Jurisdictional Determination Report

West Anchorage Snow Disposal Site

Municipality of Anchorage – Project Management & Engineering

Connors Bog
Anchorage, Alaska

November 11, 2020

This page intentionally left blank.

Table of Contents

Tables

Figures

Appendices

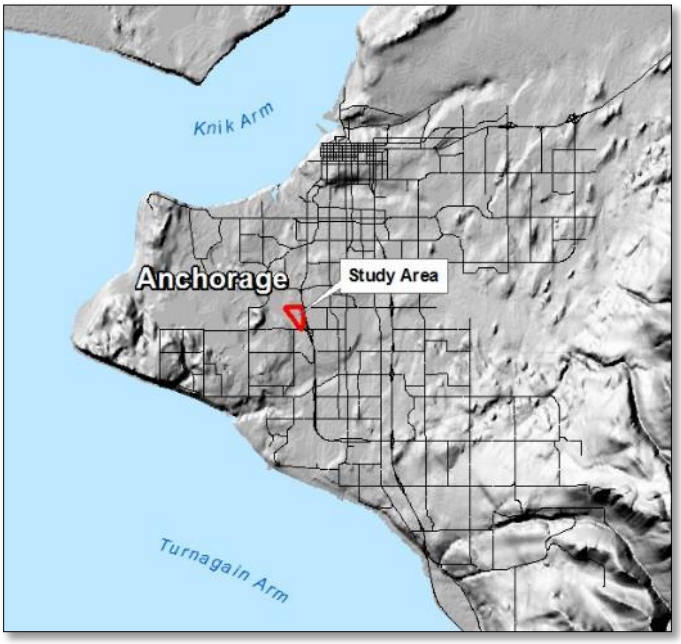
1.0 Introduction and Purpose

The Municipality of Anchorage (MOA) is evaluating the development of a snow disposal site in West Anchorage. Currently, there are no publicly-owned snow disposal sites in the vicinity, which has adversely affected the efficiency of snow handling operations. MOA has selected a site (study area) covering a portion of three parcels (Parcel Numbers 01204106000, 01204107000, and 01257101000; Figure 1) owned by MOA that is immediately south of Javier De La Vega Park in Connors Bog, adjacent to Minnesota Drive. MOA has contracted HDR, Inc. (HDR) to assist with delineation of wetlands within the study area and to preliminarily determine whether those wetlands are subject to U.S. Army Corps of Engineers' (USACE) jurisdiction under authority of Section 404 of the Clean Water Act of 1972 (as amended) or Section 10 of the Rivers and Harbors Act of 1899 according to the definitions provided in the Navigable Waters Protection Rule (NWPR; 85 FR 22250).

The purpose of this report is to present evidence that supports a preliminary determination that wetlands identified within the study area are not subject to USACE jurisdiction according to the definitions. Information presented herein complies with the USACE guidance for jurisdictional determination reports, Special Public Notice (SPN) 2020-00399 (USACE 2020).

1.1. Study Area Description

The study area is located in the Anchorage Bowl within the Municipality of Anchorage (MOA) in an area known as Connors Bog. The bog is situated on a relatively flat glacial till plain connected to Connors Lake and is surrounded by surface roads, residential development, industrial development at the MOA-owned Kloep Station, and park lands (Inset 1).



Inset 1. Study Area

The study area is relatively flat and is defined by the southern boundary of Javier De La Vega Park, Minnesota Drive to the east, Raspberry Road to the south, and a trail (Connors Bog Trail) that lies on top of a 54-inch rolled concrete sewer line that serves as the western boundary of the study area (Figures 1 and 2). Connors Bog, especially within the study area, exhibits a string bog surface form where slightly higher ridges dominated by shrubs are interspersed with low sedge and moss-dominated areas. The ridges in a string bog are oriented perpendicular to the flow of surface water, which suggests that surface water present during spring snow melt moves southwest toward the sewer line. A 12-inch diameter culvert runs through the sewer line trail and acts as an intermittent surface water connection between the study area and the

remainder of Connors Bog to the west. Raspberry Road, constructed in 1980, separates Connors Bog from Strawberry Bog, which lies to the south of Connors Bog across Raspberry Road. Existing wetland mapping for Connors Bog is shown in Figure 3.

The 72.8-acre study area can be found on Anchorage A-8 U.S. Geological Survey (USGS) quadrangles and is located in Sections 1 and 2 of Township 12 North, Range 4 West, Seward Meridian. The study area is divided between the North Fork Campbell Creek (12-digit Hydrologic Unit Code [HUC] 190204010603) watershed and the Knik Arm-Frontal Cook Inlet (190204010808) watershed (USGS 2020; Figure 4).

2.0 Methods

2.1. Wetland Delineation

On October 2, 2020 HDR wetland scientists Alena Gerlek (Professional Wetland Scientist [PWS] #3144), and Valerie Watkins (PWS #2958) conducted an on-site investigation of wetlands and waterbodies within the 72.8-acre study area. Soil conditions, hydrology, and plant communities were studied using methods described in the 1987 *Wetlands Delineation Manual* and the 2007 *Regional Supplement* (USACE 1987, 2007). The field work occurred within the USACE recommended growing season for the Cook Inlet ecoregion (USACE 2007).

The USACE Antecedent Precipitation Tool (APT) was used to determine the degree to which any recent climatic events (e.g., abnormally wet or dry conditions) may have influenced hydrology conditions during the time of the field investigation. The APT utilizes 30 years of data on precipitation, drought, and other climatic factors to determine “normal” conditions (Deters 2020). Hydrologic indicators observed in the field on October 2, 2020 would be expected to correlate with the APT output for these days (Appendix B). The APT calculated that the hydrologic conditions were normal, which is consistent with field observation.

Standard USACE Wetland Determination Forms were completed at eight sites within the study area (Appendix A). Photographs and observational data were collected at 17 additional locations (Observation Points) to document sites that were similar to those areas for which a Wetland Determination Form had already been completed. Locations of Wetland Determination Form sites and Observation Points were collected using a handheld global positioning system (GPS) and are shown on Figure 5. Photos at Wetland Determination Form sites and Observation Points are available upon request.

2.2. Investigation of Potential Surface Water Connections

A consideration when determining jurisdictional status of a wetland is the presence or absence of a surface water connection between wetlands within the study area and any potentially jurisdictional tributaries, waterbodies, or wetlands. During the wetland delineation a small culvert that runs through the Connors Bog Trail was observed. Since this culvert represents a surface water connection to wetlands west of the trail and outside of the study area, the investigation of potential surface water connections was expanded to include the remainder of Connors Bog and Connors Lake. Potential surface water connections were investigated by HDR wetland

scientist Simon Wigren (PWS #2699) on October 13, 2020 by walking publicly-owned land around the perimeter of Connors Bog and Connors Lake to document conditions at all possible surface water connections. These possible connections may include streams, culverts, and ditches. Known drainage features mapped by MOA (2020) were targeted for field observation. During the investigation a track line was recorded and GPS points were collected to document the areas observed and the locations of all culverts that could allow surface water flow into or out of Connors Bog (Figure 6). The APT calculated that antecedent hydrologic conditions on October 13 were drier than normal which was taken into consideration during the investigation. Photographs taken during the investigation are provided in Appendix C.

During the investigation, the north end of a known culvert through Raspberry Road could not be located due to thick grass cover on the road embankment. MOA ordered the inspection of the culvert by the Street Maintenance Department which was conducted using a mobile culvert inspection unit on October 14, 2020 by MOA Street Maintenance staff. The culvert is shown in the MOA Drainage Viewer[1] (Drainageway ID 1436-11-1) and the location is shown on Figure 6. The MOA culvert inspection report is provided in Appendix D.

3.0 Summary of Findings

3.1. Wetlands

The vegetation, hydrology, and soil conditions described below are based on field data collected on-site on October 2, 2020. Six of the eight sites where Wetland Determination Forms were completed were determined to be wetland and the remaining two sites were determined to be upland. Of the upland sites, two of the vegetation communities were hydrophytic but lacked hydric soils or indicators of wetland hydrology. Upland sites were located within dense black spruce stands in topographic high points. Completed Wetland Determination Forms are included in Appendix A. Observation Points that were determined to be wetland were similar to Wetland Determination Form sites and exhibited signs of prolonged flooding or saturation. Observation Points in uplands were also situated on topographic highs and were composed of similar vegetation types as Wetland Determination Form sites that were determined to be in uplands. Based on wetland mapping (Figure 5) completed from analysis of the field data, there is 66.2 acres of wetland and 6.6 acres of upland within the study area. Digital wetland mapping is available upon request.

3.2. Investigation of Potential Surface Water Connections

A total of 17 sites were documented during the investigation of potential surface water connections. While the APT found that conditions on October 13, 2020 were drier than normal, none of the culverts or potential surface water connections at these sites exhibited any observable evidence (water marks, scour lines, etc.) that they convey surface flow out of

[1] The MOA Drainage Viewer is available at http://moapw.maps.arcgis.com/apps/webappviewer/index.html?id=e482230f740e464989cc9e4fb8fef786

Connors Bog in a typical year. Additionally, surface water conditions did not appear to vary from those observed during the wetland delineation performed 11 days prior. Observational photos taken at each site are presented in Appendix C. Table 1 summarizes the observations at each site.

Table 1. Summary of Potential Surface Water Connection Investigation Sites

Site ID	Potential Surface Water Connection	Field Observations
SW1	Culvert through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-11-1)	North end not found. Investigated by MOA Street Maintenance staff. See Inset 2. South end has rust from occasional flooding in Strawberry Bog but north end is buried in the road prism.
SW2	Storm pipe from catch basin in median of Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-10-1)	Dry culvert, overgrown.
SW3	Storm pipe through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-11-1)	Dry culvert, overgrown.
SW4	Culvert through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-17-1)	Connors Bog side of culvert. Dry and overgrown with grass.
SW5	Culvert through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-17-1)	Minnesota Drive catch basin side of culvert. Dry and overgrown with grass.
SW6	Culvert through Minnesota Drive visible in MOA Drainage Viewer (Drainageway ID 1436-15-1)	Appears to flow toward Connors Bog but may only reach it during very high water conditions.
SW7	Northern extent of wetlands in Connors Bog, north of Connors Lake	No surface outlet(s) found.
SW8	Ditch along Jewel Lake Road	Disturbed, fill substrate. Higher in elevation than wetlands.
SW9	Topographic high with trail leading into Connors Bog	No channelized feature found. Several feet higher than wetlands to south.
SW10	Culvert through Frontage Road visible in MOA Drainage Viewer (Drainageway ID 1280-57-1)	Ditch and culvert dry. No channel development within ditch. Likely for snow storage and spring runoff.
SW11	North side of same culvert through Frontage Road visible in MOA Drainage Viewer (Drainageway ID 1280-57-1)	Ditch and culvert dry. No channel development within ditch. Likely for snow storage and spring runoff.
SW12	Culvert through Jewel Lake visible in MOA Drainage Viewer (Drainageway ID 1280-56-1)	Small culvert ~10” diameter. Dry and overgrown. Likely for runoff.
SW13	Northern extent of ditch along Jewel Lake Road	No channelized features found. Large, open field.
SW14	Culvert through Collins Way visible in MOA Drainage Viewer (Drainageway ID 79-40-1)	Culvert drains ditches along Jewel Lake Road and flow into Connors Bog.
SW15	Storm pipe visible in MOA Drainage Viewer (No Drainageway ID)	Storm pipes from neighborhood discharge here into catch basin.
SW16	Culvert through AWWU Sewer Line Trail	Connects wetlands east of the trail to the wetlands west of trail. Small diameter (12”) and sits ~1 foot above wetland surface.
SW17	General site conditions of Connors Lake	Lake level apparently low. No outlets observed while walking perimeter of lake.

As described in Section 2.1, the north end of a known culvert through Raspberry Road could not be located (SW1). MOA Street Maintenance owns a mobile device fitted with cameras that can provide a high definition 360-degree view of pipes to assess their overall condition. MOA Street Maintenance was able to enter the south end of the culvert and move the device approximately 140 feet north under Raspberry Road. At that point a plug of soil and fill material was encountered and causes an apparent full blockage of the north end of the culvert (Inset 2). MOA Street Maintenance staff inspected the north embankment with a metal detector and found the

apparent north end of the culvert, which was covered with several feet of road material (Inset 3). A full report of the culvert inspection performed by MOA Street Maintenance is provided in Appendix D.

Inset 2. Blockage in Raspberry Road culvert

Inset 3. MOA staff detecting the north end of the culvert under Raspberry Road

4.0 Jurisdictional Determination

The wetland delineation described in Section 2.0 was prepared in compliance with the U*SACE Wetlands Delineation Manual* (USACE 1987) and the 2007 *Regional Supplement* (USACE 2007). The on-site delineation conducted by HDR indicated that there are approximately 66.2 acres of wetlands within the 72.8-acre study area.

On June 22, 2020 the changes to the definition of Waters of the United States (WOUS) contained in the NWPR came into effect. For the purposes of the Clean Water Act, the NWPR defines WOUS as the following categories (33 CFR 328.3[a]):

(1) The territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide;

(2) Tributaries;

(3) Lakes and ponds, and impoundments of jurisdictional waters; and

(4) Adjacent wetlands.

The only waterbody adjacent to the study area wetlands is Connors Lake. However, Connors Lake is only approximately 20 acres in surface area and does not appear to be used for, or have the potential use for, interstate or foreign commerce. In order to provide a preliminary determination of the jurisdictional status of the wetlands within the study area, a discussion for each of the remaining three categories of WOUS is provided below as they relate to the wetlands in the study area.

4.1. Tributaries

Tributaries are defined under the NWPR as (33 CFR 328[c][12]):

> *"The term tributary means a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a water identified in paragraph (a)(1) of this section in a typical year either directly or through one or more waters identified in paragraph (a)(2), (3), or (4) of this section. A tributary must be perennial or intermittent in a typical year. The alteration or relocation of a tributary does not modify its jurisdictional status as long as it continues to satisfy the flow conditions of this definition. A tributary does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a subterranean river, through a culvert, dam, tunnel, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature. The term tributary includes a ditch that either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland as long as the ditch satisfies the flow conditions of this definition."*

As shown in Figure 4, there are no tributaries emanating from or that pass through Connors Bog. Fish Creek and Campbell Creek are the closest streams but lie approximately 1.0 mile to

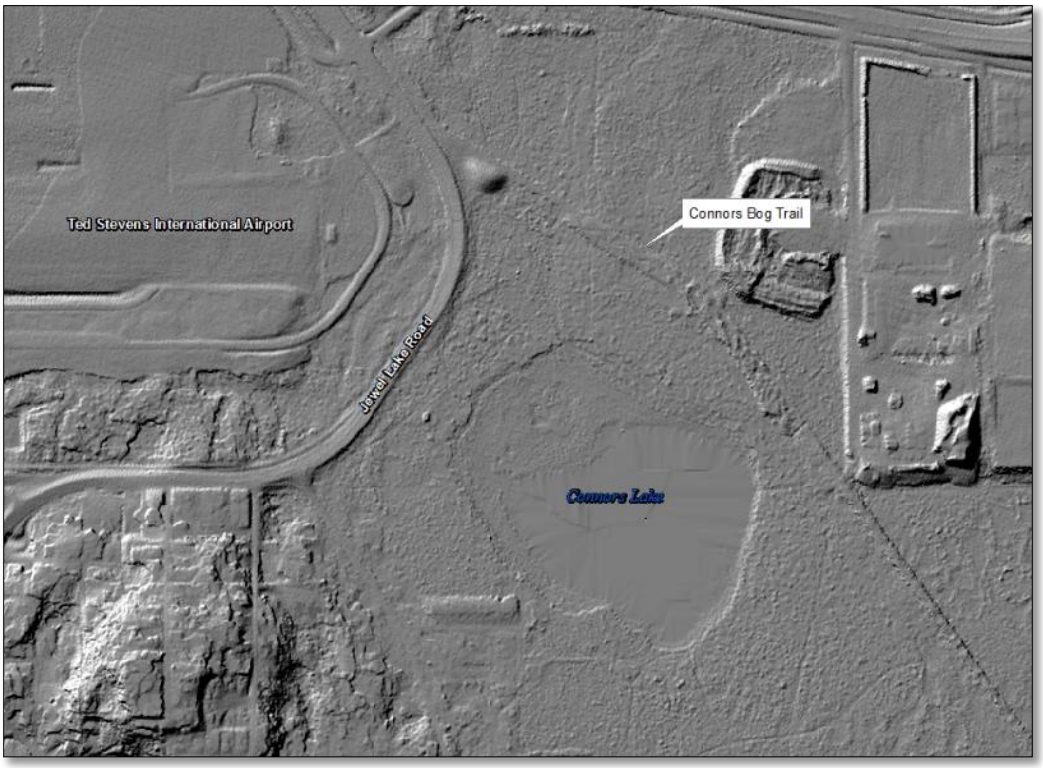
the north and 1.5 miles to the southeast of the center of Connors Bog, respectively. The field investigation of potential surface water connections did not find any surface inlets or outlets of Connors Lake or Connors Bog that could be considered tributaries (Figure 6).

4.2. Lakes, Ponds, and Impoundments of Jurisdictional Waters

Lakes, ponds, and impoundments of jurisdictional waters are defined under the NWPR as (33 CFR 328[c][6]):

> *"The term lakes and ponds, and impoundments of jurisdictional waters means standing bodies of open water that contribute surface water flow to a water identified in paragraph (a)(1) of this section in a typical year either directly or through one or more waters identified in paragraph (a)(2), (3), or (4) of this section. A lake, pond, or impoundment of a jurisdictional water does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a culvert, dike, spillway, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature. A lake or pond, or impoundment of a jurisdictional water is also jurisdictional if it is inundated by flooding from a water identified in paragraph (a)(1), (2), or (3) of this section in a typical year."*

In order for Connors Lake to meet the definition of a WOUS, a surface water connection of any size and type would be required to flow from the lake to a jurisdictional water. Aerial imagery and topographic data show that there are no clear outlets from Connors Lake that would contribute surface water through any other WOUS or non-jurisdictional surface water features. As shown in Inset 4, the lake lies in a depressional area and is bounded by surface development. Field investigation of the area (Figure 6) found that there are no streams, culverts or other features that would allow surface water to flow out of Connors Lake to any WOUS.



Inset 4. 2-foot LiDAR hillshade of area around Connors Lake

4.3. Adjacent Wetlands

Adjacent wetlands are defined under the NWPR as (33 CFR 328[c][6]) wetlands that:

- *Abut, meaning to touch at least at one point or side of, a water identified in paragraph (a)(1), (2), or (3) of this section;*
- *Are inundated by flooding from a water identified in paragraph (a)(1), (2), or (3) of this section in a typical year;*
- *Are physically separated from a water identified in paragraph (a)(1), (2), or (3) of this section only by a natural berm, bank, dune, or similar natural feature; or*
- *Are physically separated from a water identified in paragraph (a)(1), (2), or (3) of this section only by an artificial dike, barrier, or similar artificial structure so long as that structure allows for a direct hydrologic surface connection between the wetlands and the water identified in paragraph (a)(1), (2), or (3) of this section in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature. An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year."*

As described in the previous discussion, Connors Lake does not have any surface water connection to downstream WOUS. Therefore, the wetlands within the study area do not abut and are not inundated by a WOUS, as defined under the NWPR. Additionally, as shown in

Section 3.2, the culvert through Raspberry Road does not provide a surface water connection through the road, an artificial berm, to Strawberry Bog. Strawberry Bog may provide a surface water connection to Campbell Creek, but that possibility has not been investigated as part of this report. The wetlands in the study area do not meet the definition of 'adjacent wetlands' under the NWPR because it does not abut a WOUS and does not have a surface water connection through Raspberry Road.

Based on the discussion provided in this section, there are no surface water connections between the wetlands within the study area and any WOUS. Therefore, the wetlands within the study area are preliminarily determined to not be within the jurisdiction of the USACE under Section 404 of the Clean Water Act, however the USACE will render a determination of jurisdictional status.

5.0 References

Deters, J. 2020. *Antecedent Precipitation Tool Version 1.0.* USACE Regulatory Program.

Municipality of Anchorage (MOA). 2020. Watershed Management Services Hydrography Geodatabase. Accessed at: http://www.anchoragestormwater.com/datalibrary.html on September 28, 2020.

—. 2015a. Digital color ortho-rectified aerial photography taken in 2015, at a sub-meter horizontal accuracy ground pixel resolution.

—. 2015b. Light Detection and Ranging (LiDAR)-derived 2-foot topographic contours.

U.S. Army Corps of Engineers (USACE). 2020. Special Public Notice 2020-00399. Corps of Engineers Regulatory Program, Consultant-Supplied Jurisdictional Determination Reports. Anchorage, AK.

—. 2007. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0)*. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi. TR-07-24.

—. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. Technical Report Y-87-1.

U.S. Federal Register. April 21, 2020. Rules and Regulations, Vol. 85, No. 77. U.S. Department of Defense. Department of the Army, Corps of Engineers. 33 CFR Part 328. *The Navigable Waters Protection Rule: Definition of "Waters of the United States."*

U.S. Fish and Wildlife Service (USFWS). 2020. National Wetlands Inventory. Wetlands Mapper digital data. Accessed at: https://www.fws.gov/wetlands/data/mapper.html on October 8, 2020.

U.S. Geological Survey (USGS). 2020. The National Map Viewer. Accessed at http://viewer.nationalmap.gov/viewer/ on October 10, 2020.

This page intentionally left blank.

Figures

LEGEND

Study Area

Snow Disposal Site Parcels

0 150 300 600 900 1,200 Feet

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020

N

West Anchorage Snow Disposal
Municipality of Anchorage

Figure 1
Study Area Vicinity
Jurisdictional Determination Report

LEGEND

StudyArea

5-foot Contours

0 125 250 500 750 1,000 Feet

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020

N

West Anchorage Snow Disposal
Municipality of Anchorage

Figure 2
Study Area Topography
Jurisdictional Determination Report

LEGEND

Study Area

MOA Wetland Mapping (MOA 2020)

NWI Wetland Mapping (USFWS 2020)

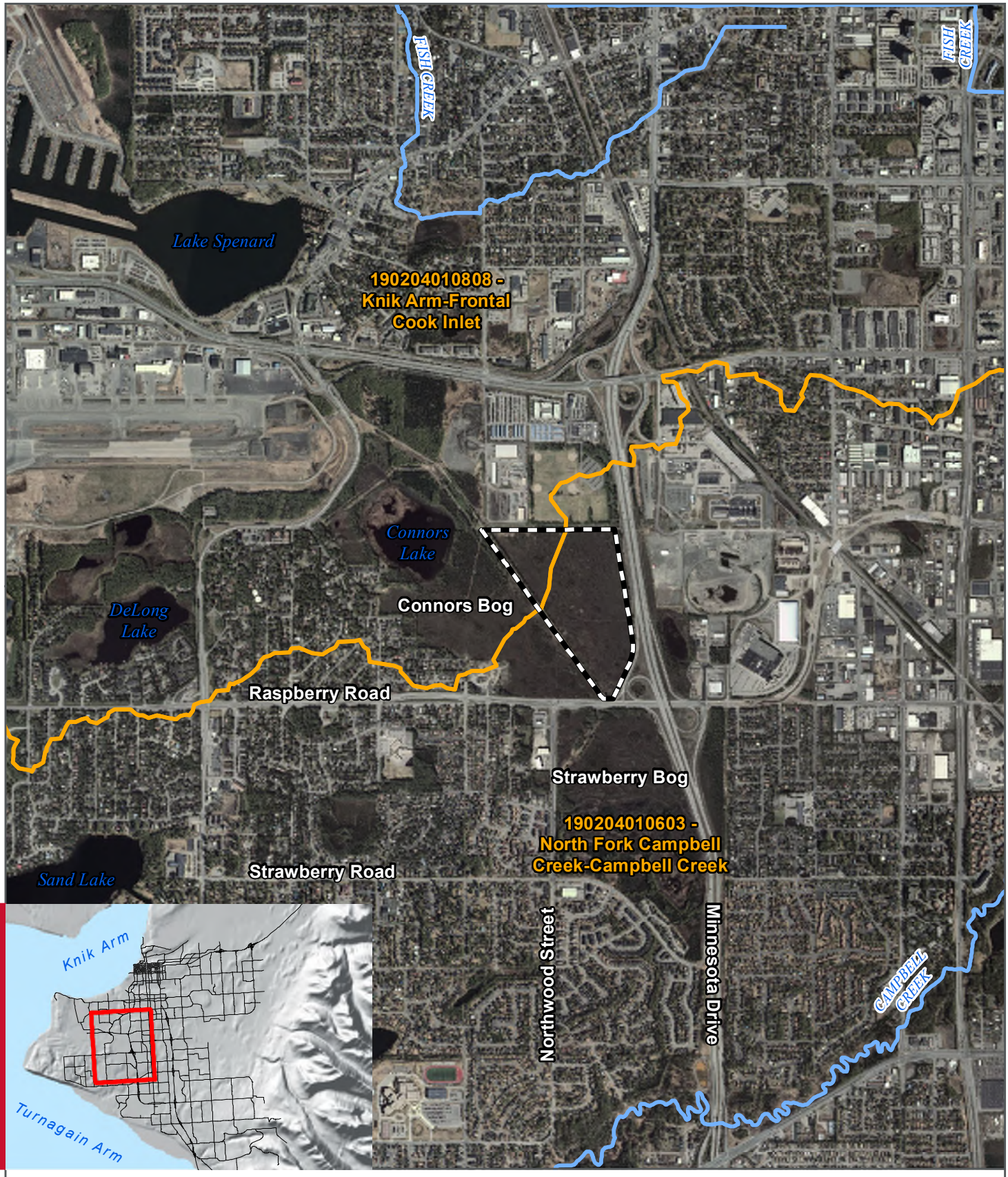
0 125 250 500 750 1,000 Feet

Aerial imagery provided by the Municipality of Anchorage (2015)
11/9/2020

N

West Anchorage Snow Disposal
Municipality of Anchorage

Figure 3
Existing Wetland Mapping
Jurisdictional Determination Report



LEGEND

- Study Area
- HUC-12 Watersheds (USGS 2020)
- Streams

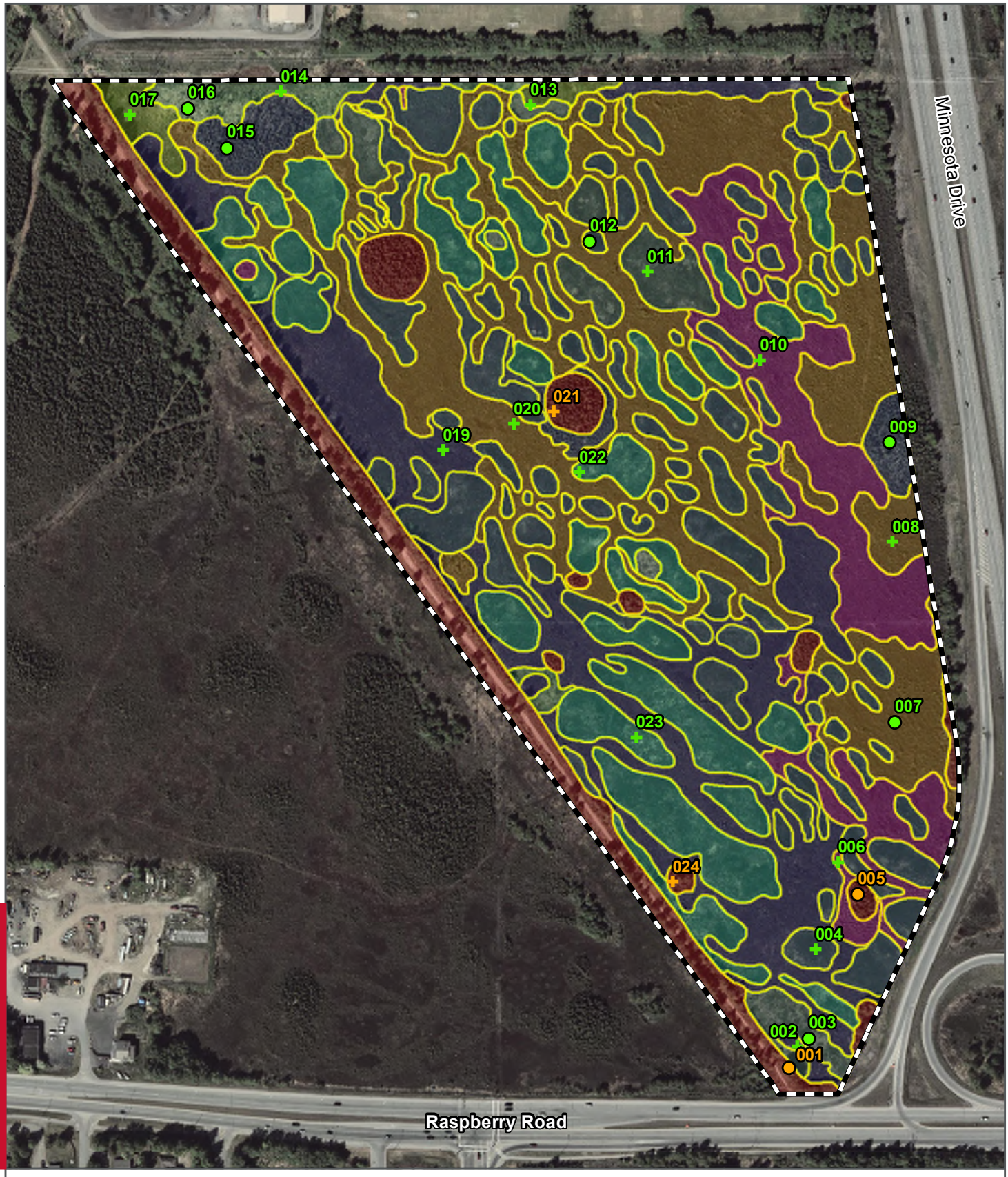
0 360 720 1,440 2,160 2,880 Feet

West Anchorage Snow Disposal
Municipality of Anchorage

Figure 4
Watersheds
Jurisdictional Determination Report

Aerial imagery provided by the Municipality of Anchorage (2015)
11/9/2020

N



LEGEND

Study Area

Field Points

- JD, Upland
- JD, Wetland
- OP, Upland
- OP, Wetland

Wetland Type

- PEM1/SS1C
- PEM1C
- PSS1/4B
- PSS1/EM1B
- PSS1/EM1C
- PSS1B
- PSS1C
- PSS4/1B
- PSS4B
- Upland

0 125 250 500 750 1,000 Feet

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020

N

West Anchorage Snow Disposal
Municipality of Anchorage

Figure 5
Wetland Mapping and Field Points
Jurisdictional Determination Report

LEGEND

- Surface Water Connection Investigation Points
- Survey Track Line
- MOA Drainageways (MOA 2020)

0 125 250 500 750 1,000 Feet

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020

N

West Anchorage Snow Disposal
Municipality of Anchorage

Figure 6
Surface Water Connection Investigation
Jurisdictional Determination Report

This page intentionally left blank.

Appendix A

Wetland Determination Data Forms

October 5, 2020

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/2020
Applicant/Owner: MOA Sampling Point #: 001
Investigator(s): A. Gerlek, V. Watkins Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.159574 Long. 149.917547 ± ° NAD 83 Recorded on GPS #: ✓ Marked on map? — Field Map #: —
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: lowland Slope (%): 10 Aspect: NE
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: linear / (convex) / concave NWI classification: U
Photo nos./descriptions: Sol x2 NESW Camera #: — Veg Type (Viereck Level 4 or other): IB2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: — If no, explain. HGM type: N/A
Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No —
Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.
(Site is fill)

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ✓	Is the sampled area within a wetland? Yes — No ✓
Hydric Soil Present?	Yes —	No ✓	
Wetland Hydrology Present?	Yes —	No ✓	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bal	10	Y	FACU	5.			
2. Bet pap	20	Y	FACW	6.			
3. Pic gla	5	—	FACU	7.			
4.				8.			

Total Tree Cover: 35
50% of total cover: 17.5 20% of total cover: 7

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Bet pap	5	Y	FACW	7.			
2. Sal beb	10	Y	FAC	8.			
3. Pic gla	2	—	FACU	9.			
4. Pop bal	3	—	FACU	10.			
5. Sal pul	2	—	FACW	11.			
6.				12.			

Total Sapling/Shrub Cover: 22
50% of total cover: 11 20% of total cover: 4.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	60	Y	FAC	12.			
2. Cla ang	5	—	FACW	13.			
3. Equ sil	25	Y	FAC	14.			
4. Poa pal	1	—	FACW	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 90
50% of total cover: 45 20% of total cover: 18

Circular 1/10-ac plot — or other plot dimension: 15x20 % of bare ground: 0
% Cover of Wetland Bryophytes (where applicable) 0 % Total Cover of Bryophytes 5 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	—	X1=	—
FACW species	2	X2=	4
FAC species	95	X3=	285
FACU species	50	X4=	200
UPL + NL species	—	X5=	—
Column Totals:	147 (A)		489 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes — No ✓

Remarks:
plot confined to berm between trail & wetland

SOIL Sampling Point #: 001

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-5	Oi									fine sand mixed in
5-15	B1	10YR 4/2						Fine Sand		small gravel
15-16	B2	7.5YR 4/3						FSaLo		
16-17	B3	10YR 5/1						FSiLo		ash
17-22	B4	10YR 4/2						FSa		gravelly

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, **measure from top of mineral layers unless otherwise noted**):

Standard Indicators:

- [ ] Histosol or Histel (A1)
- [ ] Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4) (within 12"of mineral surface: ● _____" in this pit
- [ ] Thick Dark Surface (A12)
- [ ] Alaska Gleyed (A13)
- [ ] Alaska Redox (A14)
- [ ] Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- [ ] Alaska Color Change[4] (TA4)
- [ ] Alaska Alpine Swales (TA5)
- [ ] Alaska Redox with 2.5Y Hue
- [ ] Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- [ ] Other (e.g., see p.91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches) _____

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes _____ No ✓

Comments:
1. too dry for a-a
2.
3. likely fill from utility line

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2) (w/in 12")
- [ ] Saturation (A3) (w/in 12")
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Mart Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Dry-Season Water Table (C2)
- [ ] Other (explain)

Secondary Indicators (at least 2 are required)

- [ ] Water-Stained Leaves (B9)
- [ ] Drainage Patterns (B10) _____
- [ ] Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- [ ] Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- [ ] Salt Deposits (C5)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- [ ] Microtopographic Relief (D4) (caused by water)
- [ ] FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) _____

Water Table Present? Yes ____ No ✓ Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:
plot is ~4' in elev. above adjacent wetland

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/20

Applicant/Owner: MOA Sampling Point #: 003

Investigator(s): A. Gerlek, V. Watkins Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.159776 Long. 149.917263 ± ' NAD 83 Recorded on GPS #: ___ Marked on map? — Field Map #: —

Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: lowland Slope (%): 1 Aspect: S

Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: PEMA/SSIC

Photo nos./descriptions: SD:1x2 NESW Camera #: ___ Veg Type (Viereck Level 4 or other): BLCZe

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: ___ If no, explain. HGM type: Flat

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

Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the sampled area within a wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
Wetland Hydrology Present?	Yes ✓	No ___	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Cha cal	25	Y	FACW	7.			
2. Myr gal	5		OBL	8.			
3. Arc pfl	3		FACW	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 33

50% of total cover: 16.5 20% of total cover: 6.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Car las	90	Y	OBL	12.			
2. Car utr	8		OBL	13.			
3. Lim pal	2		OBL	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 100

50% of total cover: 50 20% of total cover: 20

Circular 1/10-ac plot ✓ or other plot dimension: ___ % of bare ground: 5

% Cover of Wetland Bryophytes (where applicable) 30 % Total Cover of Bryophytes 30 %

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	105	X1=	105
FACW species	28	X2=	56
FAC species	—	X3=	—
FACU species	—	X4=	—
UPL + NL species	—	X5=	—
Column Totals:	133 (A)		161 (B)

Prevalence Index = B/A = 1.21

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%

✓ Prevalence Index is ≤3.0

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Car utr in low spots w/ standing water or surface saturation.

SOIL

Sampling Point #: 003

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-11	Oi								—	
11-72	Oe								—	some Silt mixed

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, **measure from top of mineral layers unless otherwise noted**):

Standard Indicators:

- Y Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- Y Hydrogen Sulfide (A4) (within 12"of mineral surface; @ 11" in this pit
- N Thick Dark Surface (A12)
- Alaska Gleyed (A13)
- Alaska Redox (A14)
- Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Alaska Color Change[4] (TA4)
- Alaska Alpine Swales (TA5)
- Alaska Redox with 2.5Y Hue
- Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- Other (e.g., see p 91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches)

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- Y Surface Water (A1)
- Y High Water Table (A2) (w/in 12")
- Y Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- Y Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- Y FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):

Surface Water Present? Yes ✓ No ___ Depth of water (in.) 1

Water Table Present? Yes ✓ No ___ Depth to water (in.) 10

Seeping in at that depth but not yet filled?: 8

Saturation Present? Yes ✓ No ___ Depth to sat. (in.) 2
(includes capillary fringe) Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/2020
Applicant/Owner: MOA Sampling Point #: 005
Investigator(s): A. Gerlek, V. Watkins Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.160769 Long. 149.916557 ± ' NAD 83 Recorded on GPS #: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: lowland Slope (%): – Aspect: –
Local relief: Shape across slope: linear / (convex) / concave Shape up/downslope: linear / (convex) / concave NWI classification: –
Photo nos./descriptions: Soil x2 NESW Camera #: – Veg Type (Viereck Level 4 or other): TAZf
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: – If no, explain. HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No –
Are Vegetation N Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No –	Is the sampled area within a wetland? Yes – No ✓
Hydric Soil Present?	Yes –	No ✓	
Wetland Hydrology Present?	Yes –	No ✓	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic mar	40	Y	FACW	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 40
50% of total cover: 20 20% of total cover: 8

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Pic mar	10	Y	FACW	7. Cha cal	1		FACW
2. Rosac.	6	Y	FAC	8. Sor sit	1		FACU
3. Rhogro	4	Y	FAC	9.			
4. Loc Vit	5		FAC	10.			
5. Betnan	2		FAC	11.			
6. Alnvir	5		FAC	12.			

Total Sapling/Shrub Cover: 32
50% of total cover: 16 20% of total cover: 6.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	40	Y	FAC	12.			
2. Car can	8		FACW	13.			
3. Hes lig	7		FACW	14.			
4. Car utr	2		OBL	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 57
50% of total cover: 28.5 20% of total cover: 11.4

Circular 1/10-ac plot ✓ or other plot dimension: – % of bare ground: 10
% Cover of Wetland Bryophytes (where applicable) – % Total Cover of Bryophytes 50 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	X1=	2
FACW species	50	X2=	100
FAC species	56	X3=	168
FACU species	21	X4=	84
UPL + NL species	–	X5=	–
Column Totals:	129 (A)		354 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%
✓ Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No –

Remarks:
slight knob higher in elev than surrounding bog
Car utr in depressions on edges of plot
middle bitter

SOIL

Sampling Point #: 05

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	a,a dip. (pos/neg)	Remarks (or use comment number)
0-3	A									
3-12	B	10YR 3/2						SiL		Jim soil moist

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, **measure from top of mineral layers unless otherwise noted**):

Standard Indicators:

- N Histosol or Histel (A1)
- Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- Black Histic (A3)
- Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- Thick Dark Surface (A12)
- Alaska Gleyed (A13)
- Alaska Redox (A14)
- Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Alaska Color Change[4] (TA4)
- Alaska Alpine Swales (TA5)
- Alaska Redox with 2.5Y Hue
- Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- Other (e.g., see p.91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: _____
Depth (inches) _____

Drainage Class: MW
Soil Map Unit Name:

Hydric Soil Present? Yes _____ No ✓

Comments:
1. too dry for a-a
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- High Water Table (A2) (w/in 12")
- Saturation (A3) (w/in 12")
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Dry-Season Water Table (C2)
- Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- Drainage Patterns (B10) _____
- Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- Presence of Reduced Iron (C4) (pos. a,a or soil color change w/in 12")
- N Salt Deposits (C5)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- Microtopographic Relief (D4) (caused by water)
- Y FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):
Surface Water Present? Yes ____ No ✓ Depth of water (in.) _____
Water Table Present? Yes ____ No ✓ Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ____
Saturation Present? Yes ____ No ✓ Depth to sat. (in.) _____
(includes capillary fringe) Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/20

Applicant/Owner: MOA Sampling Point #: 007

Investigator(s): A Gerek, V. Watkins Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.161957 Long. 149.916028 ± ' NAD 83 Recorded on GPS #: ___ Marked on map? — Field Map #: —

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Lowland Slope (%): 2 Aspect: S

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS4/1B

Photo nos./descriptions: 501 #2 NESW Camera #: ___ Veg Type (Viereck Level 4 or other): IIA2a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: ___ If no, explain. HGM type: Flat

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

Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the sampled area within a wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ✓	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Pic mar	35	Y	FACW	7. Myr gal	5		OBL
2. Bet nan	17		FAC	8. And pol	2		FACW
3. Pic gla	13	Y	FAC	9. Cha fol	5		FACW
4. Rhy lam	8		FACW	10.			
5. Emp nig	7		FAC	11.			
6. Vac vit	3		FAC	12.			

Total Sapling/Shrub Cover: 90

50% of total cover: 45 20% of total cover: 18

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	15	Y	FAC	12.			
2. Equ fly	3		FACW	13.			
3. Tri vag	8	Y	FACW	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 26

50% of total cover: 13 20% of total cover: 5.2

Circular 1/10-ac plot ✓ or other plot dimension: ___ % of bare ground: 0

% Cover of Wetland Bryophytes (where applicable) 30 % Total Cover of Bryophytes 50 %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	X1=	5
FACW species	61	X2=	122
FAC species	50	X3=	150
FACU species	—	X4=	—
UPL + NL species	—	X5=	—
Column Totals:	116 (A)		277 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%

✓ Prevalence Index is ≤3.0

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point #: 007

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-5	O;									
5-21	Oe									

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, **measure from top of mineral layers unless otherwise noted**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- ___ Other (e.g., see p.91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches) _____

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ___

Comments:
1. Soil moist but not saturated - assume saturation at least 2 wks of growing season conditions
2.
3. prev. 3 months normal conditions but prev. 30 days drier than normal

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- Y Microtopographic Relief (D4) (caused by water) Minimal
- Y FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No ✓ Depth of water (in.) _____

Water Table Present? Yes ___ No ✓ Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:
wetter in low spots. Hydrology may be impacted by presence of Minnesota Drive - plot is at upslope edge of bog, would have been connected to other wetlands before road was constructed.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/20

Applicant/Owner: MOA Sampling Point #: 009

Investigator(s): A. Gerlek, V. Watkins Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.163886 Long. 149.916098 ± ' NAD 83 Recorded on GPS #: ✓ Marked on map? – Field Map #: –

Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: lowland Slope (%): 1 Aspect: S

Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: PSS4B

Photo nos./descriptions: SW1 #2 NESW Camera #: — Veg Type (Viereck Level 4 or other): IA3d

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: ✓ If no, explain. HGM type: flat

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

Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No —	Is the sampled area within a wetland? Yes ✓ No —
Hydric Soil Present?	Yes ✓	No —	
Wetland Hydrology Present?	Yes ✓	No —	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic mar	15	Y	FACW	5.			
2. Bet pap	3	—	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 18

50% of total cover: 9 20% of total cover: 3.6

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Pic mar	35	Y	FACW	7. Rho hm	5	—	FACW
2. Alnten	8	—	FAC	8. Bet nan	3	—	FAC
3. Rhogro	10	Y	FAC	9.			
4. Cha hal	7	—	FACW	10.			
5. Vac gl.	5	—	FAC	11.			
6. Vac vit	T	—	FAC	12.			

Total Sapling/Shrub Cover: 75

50% of total cover: 37.5 20% of total cover: 15

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	55	Y	FAC	12.			
2. Equ pra	10	—	FACW	13.			
3. Com pal	3	—	OBL	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 68

50% of total cover: 34 20% of total cover: 13.6

Circular 1/10-ac plot ✓ or other plot dimension: — % of bare ground: 8

% Cover of Wetland Bryophytes (where applicable) 10 % Total Cover of Bryophytes 30 %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	X1=	3
FACW species	72	X2=	144
FAC species	86	X3=	258
FACU species	–	X4=	–
UPL + NL species	–	X5=	–
Column Totals:	161 (A)		405 (B)

Prevalence Index = B/A = 2.52

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%

✓ Prevalence Index is ≤3.0

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

— Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No —

Remarks:
many lower spots throughout w/ bare ground + evidence of surface water
Com pal

SOIL

Sampling Point #: (2)T

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-11	Oi									
11-21	Oe									

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- ___ Other (e.g., see p.91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches) _____

Drainage Class: ?)
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ___

Comments:
1. Soil moist throughout - assume oftosaturated for at least 2 weeks during growing season - prev 30 days drier than normal (prev 3 months normal)
2. almost saturated at 20"
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, measure from soil surface):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2) (w/in 12")
- ___ Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) _____
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- ___ Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No ✓ Depth of water (in.) _____
Water Table Present? Yes ___ No ✓ Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:
many microlows throughout
hydrology likely influenced by presence of road & disconnection from larger wetland complex

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/20

Applicant/Owner: MOA Sampling Point #: 012

Investigator(s): A. Gordek, V. Whitney Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.165272 Long. 149.920371 ± ' NAD 83 Recorded on GPS #: ✓ Marked on map? — Field Map #: —

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: lowland Slope (%): — Aspect: —

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSSK

Photo nos./descriptions: 3011 x2 NESW Camera #: — Veg Type (Viereck Level 4 or other): TCZj

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: — If no, explain. HGM type: flat

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

Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No —	**Is the sampled area within a wetland?** Yes ✓ No —
Hydric Soil Present?	Yes ✓	No —	
Wetland Hydrology Present?	Yes ✓	No —	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: —

50% of total cover: — 20% of total cover: —

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Myrgal	70	Y	OBL	7.			
2. Arc pol	5	—	FACW	8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 75

50% of total cover: 37.5 20% of total cover: 15

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Eri sch	25	Y	OBL	12.			
2. Eri ang	10	Y	OBL	13.			
3. Car las	5	—	OBL	14.			
4. Eri vag	5	—	FACW	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 45

50% of total cover: 22.5 20% of total cover: 9

Circular 1/10-ac plot — or other plot dimension: 15 x 15 % of bare ground: 0

% Cover of Wetland Bryophytes (where applicable) 5 % Total Cover of Bryophytes 5 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	X1=	110
FACW species	10	X2=	20
FAC species	—	X3=	—
FACU species	—	X4=	—
UPL + NL species	—	X5=	—
Column Totals:	120 (A)		130 (B)

Prevalence Index = B/A = 1.08

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%

✓ Prevalence Index is ≤3.0

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

— Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No —

Remarks:

plot is constrained to Myrgal clearing, excluding PSS mix of surrounding PSS 4/1B

SOIL

Sampling Point #: 017

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-10	Oi								+	
10-23	Oe								+	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, **measure from top of mineral layers unless otherwise noted**):

Standard Indicators:

- Y Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- Y Hydrogen Sulfide (A4) (within 12"of mineral surface; @ 8" in this pit
- N Thick Dark Surface (A12)
- Alaska Gleyed (A13)
- Alaska Redox (A14)
- Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Alaska Color Change[4] (TA4)
- Alaska Alpine Swales (TA5)
- Alaska Redox with 2.5Y Hue
- Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- Other (e.g., see p.91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches)

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- Y Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- Y Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- Y Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- Y FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):

Surface Water Present? Yes No ✓ Depth of water (in.)
Water Table Present? Yes No ✓ Depth to water (in.)
Seeping in at that depth but not yet filled?:
Saturation Present? Yes ✓ No Depth to sat. (in.) 4
(includes capillary fringe) (Epi) Endo Unknown

Wetland Hydrology Present? Yes ✓ No

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

Remarks:
Evidence of surface water - water stained leaves in low spots
Soil was moist + some what saturated when pit was dug, but walls of pit became more saturated over time. Saturation appeared on one side of the pit before other - episaturation?
Drier than normal conditions here support wetland determination at 007000 mE

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/20
Applicant/Owner: MOA Sampling Point #: 015
Investigator(s): A. Gelek, V. Watkins Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.165920 Long. 149.925546 ± ' NAD 83 Recorded on GPS #: ✓ Marked on map? — Field Map #: —
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: leveled Slope (%): — Aspect: —
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSSAB
Photo nos./descriptions: SOIL x2 NESW Camera #: — Veg Type (Viereck Level 4 or other): TFA2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: — If no, explain. HGM type: flat
Are Vegetation N, Soil N, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No —
Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No —	Is the sampled area within a wetland? Yes ✓ No —
Hydric Soil Present?	Yes ✓	No —	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ✓	No —	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic mar	5	Y	FACW	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 5
50% of total cover: — 20% of total cover: —

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Pic mar	45	Y	FACW	7.			
2. Rhod gm	7		FAC	8.			
3. Vac vit	15	Y	FAC	9.			
4. Sor sit	1		FACW	10.			
5. Che cal	3		FACW	11.			
6.				12.			

Total Sapling/Shrub Cover: 70
50% of total cover: 35 20% of total cover: 14

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Cal can	12	Y	FAC	12.			
2. Rub ore	3	Y	FAC	13.			
3.				14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 15
50% of total cover: 7.5 20% of total cover: 3
Circular 1/10-ac plot ✓ or other plot dimension: — % of bare ground: 5
% Cover of Wetland Bryophytes (where applicable) 5 % Total Cover of Bryophytes 100 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	—	X1=	—
FACW species	53	X2=	106
FAC species	37	X3=	111
FACU species	—	X4=	—
UPL + NL species	—	X5=	—
Column Totals:	90 (A)		217 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%
✓ Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No —

Remarks:
Chamaedaphne growing in low spots

SOIL

Sampling Point #: 015

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

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	a,a dip. (pos/neg)	Remarks (or use comment number)
0-10	O;									
10-17	Oe									pockets of SaLo

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]Location: PL = Pore Lining, RC = Root Channel, M = Matrix

Hydric Soil Indicators (check ones that apply, **measure from top of mineral layers unless otherwise noted**):

Standard Indicators:

- ✓ Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ Alaska Gleyed without Hue 5Y or Redder Underlying Layer
- ___ Other (e.g., see p.91 of 2007 Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ✓
Depth (inches) _____

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ___

Comments:
1. Soil moist but not saturated - assume oxysaturation for 2 wks of growing season.
2. Prev. 3 months normal, but prev. 30 days diertion normal
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. a,a or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12")
- Y Microtopographic Relief (D4) (caused by water)
- Y FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)

Field Observations (in. from ground surface):
Surface Water Present? Yes ___ No ✓ Depth of water (in.) _____
Water Table Present? Yes ___ No ✓ Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:
hydrology likely disturbed by large amount of gravel fill to N.
1-2' in elev higher than 016

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: West Anchorage Snow Disposal Borough/City: MOA Date: 10/2/20

Applicant/Owner: MOA Sampling Point #: 016

Investigator(s): A. Gillis, V. Watkins Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.166195 Long. 149.926105 ± ' NAD 83 Recorded on GPS #: ✓ Marked on map? — Field Map #: —

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: lowland Slope (%): — Aspect: —

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PEMC

Photo nos./descriptions: soil x2 VEGW Camera #: — Veg Type (Viereck Level 4 or other): TTAZa

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ✓ No: — If no, explain. HGM type: Slope

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

Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No —	**Is the sampled area within a wetland?** Yes ✓ No —
Hydric Soil Present?	Yes ✓	No —	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ✓	No —	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet pap	3	Y	FACW	5.			
2. Pic mar	2	Y	FACW	6.			
3.				7.			
4.				8.			

Total Tree Cover: 5

50% of total cover: 2.5 20% of total cover: 1

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Bet pap	7	Y	FACW	7.			
2. Pic mar	3	Y	FACW	8.			
3. Rub ida	2	—	FACW	9.			
4. Bet nan	1	—	FAC	10.			
5. Rosa aci	1	—	FACW	11.			
6.				12.			

Total Sapling/Shrub Cover: 12

50% of total cover: 6 20% of total cover: 2.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	100	Y	FAC	12.			
2. Cha ang	3	—	FACW	13.			
3.				14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 103

50% of total cover: 51.5 20% of total cover: 20.6

Circular 1/10-ac plot ✓ or other plot dimension: — % of bare ground: 0

% Cover of Wetland Bryophytes 0 (where applicable) % Total Cover of Bryophytes 0 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species —	X1= —
FACW species 5	X2= 10
FAC species 190	X3= 300
FACU species 15	X4= 60
UPL + NL species —	X5= —
Column Totals: 120 (A)	370 (B)

Prevalence Index = B/A = 3.08

Hydrophytic Vegetation Indicators:

✓ Dominance Test is>50%

— Prevalence Index is ≤3.0

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

— Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No —

Remarks:

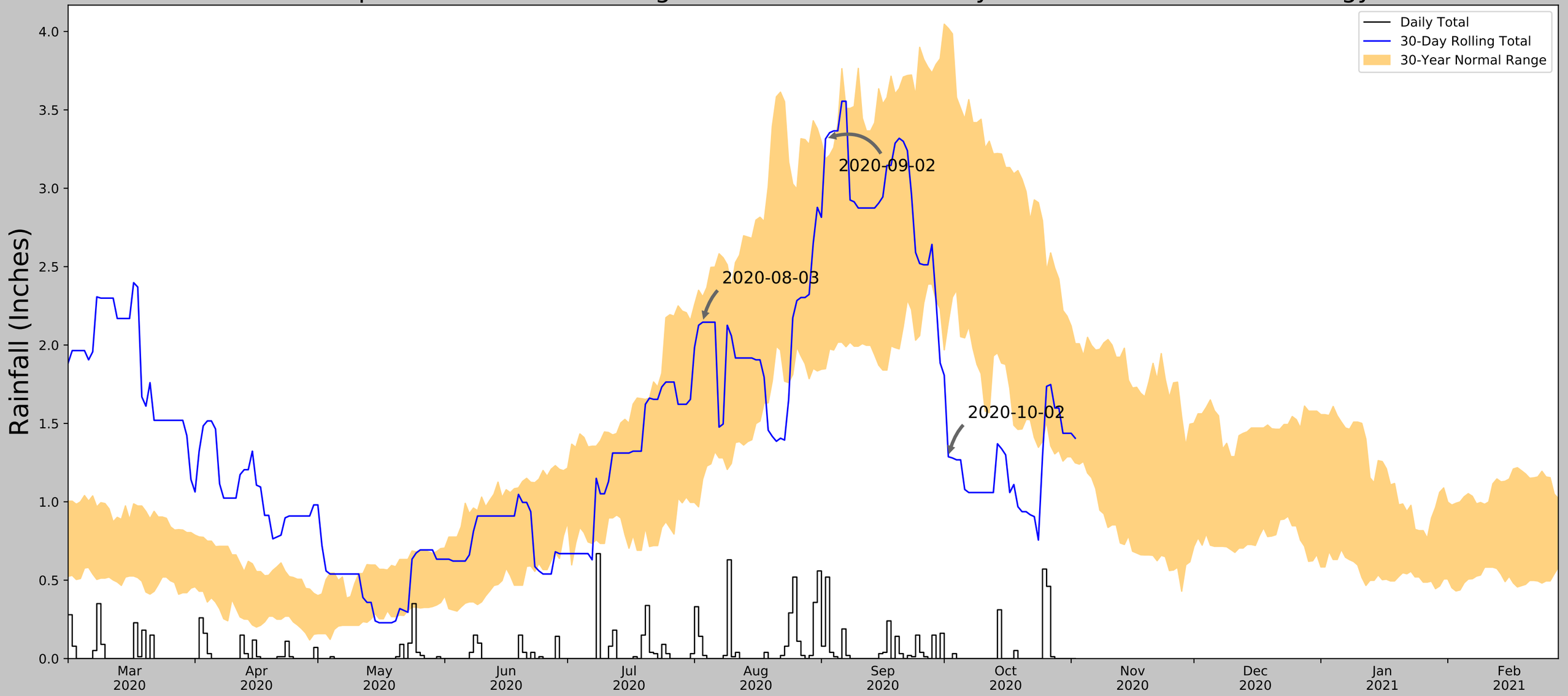
Standing dead pic mar 10%.

Appendix B

Antecedent Precipitation Tool Results

This page intentionally left blank.

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



Coordinates	61.165434, -149.922287
Observation Date	2020-10-02
Elevation (ft)	80.98
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Dry Season

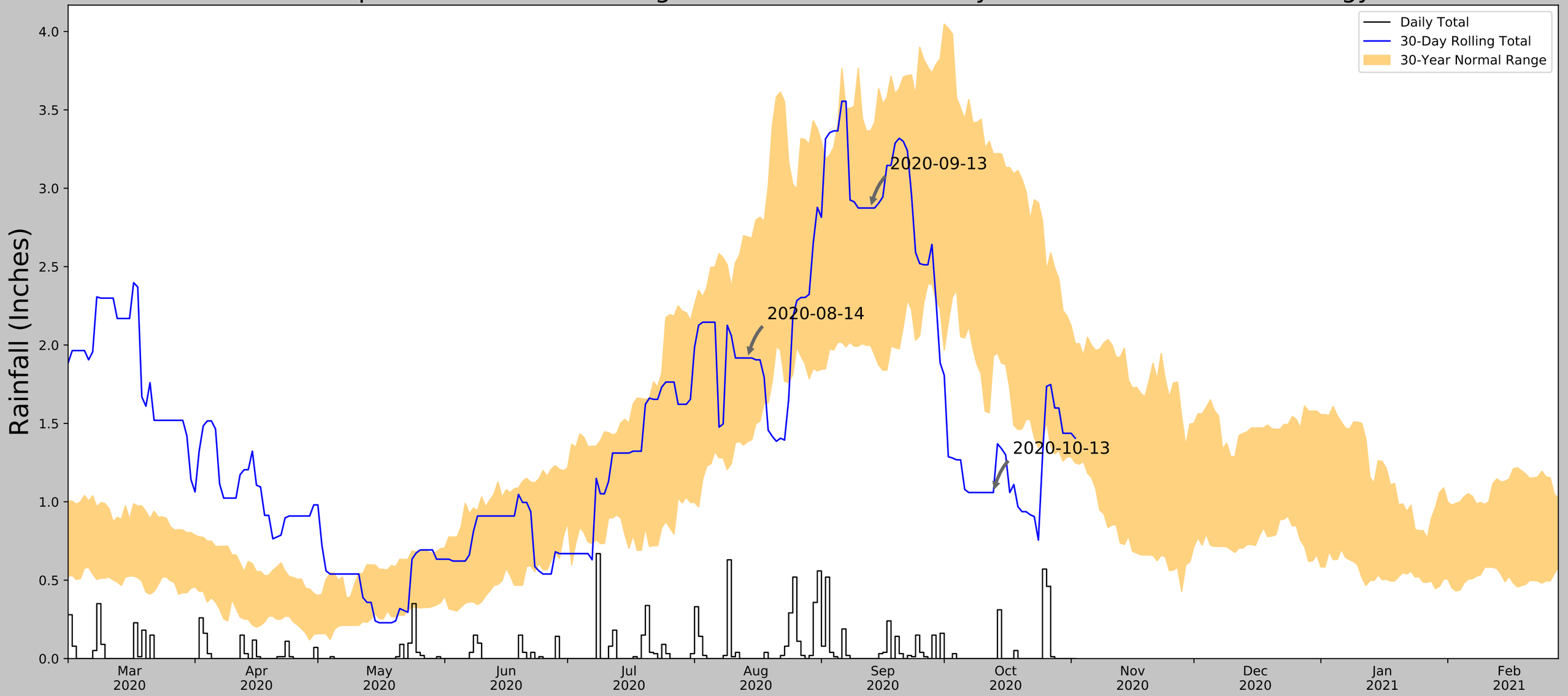
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-10-02	2.145276	4.020079	1.287402	Dry	1	3	3
2020-09-02	1.848819	3.186614	3.314961	Wet	3	2	6
2020-08-03	1.144488	2.307874	2.145669	Normal	2	1	2
Result							Normal Conditions - 11

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
ANCHORAGE INTL AP	61.1689, -150.0278	120.079	3.524	39.099	1.724	11353	90

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



Coordinates	61.165434, -149.922287
Observation Date	2020-10-13
Elevation (ft)	80.98
Drought Index (PDSI)	Not available
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
2020-10-13	1.930315	3.218504	1.059055	Dry	1	3	3
2020-09-13	1.998032	3.365748	2.874016	Normal	2	2	4
2020-08-14	1.383858	2.688976	1.917323	Normal	2	1	2
Result							Drier than Normal - 9

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
ANCHORAGE INTL AP	61.1689, -150.0278	120.079	3.524	39.099	1.724	11353	89
ANCHORAGE 4.7 SSW	61.1529, -149.9346	116.142	0.958	35.162	0.465	0	1

Appendix C

Photographs at Potential Surface Water Connection Investigation Points

October 13, 2020

This page intentionally left blank.

SW1. South end of culvert under Raspberry Road

SW1. Looking east at ditch on north end of buried culvert under Raspberry Road embankment

SW2. South End of Culvert under Raspberry Road

SW3. South End of Culvert under Raspberry Road

SW4. West end of culvert between Connors Bog and Minnesota offramp catch basin

SW5. View on top of east end of culvert into Minnesota Drive offramp catch basin

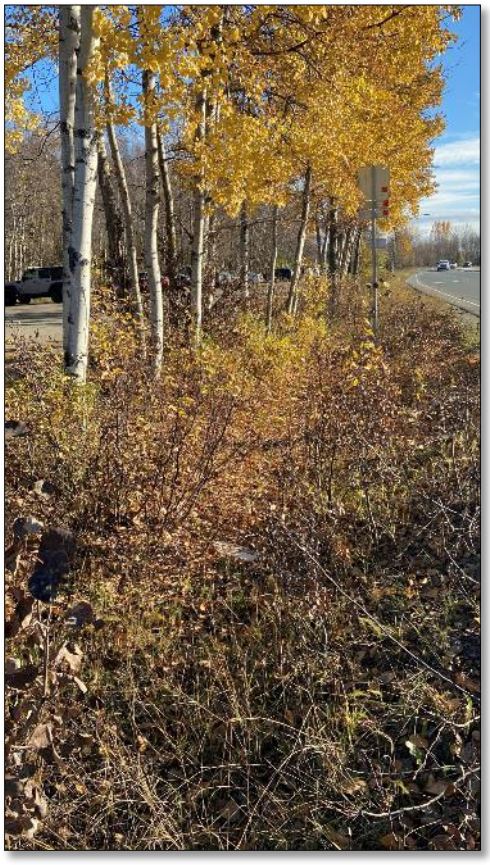
SW6. East view of culvert through Minnesota Drive

SW6. West view on top of culvert through Minnesota Drive

SW7. At northern boundary of Connors Bog wetlands looking north toward parking lot

SW8. At edge of Jewel Lake Road embankment looking south

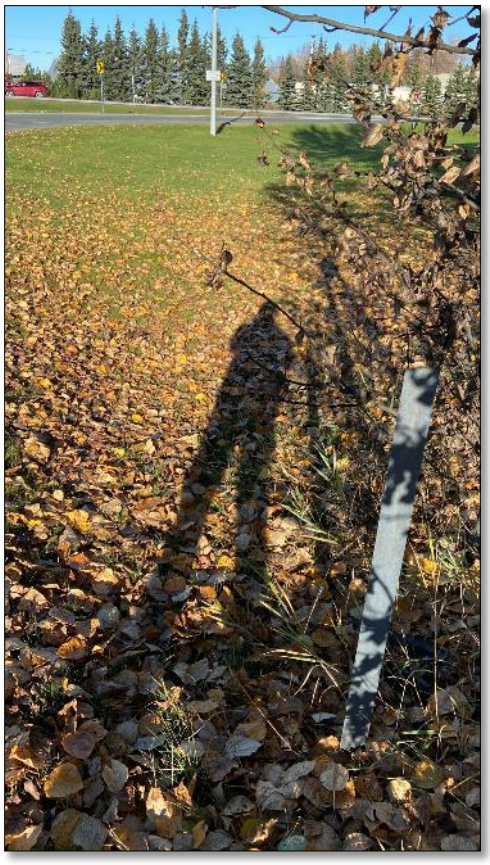
SW9. At edge of Connors Bog Dog Park parking lot looking south toward northern extent of wetlands



SW10. In ditch along Jewel Lake Road at north end of Connors Bog Dog Park parking lot looking southeast

SW11. Looking northwest at culvert under Frontage Road looking northwest along Jewel Lake Road

SW12. Looking southwest at small culvert under Jewel Lake Road



SW13. Looking north at culvert under bike path along International Airport Road onramp

SW14. Looking northeast at culvert under Collins Way

SW15. Looking northeast toward Connors Lake from point where storm drain outfall is located

SW16. Looking northeast at west end of culvert through sewer line trail in Connors Bog

SW17. Looking north at Connors Lake from trail leading to the lake

SW17. Looking west at wetlands bordering Connors Lake

Appendix D

Culvert Inspection Report

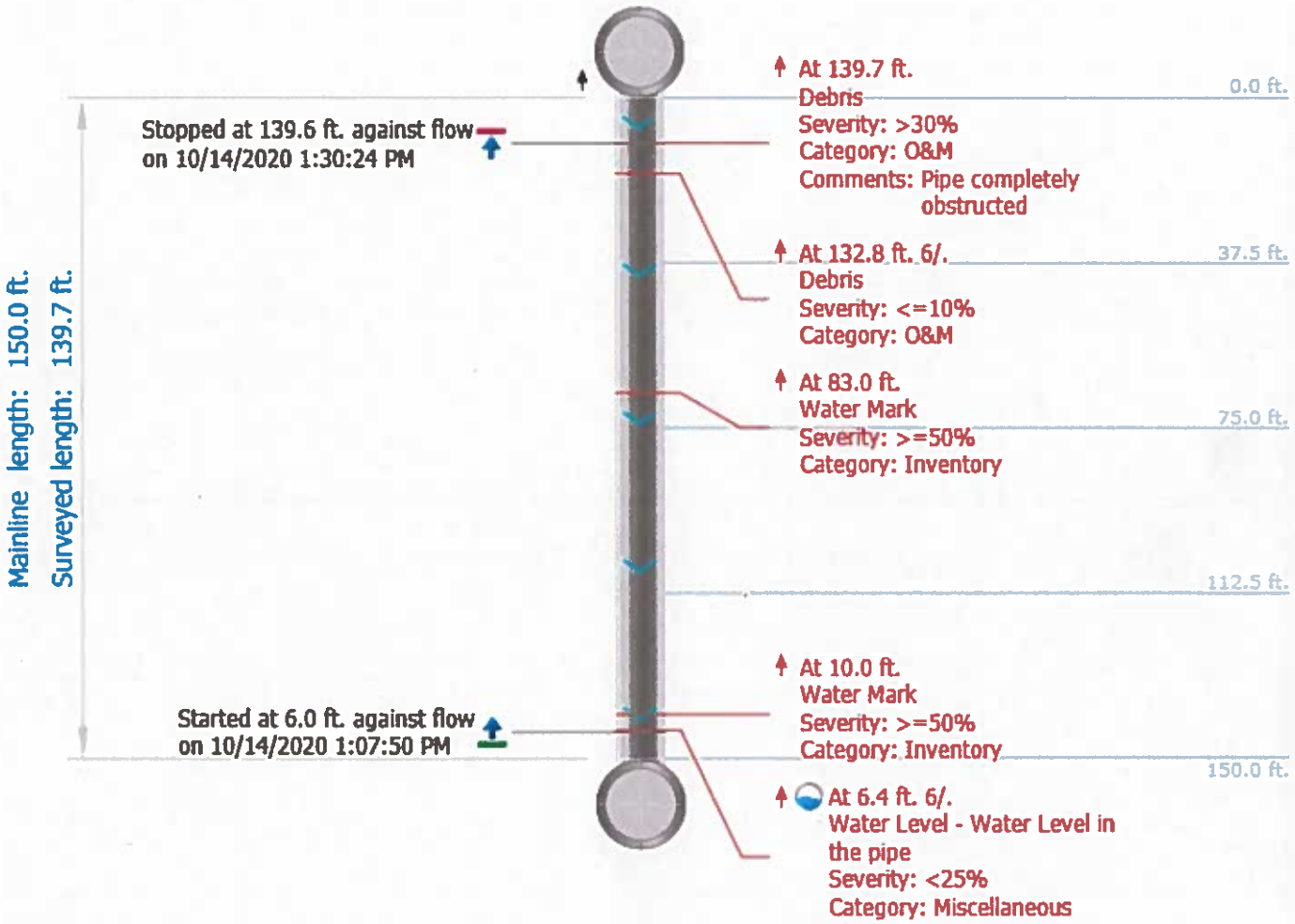
October 14, 2020

This page intentionally left blank.

Street Maintenance
Deptartment
5701 Northwood Drive
Anchorage, AK 99507

Main Inspections Pipe Run with Images

Project name:	Mainline ID:	City:	Address:
2128	**Raspberry unknown**	**Anchorage**	**Rasberry east of Northwood drive**
Start date/time:	Direction:	Weather:	Surface condition:
10/14/2020 1:07 PM	**Against the flow**	**Dry**	**Asphalt**
Pipe shape:	Pipe material:	Pipe height:	Pipe width:
Circular	**Corrugated**	**24.0 in.**	



Street Maintenance
Deptartment
5701 Northwood Drive
Anchorage, AK 99507

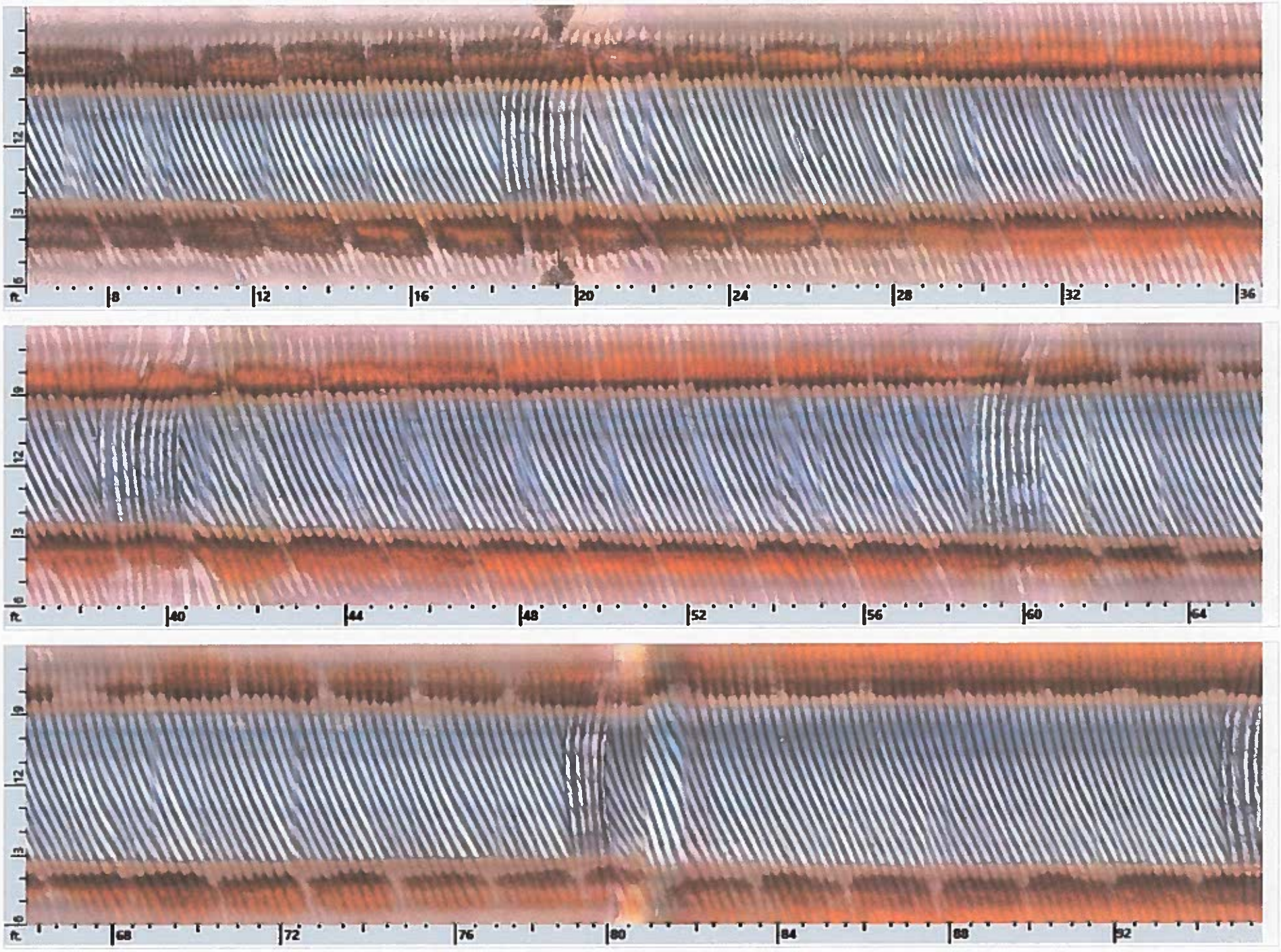
Main Inspections Flat Images

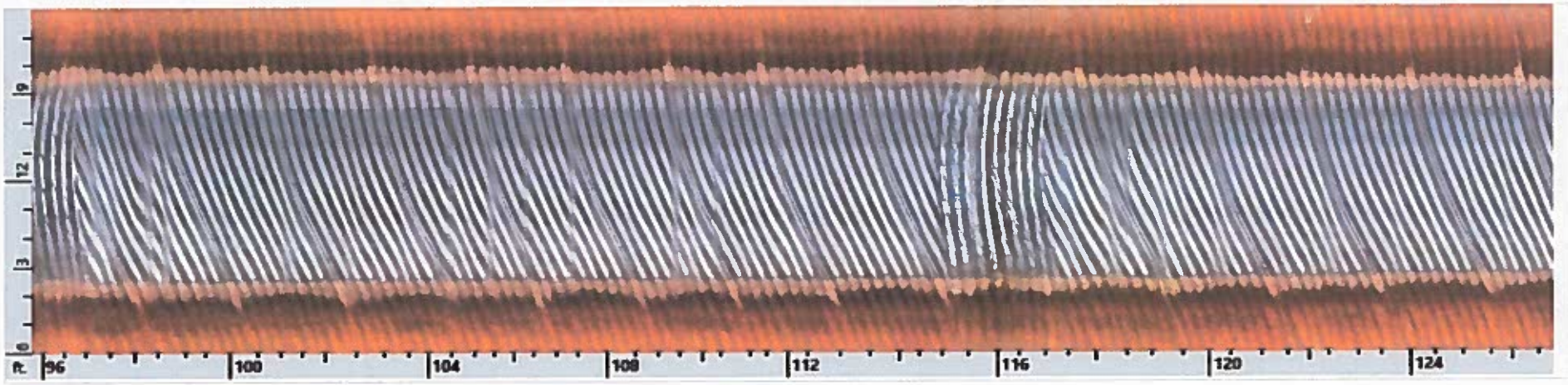
Project name:	Mainline ID:	City:	Address:
2128	**Raspberry unknown**	**Anchorage**	**Rasberry east of Northwood drive**

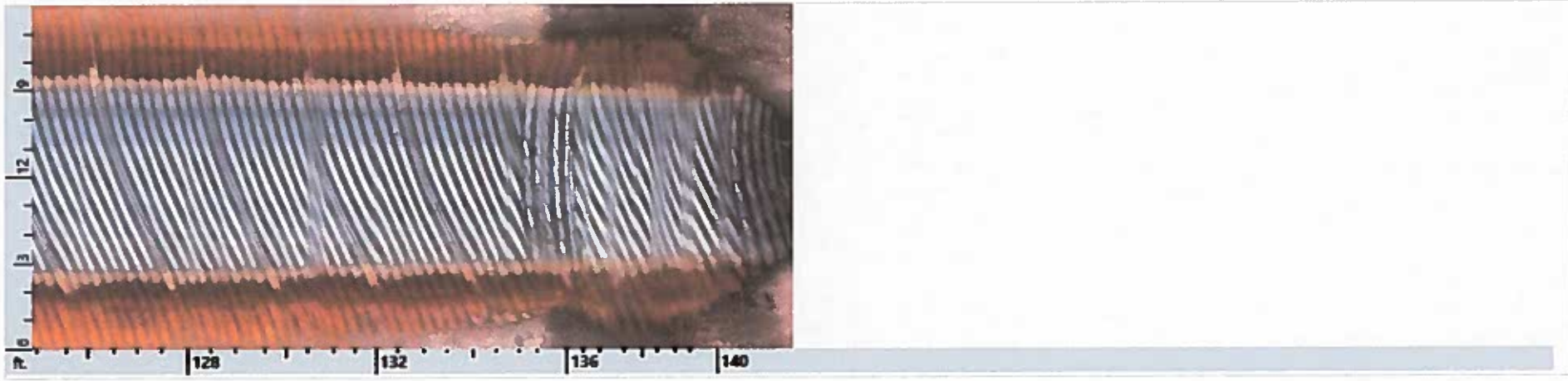
Start date/time:	Pipe width:	Pipe height:	Pipe material:	Surface condition:	Direction:	Surveyed distance:	Weather:	Media label:
10/14/2020 1:07 PM		**24.0 in.**	**Corrugated**	**Asphalt**	**Against the flow**	**139.7 ft.**	**Dry**	

Observations

Distance	Dir.	Length	From/To	Code	Modifier/Severity	Rating	Comments
6.4 ft.	**U**		**6 /**	**Water Level**	**<25%**		
10.0 ft.	**U**		**/**	**Water Mark**	**>=50%**		
83.0 ft.	**U**		**/**	**Water Mark**	**>=50%**		
132.8 ft.	**U**		**6 /**	**Debris**	**<=10%**		
139.7 ft.	**U**		**/**	**Debris**	**>30%**		**Pipe completely obstructed**


9
12
3
6
8
12
16
20
24
28
32
36
40
44
48
52
56
60
64
68
72
76
80
84
88
92


ft.
96
100
104
108
112
116
120
124


ft.
128
132
136
140