two required)	
ROLOGY Vetland Hydrolog	y Indicators: (minimum of one is re	equired;	check all that ap Salt Crust (B1					ors (minimum of two required)_ Soil Cracks (B6)	
ROLOGY Vetland Hydrolog	y Indicators: (minimum of one is re (A1)	equired;		1)			Surface		38)
ROLOGY Vetland Hydrolog Primary Indicators (Surface Water High Water Ta	y Indicators: (minimum of one is re (A1) ible (A2)	equired;	Salt Crust (B1	1) a (B13)	LRR U)		Surface Surfac	Soil Cracks (B6) Vegetated Concave Surface (E	38)
ROLOGY Vetland Hydrolog Vrimary Indicators Surface Water High Water Ta Saturation (A3	y Indicators: (minimum of one is re (A1) ible (A2))	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits	1) a (B13) (B15) (I	,		Surface Surfac	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10)	,
ROLOGY Vetland Hydrolog Irimary Indicators (Surface Water High Water Ta Saturation (A3 Water Marks (y Indicators: (minimum of one is re (A1) uble (A2)) B1)	equired;	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult	1) a (B13) (B15) (I fide Odo	or (C1)		Surface S Sparsely Drainage Oxidized	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10) Rhizospheres on Living Roots	,
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ROLOGY Vetland Hydrolog 'rimary Indicators (Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Depo Drift Deposits (Algal Mat or Ci	y Indicators: (minimum of one is re (A1) uble (A2)) B1) osits (B2) (B3) rust (B4)	equired; 	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season W Oxidized Rhiz Presence of R	1) a (B13) (B15) (I fide Odc Vater Ta osphere Reduced	or (C1) Ible (C2) es on Living Roo Iron (C4)	. ,	Surface Sparsely Drainage Oxidized Crayfish Saturatio X Geomorp	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10) Rhizospheres on Living Roots Burrows (C8) on Visible on Aerial Imagery (C9 ohic Position (D2)	(C3)
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ROLOGY Vetland Hydrolog Vimary Indicators (Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits (Iron Deposits (Iron Deposits (Inundation Visi X Water-Stained	y Indicators: (minimum of one is ref (A1) ible (A2)) B1) osits (B2) (B3) rust (B4) (B5) ible on Aerials (B7) Leaves (B9)	equired; 	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season W Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su	1) (B13) (I fide Odc Vater Ta osphere Reduced eductior rface (C	or (C1) ible (C2) es on Living Roo Iron (C4) n in Tilled Soils (7)	. ,	Surface S Sparsely Drainage Oxidized Crayfish Saturatio X Geomorp X FAC-Neu	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10) Rhizospheres on Living Roots Burrows (C8) on Visible on Aerial Imagery (C9 ohic Position (D2) utral Test (D5)	(C3)
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ROLOGY Vetland Hydrolog Primary Indicators (Surface Water High Water Ta Saturation (A3 Water Marks () Sediment Dep Drift Deposits (Iron Deposits (Inundation Visi X Water-Stained Vetace Water Press	y Indicators: (minimum of one is ref (A1) ible (A2)) B1) osits (B2) (B3) rust (B4) (B5) ible on Aerials (B7) I Leaves (B9) s: sent? Yes		Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season W Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explain	a (B13) (B15) (I fide Odc Vater Ta osphere Reduced eductior rface (C n in Rem	or (C1) ible (C2) iss on Living Roo Iron (C4) in Tilled Soils ((C6)	Surface S Sparsely Drainage Oxidized Crayfish Saturatio X Geomorp X FAC-Neu	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10) Rhizospheres on Living Roots Burrows (C8) on Visible on Aerial Imagery (C9 ohic Position (D2) utral Test (D5) ave Hummocks (D7) (LRR F)	(C3)))
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ROLOGY Vetland Hydrolog Virimary Indicators (Surface Water High Water Ta Saturation (A3 Water Marks () Sediment Depo Drift Deposits (Inon Deposits () Inon Deposits () Inundation Visi X Algal Mat or C Ion Deposits () Inundation Visi X Algal Mat or C Ion Deposits () Inundation Visi X Algal Mat or C Ion Deposits () Io	y Indicators: (minimum of one is re (A1) ble (A2)) B1) osits (B2) (B3) rust (B4) (B5) ible on Aerials (B7) I Leaves (B9) s: sent? Yes nt? Yes ? Yes fringe)		Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season W Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explain	1) (B15) (I fide Odc Vater Ta osphere Reduced eductior rface (C n in Rem (inches (inches (inches	or (C1) ble (C2) es on Living Roo Iron (C4) in Tilled Soils (7) harks) s): s): s): 	(C6)	Surface S Sparsely Drainage Oxidized Crayfish Saturatio X Geomorp X FAC-Neu Frost Hei	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10) Rhizospheres on Living Roots Burrows (C8) on Visible on Aerial Imagery (C9 ohic Position (D2) utral Test (D5) ave Hummocks (D7) (LRR F)	(C3)))
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ROLOGY Vetland Hydrolog Primary Indicators (Surface Water High Water Ta Saturation (A3 Water Marks (I Sediment Dep Drift Deposits (Inundation Visi X Algal Mat or Ci Iron Deposits (Inundation Visi X Water-Stained Field Observations Surface Water Prese Vater Table Prese Saturation Present' ncludes capillary f Describe Recorded Remarks:	y Indicators: (minimum of one is ref (A1) bble (A2)) B1) osits (B2) (B3) rust (B4) (B5) ible on Aerials (B7) I Leaves (B9) s: sent? Yes nt? Yes ? Yes fringe) I Data (stream gauge Hydrology paramete	Na Na	Salt Crust (B1 Aquatic Fauna Marl Deposits Hydrogen Sult Dry-Season W Oxidized Rhiz Presence of R Recent Iron R Thin Muck Su Other (Explain <u>X</u> Depth X Depth X Depth	1) a (B13) (I fide Odc Vater Ta osphere Reduced eductior rface (C n in Rem (inches (inches (inches n (inches	or (C1) ible (C2) iss on Living Roo Iron (C4) in Tilled Soils (7) iarks) s): s): previous inspec	(C6)	Surface S Sparsely Drainage Oxidized Crayfish Saturatio X Geomorp X FAC-Neu Frost Heat Wetland Hydro	Soil Cracks (B6) Vegetated Concave Surface (E Patterns (B10) Rhizospheres on Living Roots Burrows (C8) on Visible on Aerial Imagery (C9 ohic Position (D2) utral Test (D5) ave Hummocks (D7) (LRR F)	(C3))) <u>X</u> No



DP-20-W: Hydrophytic vegetation in Wetland FLS-31d

DP-20-W: Hydric soil indicator (Depleted matrix – F3) and Redox Dark Surface (F6)



Project/Site:	Grand Sky	City/County:	Grand Forks		Sampling Date:	September 28, 2023	
Applicant/Owner:	US Air Force, GFAFB				State: ND	Sampling Point:	DP-20U
Investigators:	C. Lotts; M. Hayes; K. Erwin;	M. Correiro	Section, Tow	nship, Range:			
Landform:	hillslope		Local relief (c	concave,convex	(,none): none	Slope (%):	0 - 2
Subregion (LRR or MLRA):	LRR F	Lat:		Lon	g:	Datum:	NAD83
Soil Map Unit Name:	Antler-Mustinka silt				NWI classification:		
, ,	itions on the site typical for this			Yes	No X	(If no, explain in Re	emarks.)
Are Vegetation	Soil or Hydrology		nficantly disturbe		"Normal Circumstances" pres		es No X
Are Vegetation	Soil or Hydrology	nat	urally problemat	ic? (If ne	eeded, explain any answers i	n Remarks.)	
SUMMARY OF FINDIN	NGS - Attach site map s	howing sa	mpling poin	t locations,	transects, important	features, etc.	
Hydrophytic Vegetation	Present?	Yes		No <u>X</u>	Is the Sampled Area		
Hydric Soils Present? Yes			No X	within a Wetland?	Yes No _X		
Wetland Hydrology Present? Yes		_	No X				
Climatic/hydrologic weeks prior to the (August and Septe phenology, soil ind	parameters not met. conditions are not typical for t survey and normal rainfall cono mber 2023) and moderate drou icators, and hydrology. y disturbed area with lots of we	ditions the wee ught from May	ek prior and wee v to July 2023. C	ek of the field vi	sit . However PSDI indicated	I severe drought for pr	reseeding two months
VEGETATION - Use se	cientific names of plants.					Sampling Point:	DP-20U
		Absolute	e Dominant	Indicator	Dominance Test worksh	leet:	
Tree Stratum (Plo	ot size: 30' Radius)	% Cove	r <u>Species</u>	<u>Status</u>	Number of Dominant Spe	cies That	
1. Elaeagnus angusti	folia	5%	Y	FACU	Are OBL, FACW, or FAC:	0	(A)
2.					Total Number of Dominan	it Species	
3.					Across All Strata:	2	(B)
4.					Percent of Dominant Spe		
		5%	= Total Cove	۲	Are OBL, FACW, or FAC:	0%	6 (A/B)
			otal cover:	1%			
Sapling/Shrub Stratum	(Plot size: 15' l	Radius	_)		Prevalence Index works	heet:	
1. 2.					Total % Cover of: OBL species	0% x 1 =	0
3.					FACW species	0% x1=	0
4.					FAC species	<u> </u>	0
5.					FACU species	22% x 4 =	0.88
		0%	= Total Cove	r	UPL species	80% x 5 =	4
	50% of total cover: 0°		otal cover:	0%	Column Totals:	102% (A)	4.88 (B)
Herb Stratum (Plo	ot size: 5' Radius)				Prevalence In		4.78
1. Bromus inermis	· ·	80%	Y	UPL			
2. Solidago canadens	sis	10%		FACU	Hydrophytic Vegetation	Indicators:	
3. Symphyotrichum e	ricoides	5%		FACU	1 - Rapid Test f	for Hydrophytic Veget	ation
4. Melilotus officinalis		2%		FACU	2 - Dominance	Test is >50%	
5.					3 - Prevalence		
6.					4 - Problematic	Hydrophytic Vegetati	on ¹ (Explain)
7.							
8.					¹ Indicators of hydric soil a	, ,,	y must be present,
9.					unless disturbed or proble	ematic.	
10							
		97%	= Total Cove				
	50% of total cover: 49		otal cover:	19%		-	
Woody Vine Stratum	(Plot size: 15' Radius)			Hydrophytic Vegetation	Present? Yes	No
-							
2.		0%	- Total Cava				
	E00/ of total acuery 00		= Total Cove				
% Bare Ground in Herb	50% of total cover: 0°	<u>~</u> 20% of t	otal cover:	0%			
% Bare Ground in Herb		holow)			_		
	list morphological adaptations	pelow.)					
Vegetation parame	elei not met.						

L								Sampling Point:	DP-201
Profile Descriptic	on: (Describe to the d	epth ne	eded to docum	ent the in	ndicator or confirm	m the abser	nce of indicators.)		
Depth	Matrix			Red	lox Features				
(inches)	Color (moist)	%	Color (moist)		Type ¹	Loc ²	Texture	Remarks	
0-14	10YR 2/1	80	10YR 6/4	10	C	M	loam		
0-14	10YR 4/3	10		-			loam		
14-20	10YR 5/4	100					sandy loam		
¹ Type: C=Conce	entration, D=Depletion,	RM=Re	educed Matrix. (CS=Cove	ered or Coated S	Sand Grains	<u>.</u>	² Location: PL=Pore Lin	ing. M=Matrix
Hydric Soil Indica								Indicators for Prob. Hy	
Listenal (A1)				Candy	Cloved Matrix (S			1 am Music (A0) /I DD	101)
Histosol (A1)					Gleyed Matrix (S	54)		1 cm Muck (A9) (LRR	
Histic Epiped				-	Redox (S5)			Coast Prairie Redox (
Black Histic ((A3)			Strippe	d Matrix (S6)			Dark Surface (S7) (LF	RR G)
Hydrogen Sul	llfide (A4)			Loamyr	ralMucky Minea	(F1)		High Plains Depression	ons
Stratified Lave	vers (A5) (LRR F)			Loamv	Gleyed Martix (F	=2)			A 72 &73 LRR
	49) (LRR F, G, H)				ed Matrix (F3)	,		Reduced Vertic (F18)	
		、				C)			
	ow Dark Surface (A11)			Dark Surface (F	,		Red Parent Material (,
Thick Dark Su	urtace (A12)			Deplete	ed Dark Surface	(F7)		V. Shallow Dark Surf.	. ,
Sandy Mucky	y Mineral (S1) (LRR O,	(S)		Redox	Depressions (F8	3)		Other (Explain in Rem	larks)
	y Peat or Peat (S2) (LF		H)	-	ains Depression			³ Indicators of hydrophyt	
5 cm Mucky F	Peat or Peat (S3) (LRF	RF)		()	MLRA 72 &73 LF	RR H)		wetland hydrology must disturbed or problematic	
Retrictive Layer ((if observed):						Hydric So	oils Present?	
Туре:				_				Yes	No
Depth (inches	s):								
ROLOGY									
Vetland Hydrolo		auirod	abook all that a	nnhu)			Secondary India	ators (minimum of two required)	
	s (minimum of one is re	equirea,		112/				ators (minimum of two required)	
Surface Wate	()		Salt Crust (B	,				ce Soil Cracks (B6)	
High Water T	able (A2)		Aquatic Faur	• •			Spars	ely Vegetated Concave Surface (I	38)
Saturation (A	.3)		Marl Deposit	is (B15) (LRR U)		Draina	age Patterns (B10)	
Water Marks	(B1)		Hydrogen Su	ulfide Odd	or (C1)		Oxidiz	ed Rhizospheres on Living Roots	(C3)
Sediment Dep	. ,		Dry-Season	Water Ta	able (C2)		Cravfi	sh Burrows (C8)	
	,				es on Living Roo	te(C3)		ation Visible on Aerial Imagery (CS	n -
Drift Deposits		_	Presence of		•	(00)		0 7 (')
Algal Mat or 0	Crust (B4)		Presence of	Reduced	1 11011 (C4)			orphic Position (D2)	
Iron Deposits	s (B5)		Recent Iron I	Reductio	n in Tilled Soils ((C6)	FAC-N	Neutral Test (D5)	
Inundation Vi	isible on Aerials (B7)		Thin Muck S	urface (C	(77		Frost I	Heave Hummocks (D7) (LRR F)	
Water-Staine	ed Leaves (B9)		Other (Expla	in in Rem	narks)				
ield Observatio	ns:								
Surface Water Pre	esent? Yes	No	o X Dept	th (inches	s):		Wetland Hyd	Irology Present?	
Vater Table Prese	ent? Yes	No	D X Dept	th (inches	s): ;	>20		Yes	No
Saturation Presen	nt? Yes	No	X Dept	th (inches	s):			-	
includes capillary	-	``		, .	·				
	ed Data (stream gauge	. monito	oring well aeria	l photos	previous inspec	tions) if ava	ailable:		
	Jana (on oann gaago	,	ning tron, aona	. priotoo,	protione mepoe				
Remarks:	Hydrology paramete	ar not me	at						
Nemarks.	Hydrology paramete	i not me	σι.						
	oitation Tool (APT) rep	orted no	ormal rainfall co	onditions f	for the Grand Fo	orks area. F	SDI indicated extre	eme drought. On-site observations	suggest drie
al conditions.									



DP-20-U: Upland vegetation next to Wetland FLS-31d

DP-20-Non-hydric soils in upland data point

