APPENDIX C

Wetlands and Waters Delineation Report

Wetlands and Waters Delineation Report

Seldon Road Extension Phase II

CFHWY00562

August 12, 2022

Prepared for:

Alaska Department of Transportation and Public Facilities

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WETLANDS AND WATERS DELINEATION REPORT

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Executive Summary

The Alaska Department of Transportation and Public Facilities required professional services to develop a Wetland and Waters Delineation Report for the Seldon Road Extension Phase II project.

This 2022 report presents the findings of the baseline (current existing conditions) fieldwork for the proposed project footprint plus a 100-foot buffer. This includes the extent of Wetlands and Waters within the study area.

The study area is located in Meadow Lakes, Alaska. The community is located approximately 4 miles west of Wasilla, Alaska and is within the Matanuska-Susitna Borough. Streams and wetlands in the study area are hydrologically connected downstream to Big Lake, which is a Traditional Navigable Water (USACE 2022).

The 2022 study area mapping is based on the criteria in the U.S. Army Corps of Engineers *Wetland Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0)* (USACE 2007), and the *2020 National Wetland Plant List* (USACE 2020a).

Study Area Wetlands and Waters

Status	Acres	Percent of Study Area
Wetlands	15.02	14.4
Waters	0.05	<0.1
Total Wetlands and Waters	**15.07**	**14.4**
Uplands	89.38	85.6
Total	**104.44**	**100.0**

Wetlands account for 15.02 acres (14.4%) of the study area. The majority of wetlands were classified in the Cowardin system (Cowardin et al. 1979) as Deciduous Shrub (33.2 percent of Wetlands and Waters), Coniferous Scrub (21.6 percent of Wetlands and Waters), or Coniferous Forest (20.9 percent of Wetlands and Waters). Slope Hydrogeomorphic wetlands were the dominant wetland classification observed within the study area, with Depressional and Riverine types also observed.

Three streams were found within the study area, accounting for 0.05 acres (<0.1%) of the study area. The total stream length within the study area is 756 feet, or 0.14 miles.

Abbreviations

2007 Supplement	*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region, 2007 Supplement Version 2.0*
AKEPIC	Alaska Exotic Plants Information Clearinghouse
APT	Antecedent Precipitation Tool
CIW	Cook Inlet Wetlands Project
EPA	Environmental Protection Agency
FVP	Field Verification Point
GPS	Global Positioning System
HGM	Hydrogeomorphic Classification
HUC	hydrologic unit code
MLRA	Major Land Resource Area
NHD	National Hydrography Dataset
NRCS	National Resource Conservation Service
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
RPW	Relatively Permanent Waters
SC	Stream Crossing
SPN	Special Public Notice
Stantec	Stantec Consulting Services Inc.
TNW	Traditionally Navigable Waters
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WB	Waterbody
WD	Wetland Determination

1.0 INTRODUCTION

The Alaska Department of Transportation & Public Facilities Central Region is proposing to extend Seldon Road to the west, from North Windy Bottom Road to Pittman Road. Baseline (current existing conditions) fieldwork for the project footprint plus a 100-foot buffer (study area) was conducted in 2022 to determine the extent of Wetlands and Waters.

Field data were collected in June 2022 by Stantec Consulting Services Inc. (Stantec). The field data collected was used in conjunction with topographical base maps, aerial photography, and other data sources to produce the figures and findings presented in this report.

Stantec verifies the evaluation and collection of field data, wetland determinations, and the resulting digital maps and figures were performed in accordance with guidance provided in the U.S. Corps of Engineers (USACE) *Wetland Delineation 1987 Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region, 2007 Supplement Version 2.0* [2007 Supplement] (USACE 2007). The report and figures meet the standards prescribed in USACE Special Public Notice (SPN) 2020-00399: Corps of Engineers Regulatory Program Consultant-Supplied Jurisdictional Determination Reports (USACE 2020b). Plant species reporting and analyses were completed using the 2020 National Wetlands Plant List (USACE 2020a).

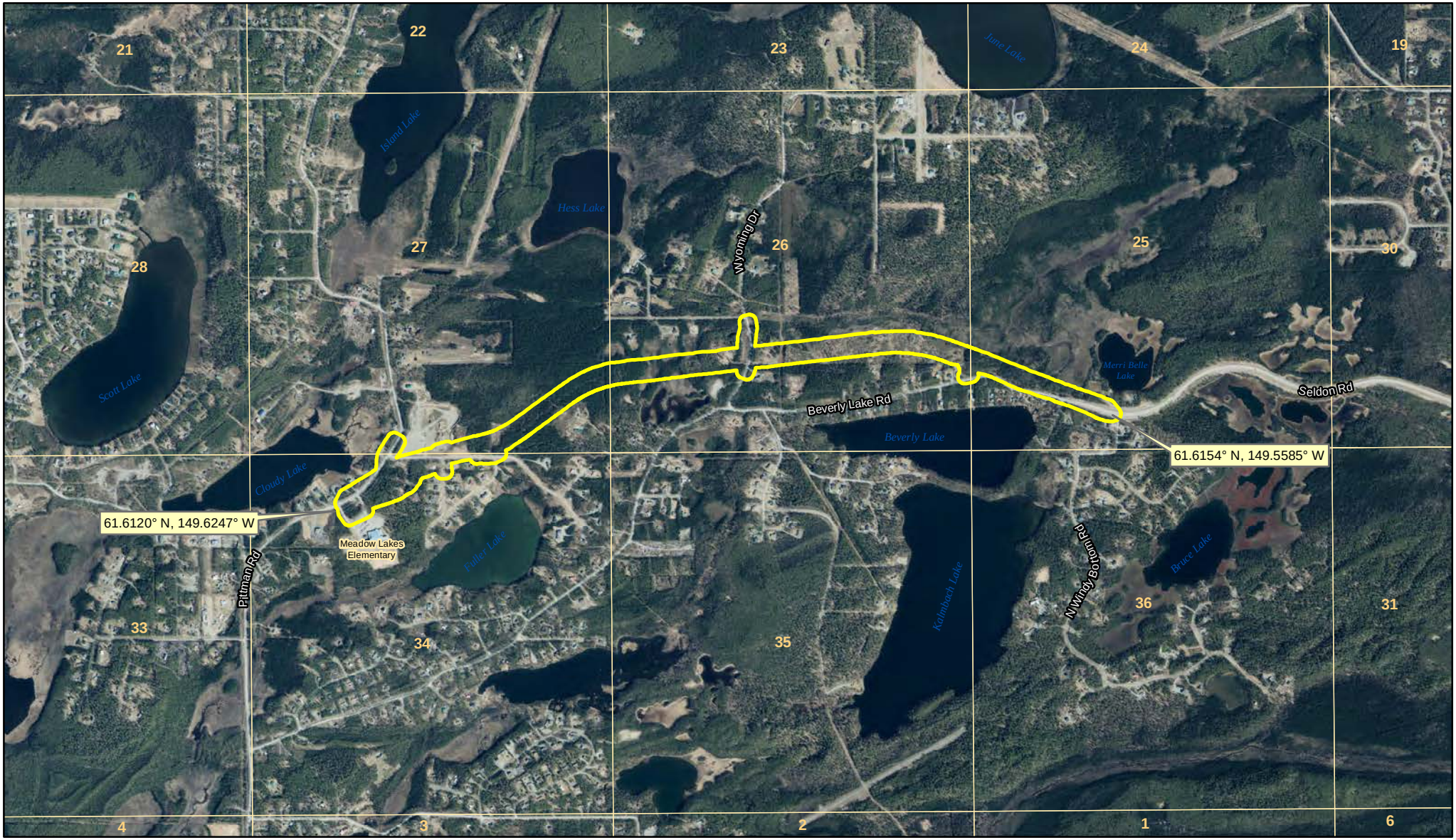
1.1 STUDY AREA LOCATION

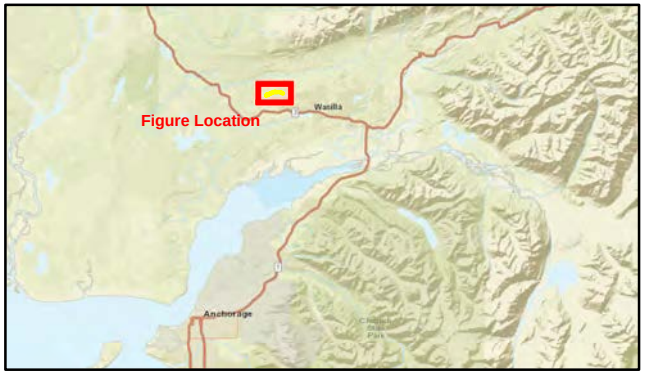
The western boundary of the study area begins near Meadow Lakes Elementary School in the Matanuska-Sustina Borough at latitude 61.6120° N, longitude 149.6247° W. The eastern boundary of the study area is near the western end of the Seldon Road Extension Phase 1 project at the intersection of Seldon Road and North Windy Bottom Road at latitude 61.6154° N, longitude 149.5585° W (Figure 1).

The study area can be found on the Anchorage 1:250,000 U.S. Geological Survey (USGS) quadrangle map and the Anchorage C-7 1:63,360 quadrangle maps. The project is within the Seward Meridian and crosses 4 Public Land Survey System sections. The complete Township Range and Section list is shown in Table 1.

Table 1 Study Area Location

Meridian	Township	Range	Section
Seward	18N	2W	25, 26, 27, 34





Study Area

Public Land Survey Section
(Seward Meridian, T 18N, R 2W)

0 1,000 2,000 3,000 Feet

(At original document size of 8.5x11)

1:24,000 1 inch = 2,000 feet

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Seldon Road Extension Phase II

Figure
Location

Figure Number
1

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2.0 EXISTING DATA AND METHODOLOGY

2.1 EXISTING DATA

Sources of existing data used in developing baseline environmental data include: Cook Inlet Wetlands (CIW) mapping data, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data, U.S. Department of Agriculture (USDA) ecoregion and soil survey information, USGS project watersheds and stream data, local climate data, and USFWS and Alaska Department of Fish and Game fish and wildlife data.

2.1.1 Cook Inlet Wetlands

The study area intersects 29.0 acres of wetlands mapped by the CIW project (Table 2). This mapping was conducted at a scale of 1:18,000 in the NAD83 State Plane Alaska 4 projection using aerial imagery collected in 2011. CIW mapping is shown on Figure 2.

Table 2 Cook Inlet Wetlands Mapping

Wetland Type	Acres	Percent Study Area
Discharge Slope	11.0	37.9
Drainageway	0.3	1.0
Kettle	7.0	24.1
Riverine	6.0	20.7
Spring Fen	0.1	0.3
VLD Trough	4.7	16.2
Total	**29.0**	**100.0**

*Apparent inconsistencies in sums are the results of rounding.

2.1.2 National Wetland Inventory

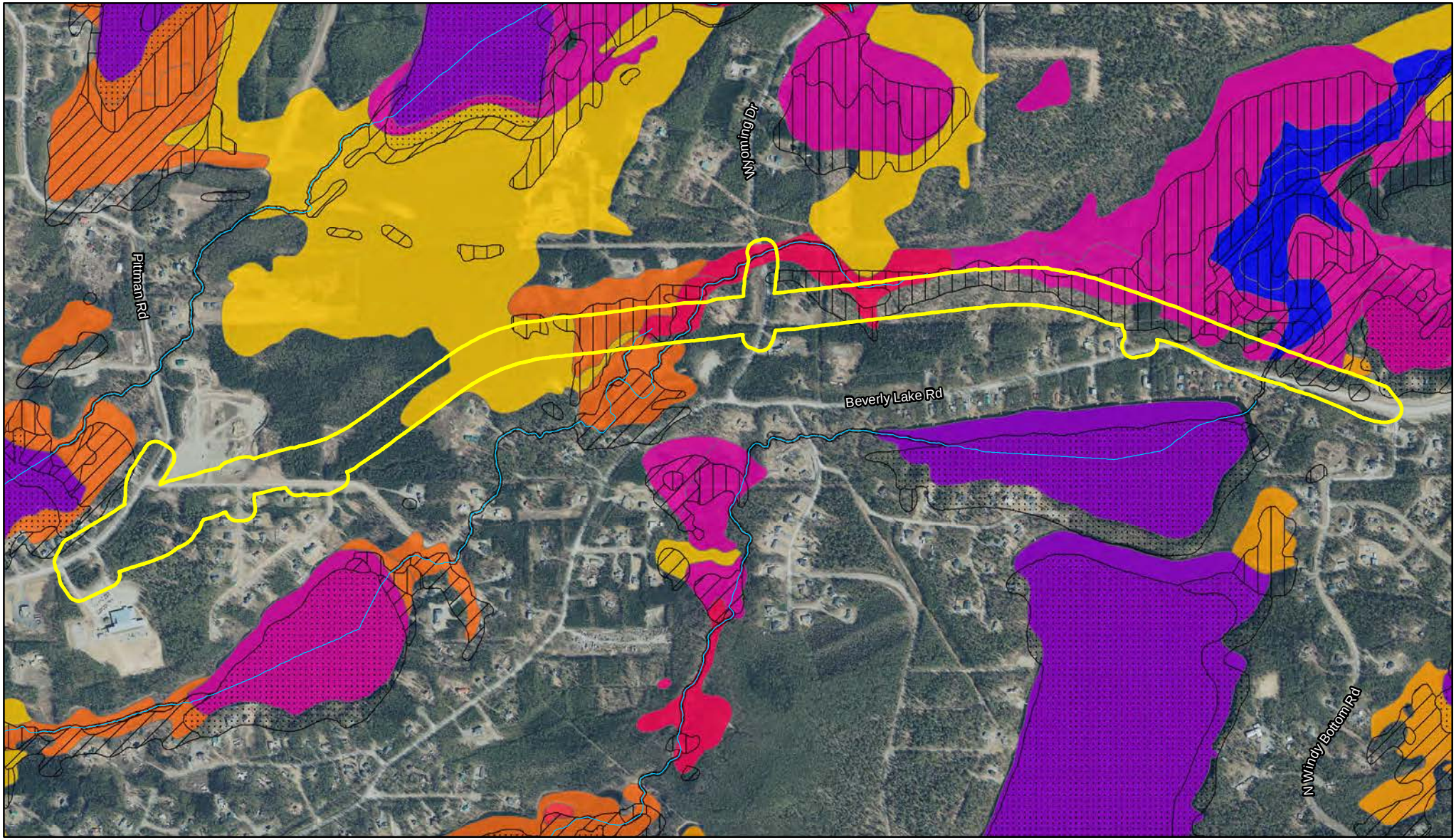
The NWI on-line Wetlands Mapper shows the study area is covered by digital NWI data in NAD83 Albers projection (USFWS 2022a). The area was mapped using 1996 True Color imagery at a scale of 1:24,000. The NWI mapping is offset from Cook Inlet Wetlands mapping and current aerial imagery, most likely due to projection issues with the imagery used by USFWS.

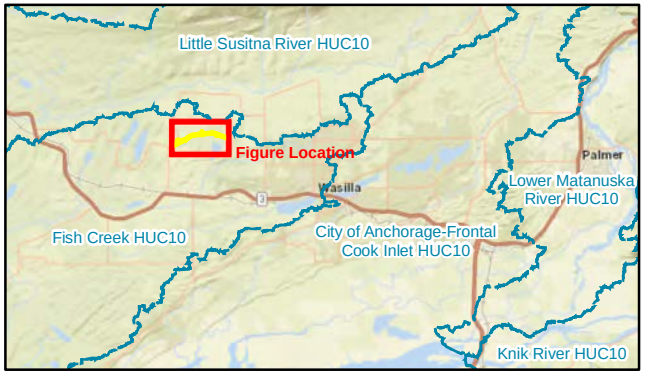
The NWI shows wetlands occupying low-lying areas situated within the study area. Wetlands and Waters types include forested/shrub wetlands, emergent wetlands, streams, and the edge of one lake, and total 27.7 percent of the study area. Figure 2 shows the NWI coverage of the study area. Table 3 lists acres of NWI Wetlands and Waters mapped in the study area.

Table 3 National Wetland Inventory Mapping

NWI Group	NWI Code	Acres	Percent Study Area
Wetlands			
Freshwater Forested/Shrub	PFO4B	1.3	1.2
	PSS1/4B	6.9	6.6
	PSS4/1B	17.1	16.3
Freshwater Emergent	PEM1/SS1B	0.5	0.5
	PEM1/SS1C	3.1	2.9
	PEM1F	0.2	0.2
Wetlands Total		**28.9**	**27.7**
Waters			
Riverine	R5UBH	0.6	0.6
Lake	L2AB3H	0.2	0.2
Waters Total		**0.8**	**0.8**
Wetlands and Waters Total		**29.7**	**28.5**
Uplands	U	74.7	71.5
Total		**104.4**	**100.0**

*Apparent inconsistencies in sums are the results of rounding.





Study Area

NHD Flowline

NWI Wetland Type

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

Cook Inlet Wetland Type

- Discharge Slope
- Spring Fen
- VLD Trough
- Floating Island
- Riverine
- Depression
- Kettle
- Lake
- Drainageway

0 1,000 2,000 Feet

(At original document size of 8.5x11)

1:14,000 1 inch = 1,166.67 feet

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Figure

NWI, NHD, and CIW Mapping

Figure Number

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2.1.3 Major Land Resource Area

The study area is located within the 6.8 million-acre Cook Inlet Lowlands Major Land Resource Area (MLRA; USDA 2006). This MLRA is a broad expanse of gently sloping to rolling plains and low- or moderate-relief hills bordered by the surrounding mountains. Small and medium sized lakes are scattered throughout the part of the MLRA covering the study area. The waters of the MLRA drain to Cook Inlet.

Annual precipitation ranges from 15 to 60 inches, with a climate considered transitional from temperate maritime to subarctic continental (USDA 2006).

Uplands are dominated by white spruce, paper birch, and quaking aspen. Cottonwood are common on flood plains and in seepage areas. Lowlands and areas of peat support stunted spruce, low scrub, and sedge and grass meadows (USDA 2006).

2.1.4 Watersheds

The study area is within one USGS hydrologic unit code (HUC) 10 watershed, Fish Creek (1902040105), and one HUC 12 watershed, Meadow Creek (190204010502) (USGS 2022). The study area watersheds are shown in Figure 2. Hydrologically, water in these watersheds flow via surface and groundwater connections to Big Lake.

2.1.5 Rivers and Streams

USACE Special Public Notice (SPN) 2020-00339 Corps of Engineers Regulatory Program Consultant-Supplied Jurisdictional Determination Reports (USACE 2020b) superseded 2010 guidance (USACE 2010). However, in 2021 the Environmental Protection Agency (EPA) published guidance directing use of pre-2015 Waters of the U.S. instructions (EPA 2021). Therefore, to classify study area streams, this report refers to SPN 2010-45 (USACE 2010).

In the Alaska District SPN 2010-45, USACE asks for data (optional) describing the various tributaries (streams) flowing from or through the project study area, and their connections to traditionally navigable waters downstream. The USACE is responsible for determining the jurisdiction of Waters of the U.S. (wetlands, streams, rivers, lakes), by reviewing connections to downstream navigable waters (USACE 2010).

Traditionally Navigable Waters

Traditionally Navigable Waters (TNW) are defined in SPN 2010-45 as those "…waters which are currently used or were used in the past or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide."

The USACE Alaska District lists the Navigable Waters in Alaska (USACE 1995). Streams running through the study area connect downstream to Big Lake, a TNW.

Relatively Permanent Waters

In addition to identifying TNWs in the project area, non-navigable streams (Relatively Permanent Waters [RPW]) also need to be identified. Non-navigable streams are classified by USACE (2010) in three ways:

Relatively Permanent Non-Navigable Tributaries of Traditional Navigable Waters (Perennial RPW): Non-navigable waters typically flowing year-round or waters having a continuous flow at least seasonally (typically three months). Perennial RPW do not include ephemeral tributaries which flow only in response to precipitation and intermittent streams which do not typically flow year-round or have continuous flow at least seasonally.

Seasonal Relatively Permanent Waters (Seasonal RPW): Non-navigable, seasonal RPW—intermittent streams which do not typically flow year-round or have continuous flow at least seasonally.

Non-Relatively Permanent Waters (Non-RPW): Non-navigable tributaries that do not typically flow year-round or do not have continuous flow at least seasonally.

National Hydrography Dataset

The USGS National Hydrography Dataset (NHD; USGS 2022) catalogs two unnamed perennial streams that flow through the study area near the crossing of Wyoming Drive (Figure 2).

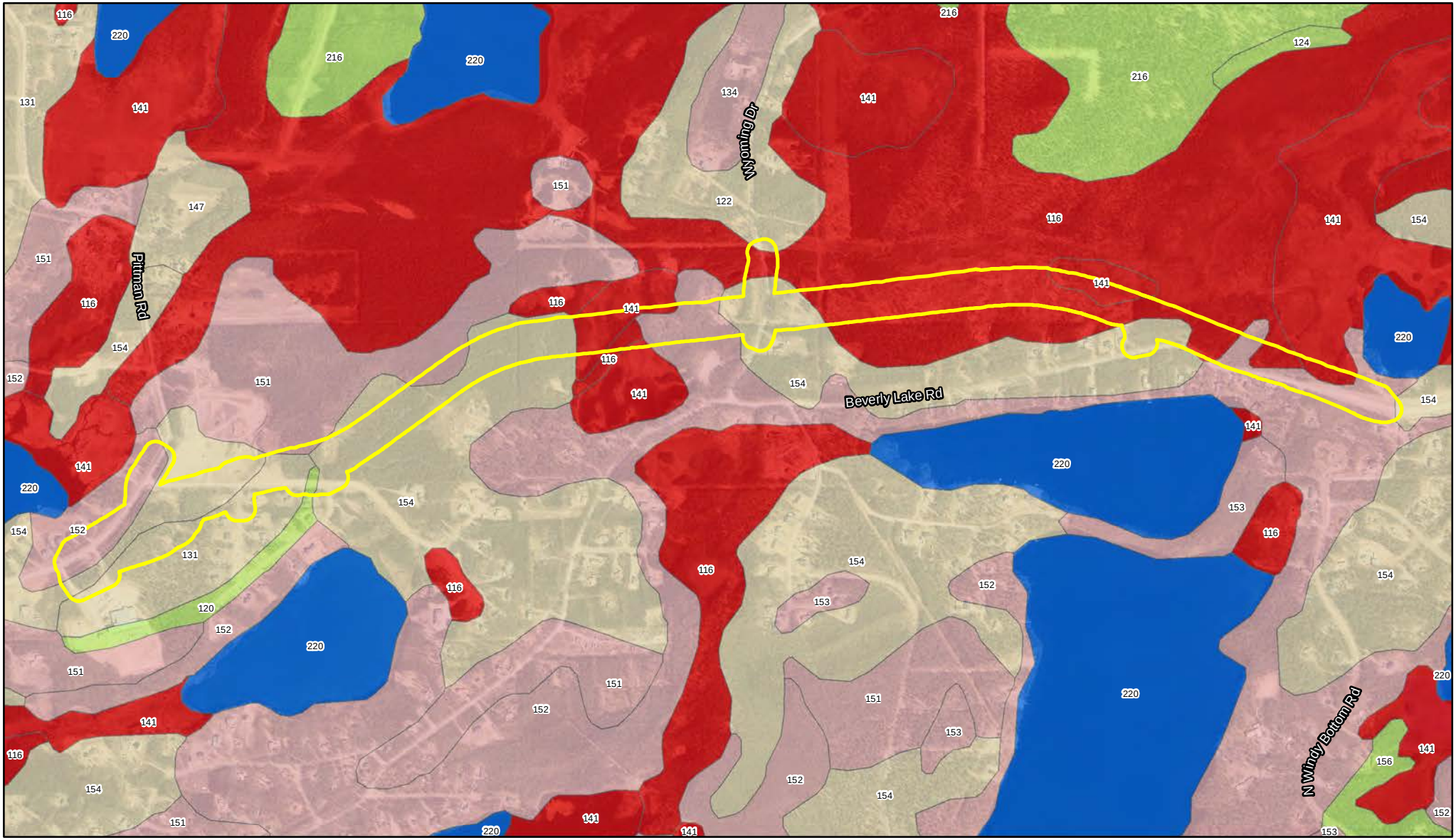
2.1.6 Soil Survey

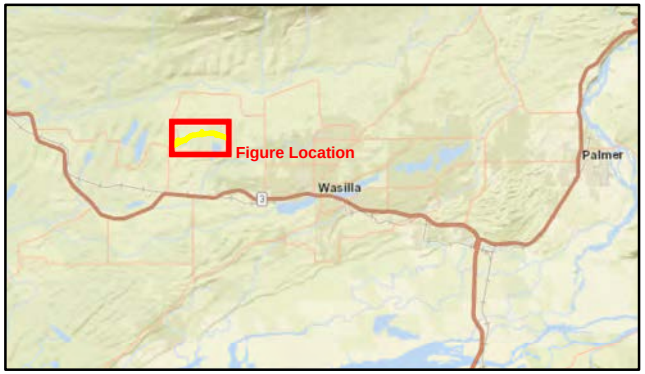
The Soil Survey of Matanuska-Susitna Valley Area, Alaska (USDA 1998) covers 1.5 million acres in the Matanuska-Susitna Borough. Table 4 lists the map units in the study area and their estimated hydric soils percentage. Two soil map units within the study area are considered to have 90% components with hydric soils. These two map units generally align with the NWI-mapped wetland areas within the study area. Six additional map units occur in the study area and have between four % and six % components with hydric soils. Figure 3 shows the soil map units around the study area.

Table 4 Soil Survey

Map Unit Name	Map Unit	Acres	Percent of Study Area	Percent Hydric Components
Cryaquepts, depressional, 0 to 7 percent slopes	116	25.8	24.7	90
Cryods, low elevation, and Cryochrepts, 30 to 70 percent slopes	120	0.5	0.5	5
Deception silt loam, rolling	122	0.4	0.4	4
Estelle silt loam, rolling	131	9.5	9.1	4
Histosols	141	7.7	7.4	90
Kichatna silt loam, 0 to 3 percent slopes	151	2.3	2.2	6
Kichatna silt loam, sloping and moderately steep	152	20.0	19.2	6
Kichatna silt loam, undulating	154	38.4	36.8	4
	Total	**104.4**	**100.0**	

*Apparent inconsistencies in sums are the results of rounding





Study Area

Soil Map Unit Percent Hydric (labled by Map Unit Number)

- 4% hydric
- 5% hydric
- 6% hydric
- 90% hydric
- Water

0 1,000 2,000 Feet

(At original document size of 8.5x11)

1:14,000 1 inch = 1,166.67 feet

N W E S

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Figure
Soils Mapping

Figure Number
3

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2.1.7 Climate Data

The growing season for this area begins May 8 and ends October 5 (USACE 2007).

Precipitation data leading to 2022 field work is listed in Table 5. The weather conditions preceding the field investigations were considered during onsite determinations. Normal precipitation is based on 1991-2020 records for Matanuska Experimental Farm, Alaska (NOAA 2022). Field work was conducted June 9 and 10, 2022. Winter precipitation preceding field work was high. October 2021, December 2021, and February 2022 were all above climate normal ranges, while November 2021, January 2022, and March 2022 were within climate normal range. Precipitation in April and May 2022 was within climate normal ranges, but at the lower end of that range. Precipitation for the water year, starting October 2021, through June 2022, was 124 percent of normal (Table 5).

Table 5 2022 Water Year WETS Precipitation for Matanuska Experimental Farm, Alaska

Month	Total Monthly Accumulated Precipitation (Inches)	Average Monthly Accumulated Precipitation 1991-2020 (Inches)	Percent of Average Precipitation	30% Chance Precipitation	
				Less Than (In.)	More Than (In.)
October 2021	2.07	1.39	149	0.87	1.65
November 2021	0.56	0.84	67	0.40	1.03
December 2021	1.77	1.02	174	0.59	1.25
January 2022	0.77	0.81	95	0.38	0.95
February 2022	2.28	0.78	292	0.37	0.93
March 2022	0.57	0.52	110	0.29	0.64
April 2022	0.14	0.35	40	0.13	0.42
May 2022	0.53	0.72	74	0.35	0.87
June 2022	0.80	1.22	66	0.81	1.49
Total	**9.49**	**7.65**	**124**	**-**	**-**

These data suggest that conditions during field work were normal to drier than normal, due to the lower than average precipitation in the months directly preceding field work.

The USACE and EPA Antecedent Precipitation Tool (APT, EPA 2022) was run for the dates the field work was conducted. The APT results showed that conditions were Normal on June 9, and conditions were Drier than Normal on June 10. The APT showed that delineations were conducted in the dry season. APT outputs are included in Table 6 and Appendix A.

Table 6 Antecedent Precipitation Tool Results

Date	Season	Antecedent Precipitation Score	Antecedent Precipitation Condition
6/9/2022	Dry Season	14	Normal Conditions
6/10/2022	Dry Season	9	Drier than Normal

2.1.8 Fire History

No fires have been recorded within the study area going back to 1940 (AICC 2022), although fire likely has been part of the ecosystem historically.

2.1.9 Sensitive and Rare Species

There are no threatened or endangered State or Federally listed species within the study area (USFWS 2022b).

2.1.10 Non-Native Species

The Alaska Exotic Plants Information Clearinghouse (AKEPIC) tracks non-native plant species in Alaska and provides biographies and risk assessments, to include an invasiveness ranking—the higher the number, the higher the conservation concern. The AKEPIC database and mapping applications show three survey datapoints within or near the study area corridor (AKEPIC 2022). Table 7 lists the 18 exotic plants in the database for this survey area.

Table 7 AKEPIC listed Non-Native Plants

Common Name	Scientific Name	Invasiveness Rank
lambsquarters	*Chenopodium album L.*	37
narrowleaf hawksbeard	*Crepis tectorum L.*	56
foxtail barley	*Hordeum jubatum L.*	63
leporinum barley	*Hordeum murinum L. ssp. leporinum (Link) Arcang.*	60
bigleaf lupine	*Lupinus polyphyllus Lindl. ssp. polyphyllus*	71
pineappleweed	*Matricaria discoidea DC.*	32
white sweetclover	*Melilotus albus Medik.*	81
timothy	*Phleum pratense L.*	54
common plantain	*Plantago major L.*	44

annual bluegrass	*Poa annua L.*	46
prostrate knotweed	*Polygonum aviculare L.*	45
old-man-in-the-Spring	*Senecio vulgaris L.*	36
corn spurry	*Spergula arvensis L.*	32
common chickweed	*Stellaria media (L.) Vill.*	42
common dandelion	*Taraxacum officinale F.H. Wigg.*	58
alsike clover	*Trifolium hybridum L.*	57
red clover	*Trifolium pratense L.*	53
white clover	*Trifolium repens L.*	59

2.2 METHODOLOGY

2.2.1 Field Data Collection

During the 2022 wetland field evaluations, Global Positioning System (GPS) locations and detailed information on one tenth of an acre plots (1/10) were recorded in representative project vegetation types. Additional field data, notes, and photographs were used to evaluate mapping areas with similar characteristics.

Field data was collected and recorded using three types of plots:

1. Wetland Determination (WD) Plots. At these sites, investigators recorded detailed descriptions of vegetation, hydrology, and soils on field data forms. Wetland status for this plot type was determined based on the presence or absence of hydrophytic vegetation, hydrology, and hydric soils.

2. Field Verification Points (FVP). Photographs and GPS locations were taken for vegetation communities and landscape positions that were clearly wetlands or upland based on WD results in nearby similarly situated areas with similar site-specific information. Project Vegetation Type, Hydrogeomorphic (HGM), and Cowardin classifications were recorded.

3. Stream Crossing (SC) Points. Photographs and GPS locations were taken when streams were encountered. Information on the stream status as intermittent or perennial Relatively Permanent Waters (USACE 2010) and additional stream data were collected.

Generally, the information collected at each representative wetland determination field plot included:

- percent coverage of all plant species (tree, shrub, and herbaceous species) and their wetland indicator status according to the 2020 *National Wetland Plant List* (NWPL, USACE 2020a);

- vegetation type;

- soil characteristics;
- visible or readily apparent hydrologic characteristics;
- physical characteristics including aspect, elevation, landform, and topography;
- location information including latitude and longitude (in NAD83, decimal degrees);
- wetland descriptors including HGM and Cowardin classifications;
- indications of prior disturbance and whether current conditions represent the 'new normal'; and
- direct wildlife observations, as well as indirect observations such as trails, scat, dens, or heavy browse.

Plant Data

Alaska plant indicator statuses follow the Alaska 2020 NWPL (USACE 2020a). Alaska is divided into subregions, where plant indicator statuses may differ from the rest of the State. The study area is not within any subregions, so there are no modifications to plant indicator statuses. Plants observed during field work and their indicator statuses are listed in Appendix B.

The presence of hydrophytic vegetation was determined using the prevalence index and the dominance test (USACE 2007).

Hydric Soils Assessment

Field indicators of hydric soils and determination of hydric soil status was based on USDA National Resource Conservation Service (NRCS) guidance (USDA 2018) and the Alaska 2007 Supplement (USACE 2007). The 2007 Supplement contains a subset of hydric soil indicators found in the U.S. as determined by the National Technical Committee for Hydric Soils (USACE 2007). Additional soil characteristics recorded within the soil horizons were based on NRCS guidance (Schoeneberger et al. 2012).

Hydrology

The 2007 Supplement lists numerous primary and secondary hydrology indicators. All indicators found in the sampling area were recorded in the data form.

Field Data

Field plot data were collected at 53 sites throughout the study area, but primarily focused on areas where Cook Inlet Wetland, NWI, or NHD mapping (Sections 2.1.1, 2.1.2, and 2.1.5, Figure 2), or landscape position showed potential for Wetlands and Waters. Field site locations were determined using a sub-meter GPS unit. All field data were entered into a project database where the data were reviewed; queries were generated from the database to provide the information needed for mapping and results analyses.

Field data were collected June 9-10 by Stantec Professional Wetland Scientist Zach Baer and Field Technician Alivia Lowell. Field plot types collected are shown in Table 8. Field forms and photos for all WD plots, and photos of FVP and SC plots are presented in Appendix C.

Table 8 Field Plots

Company	Field Plot Type	Wetlands and Waters	Uplands	Total Plots
Stantec	Wetland Determination (WD)	5	6	11
	Field Verification Point (FVP)	14	25	39
	Stream Crossing (SC)	3	0	3
	Total	**22**	**31**	**53**

2.2.2 Mapping

Final mapping (wetland boundaries, HGM classification, Cowardin code, and Vegetation Type) was completed using digital, true color orthoimagery collected by the Matanuska-Susitna Borough in 2019 and 2021 that maintains a resolution of 0.5-feet in ESRI's ArcMap GIS (10.8) environment. Additionally, a Hillshade derived from a 1-meter Bare Earth Digital Elevation Model collected in 2011 was utilized in the mapping process.

Field data were used to identify the characteristics of the vegetation and wetlands or non-wetlands community at a specific location. The information gathered from one site was used for calibration to extrapolate to similar unvisited sites within the mapping environment. In addition to imagery interpretations, ancillary data including field notes, general landscape position, slope, aspect, landform and proximity to other vegetation community types and land cover types were utilized to assist in the mapping process.

Mapping polygons were drawn to delineate differences among the four classification systems used to attribute each polygon. Polygons were drawn around all features. When stream boundaries were not visible due to overhanging vegetation, polyline features were drawn to indicate location. Wetland boundaries were delineated at scales between 1:600 (one inch equals 50 feet) to 1:800 (one inch equals 67 feet).

3.0 RESULTS

3.1 WETLANDS AND WATERS

The field verified Wetlands and Waters totals are shown in Table 9. Nearly 15 percent of the study area was identified as Wetlands and Waters. Figure 4 shows an overview of the Wetlands and Waters in the study area. Detailed figures for the study area are provided in Appendix D.

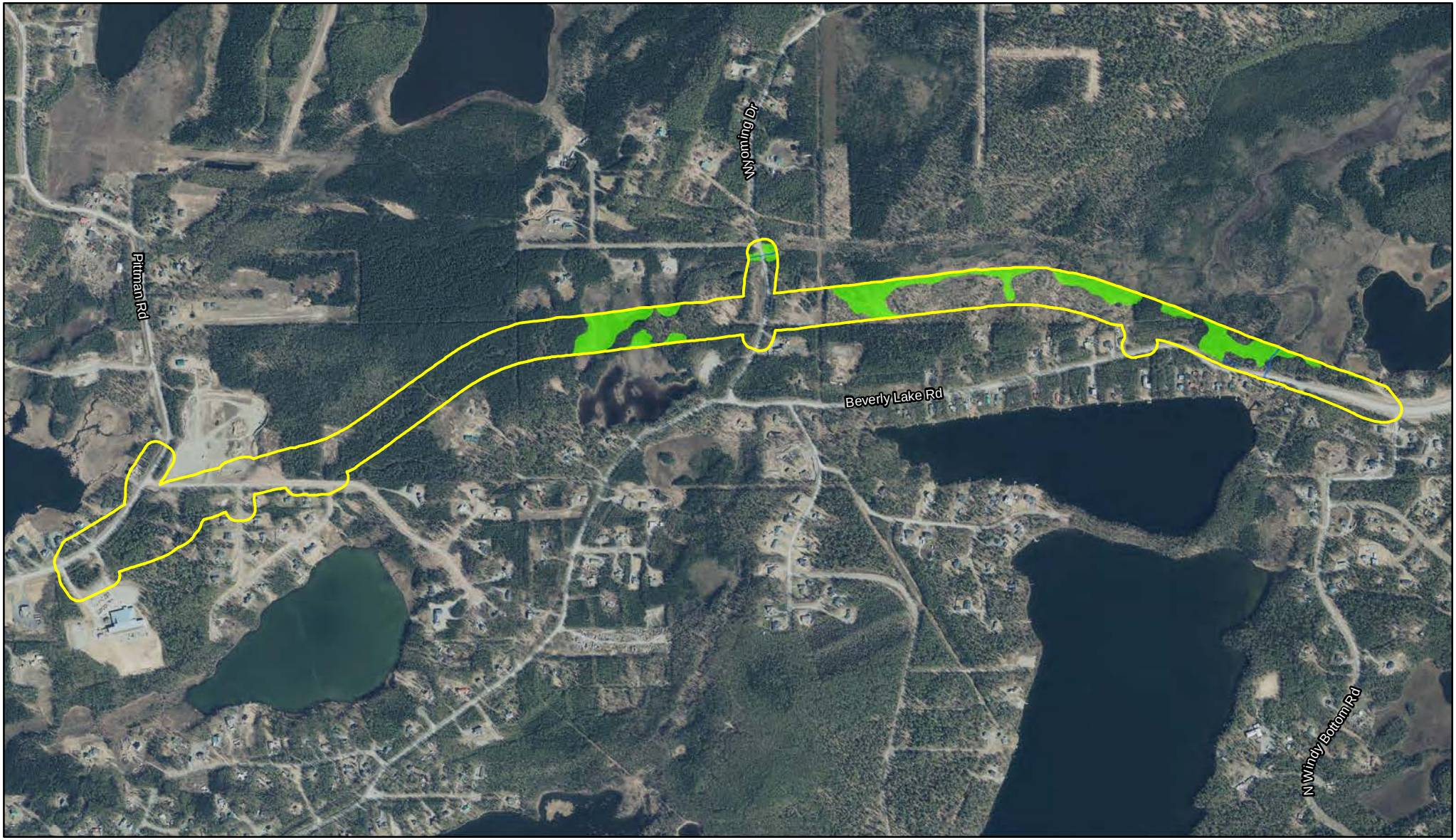
Table 9 Wetlands and Waters

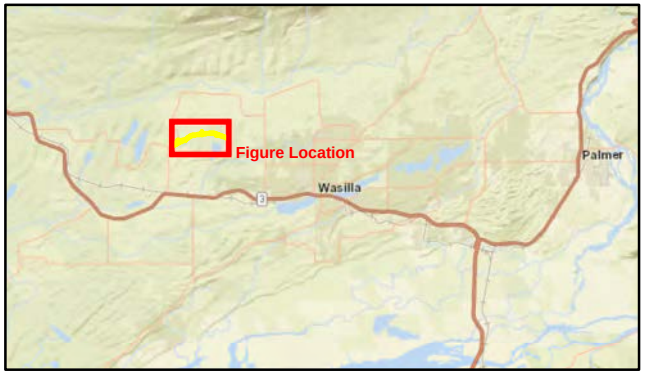
Status	Acres	Percent of Study Area
Wetlands	15.02	14.4
Waters	0.05	<0.1
Total Wetlands and Waters	**15.07**	**14.4**
Uplands	89.38	85.6
Total	**104.44**	**100.0**

*Apparent inconsistencies in sums are the results of rounding

Wetlands and Waters were found in the eastern two-thirds of the study area, occupying low-lying, concave landscape positions (Figure 4). Wetlands were found in generally the same locations as mapped by the NWI and CIW, however, the field verified mapping presented here refined the boundaries presented in those relatively coarse-scaled products. The field verified mapping determined that 15.07 acres of wetlands and waters occurred within the study area, versus the 29.0 acres mapped by CIW and the 29.7 acres mapped by the NWI.

Wetlands and Waters in the study area are all connected upstream to a large wetland complex situated directly to the northeast of the study area. A small, slow-moving stream flowing from this complex parallels the northern portion of the study area before crossing under Wyoming Drive in a culvert. This stream supports a broad swale, and water from this system flows to the wetlands in the study area lying west of Wyoming Drive. Wetlands in the study area to the east of Wyoming Drive are supported by this swale or are directly part of the large wetland complex. At the eastern end of the study area, two streams drain the large wetland complex into Beverly Lake to the south.





Study Area

Aquatic Resource Type

Stream

Wetland

0 1,000 2,000 Feet

(At original document size of 8.5x11)

1:14,000 1 inch = 1,166.67 feet

N W E S

Client

AK Dept. of Transportation & Public Facilities

Project

Seldon Road Extension Phase II

Figure

Wetlands and Waters Overview

Figure Number

4

Stantec

3.1.1 Cowardin Classification

As part of the wetlands mapping, Wetlands and Waters were classified according to the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

Approximately one-third of wetlands were classified as Deciduous Shrub (33.2 percent of Wetlands and Waters). The next largest categories were Coniferous Scrub (21.6 percent of Wetlands and Waters) which is comprised of stunted black spruce saplings, and Coniferous Forest (20.9 percent of Wetlands and Waters) which is comprised of black spruce forests. Herbaceous wetlands totaled 15.3 percent of Wetlands and Waters, while Mixed Forests and Deciduous Forests each covered less than five percent of Wetlands and Waters. Streams totaled 0.3 percent of Wetlands and Waters. Wetlands and Waters polygons are labeled by Cowardin Classification on the Wetlands and Waters detail figures presented in Appendix D. All classifications and total acres for each are shown in Table 10.

Table 10 Cowardin Classifications for the Study Area

Cowardin Group	NWI Code	Wetland Acres	Percent of Study Area	Percent of Wetlands and Waters
Wetlands				
Coniferous Forest	PFO4/SS1	1.63	1.6	10.8
	PFO4/EM1	1.52	1.5	10.1
Total Coniferous Forest		**3.14**	**3.0**	**20.9**
Mixed Forest	PFO4/1	0.67	0.6	4.4
Total Mixed Forest		**0.67**	**0.6**	**4.4**
Deciduous Forest	PFO1/EM1	0.35	0.3	2.3
	PSS1/FO1	0.29	0.3	1.9
Total Deciduous Forest		**0.64**	**0.6**	**4.3**
Coniferous Scrub	PSS4/1	0.44	0.4	2.9
	PSS4/EM1	1.00	1.0	6.7
	PSS1/4	1.62	1.5	10.7
	PEM1/SS4	0.20	0.2	1.3
Total Coniferous Scrub		**3.26**	**3.1**	**21.6**
Deciduous Shrub	PSS1	0.53	0.5	3.5
	PSS1/EM1	2.18	2.1	14.4
	PEM1/SS1	2.29	2.2	15.2
Total Deciduous Shrub		**5.00**	**4.8**	**33.2**
Herbaceous	PEM1	2.31	2.2	15.3
Total Herbaceous		**2.31**	**2.2**	**15.3**

Results

Cowardin Group	NWI Code	Wetland Acres	Percent of Study Area	Percent of Wetlands and Waters
Total Wetlands		**15.02**	**14.4**	**99.7**
Waters				
Stream	R2UB	0.01	<01	0.1
	R3UB	0.04	<0.1	0.3
Total Stream		**0.05**	**<0.1**	**0.3**
Total Waters		**0.05**	**<0.1**	**0.3**
Total Wetlands and Waters		**15.07**	**14.4**	**100.0**
Total Uplands		**89.38**	**85.6**	
Total Study Area*		**104.44**	**100.0**	

*Apparent inconsistencies in sums are the results of rounding.

3.1.2 Project Hydrogeomorphic Classification

Wetland functional capacity was assessed using an HGM-based rapid assessment procedure. This procedure is based on the essential elements of the Hydrogeomorphic approach described by the USACE in Brinson (1993) and Smith et al. (1995) to identify groups of wetlands that function similarly.

The HGM classification is based on a wetland's: (1) position in the landscape or geomorphic setting, (2) dominant source of water, and (3) hydrodynamics of the water in the wetland (Brinson 1993). The purpose of the HGM classification is to provide a mechanism to account for the natural variation inherent between wetlands, particularly when wetland functions are being assessed. For example, a riverine wetland will generally have a much higher opportunity to export organic carbon than an isolated depressional wetland due to the riverine wetland's landscape position and hydrodynamics. Table 11 provides a summary of the acres of each HGM type as currently classified within the study area.

Table 11 Hydrogeomorphic Classification

HGM Classification	Acres	Percent of Study Area
Wetlands		
Riverine	0.51	0.5
Slope	14.51	13.9
Total Wetlands	**15.02**	**14.4**
Waters		
Riverine Channel	0.05	<0.1
Total Waters	**0.05**	**<0.1**
Total Wetlands and Waters	**15.07**	**14.4**
Total Uplands	**89.38**	**85.6**
Total Study Area	**104.44**	**100.0**

*Apparent inconsistencies in sums are the results of rounding

The HGM classes identified in the study area are shown on the detailed figures in Appendix D and discussed in the following section. The HGM descriptions are taken from Wetland Functional Assessment Guidebook, Operational Draft Guidebook for Assessing the Functions of Slope/Flat Wetland Complexes in the Cook Inlet Basin Ecoregion Alaska, using the HGM Approach (Hall et al 2003), an application of the HGM approach for precipitation driven wetlands on discontinuous permafrost in Interior Alaska.

Slope Wetlands

Slope HGM wetlands normally occur where there is a discharge of groundwater to the land surface. They exist on sloping land surfaces from steep hillslopes and swales to nearly level terrain. Slope wetlands are usually incapable of depressional water storage. Principal water sources are groundwater return flow and interflow from surrounding non-wetlands and precipitation. Hydrodynamics are dominated by downslope unidirectional flow. Slope wetlands can occur in nearly level landscapes if groundwater discharge is a dominant source to the wetland surface. Slope wetlands lose water by subsurface flows, surface flows, and by evapotranspiration (Hall et al 2003). Examples of slope wetlands in Alaska include patterned fens, hillside seeps, spring-fed wetlands, and wetlands at the base of bluffs or toeslopes where groundwater is discharged near the surface.

The majority of wetlands within the study area are classified as Slope wetlands (Photo 2). They are supported by discharge of groundwater from the Talkeetna Mountains to the north.

Photo 1 Slope HGM Wetland

Riverine Wetlands

Riverine HGM wetlands are found within active floodplains and riparian corridors associated with river and stream channels. Dominant water sources are subsurface hydraulic connections or overbank flow from nearby river and stream channels and wetlands. Groundwater discharge from surficial aquifers, overland flow from neighboring uplands and small tributaries, and precipitation may contribute additional inputs. Riverine wetlands lose surface water by flow returning to the channel after flooding or precipitation events.

Subsurface water loss generally occurs through discharge to nearby active channels, evapotranspiration, and vertical migration to deeper groundwater (Hall et al 2003).

Riverine wetlands in the study area occur in the swale containing the stream that crosses under Wyoming Drive (Photo 1). Other creeks in the study area are incised; overbank flooding does not occur enough to create or support wetlands in the adjacent riparian zone.

Photo 2 Riverine HGM Wetland

Riverine Channel Waters

Streams and rivers (RPW) are classified as Riverine Channel in the project HGM system.

The three unnamed streams intersecting the study area are considered Riverine Channel. The stream identified at data point ST053 is shown in Photo 3.

Photo 3 Riverine Channel Stream

3.1.3 Streams

Three Perennial RPW streams were found within the study area (Figure 4, Appendix D). The NHD had mapped two streams in the study area but only one of these streams was verified. However, two additional streams were found that the NHD had not mapped.

The total length of streams within the study area was 756 linear feet.

3.1.4 Jurisdictional Status of Wetlands and Waters

The Wetlands and Waters within the study area have adjacent downstream connections to Beverly Lake, which flows through several lakes and unnamed streams to Little Meadow Creek, which flows to Meadow Creek, which flows to Big Lake, a Traditional Navigable Water.

The jurisdictional status of the Waters of the U.S. is ultimately determined by USACE.

3.1.5 Plant Species

Thirty-two vascular plant species were recorded at WD plots in the study area. No recorded species were threatened or endangered. No non-native plant species were recorded. Non-native plant species were observed in the road shoulder along the study area; however, these areas were uplands in the road prism and not broadly sampled during the field effort. The full list of plant species recorded is presented in Appendix B. Appendix B lists all plant species presented on data forms (Appendix C) by the nomenclature of the NWPL (USACE 2020a).

4.0 REFERENCES

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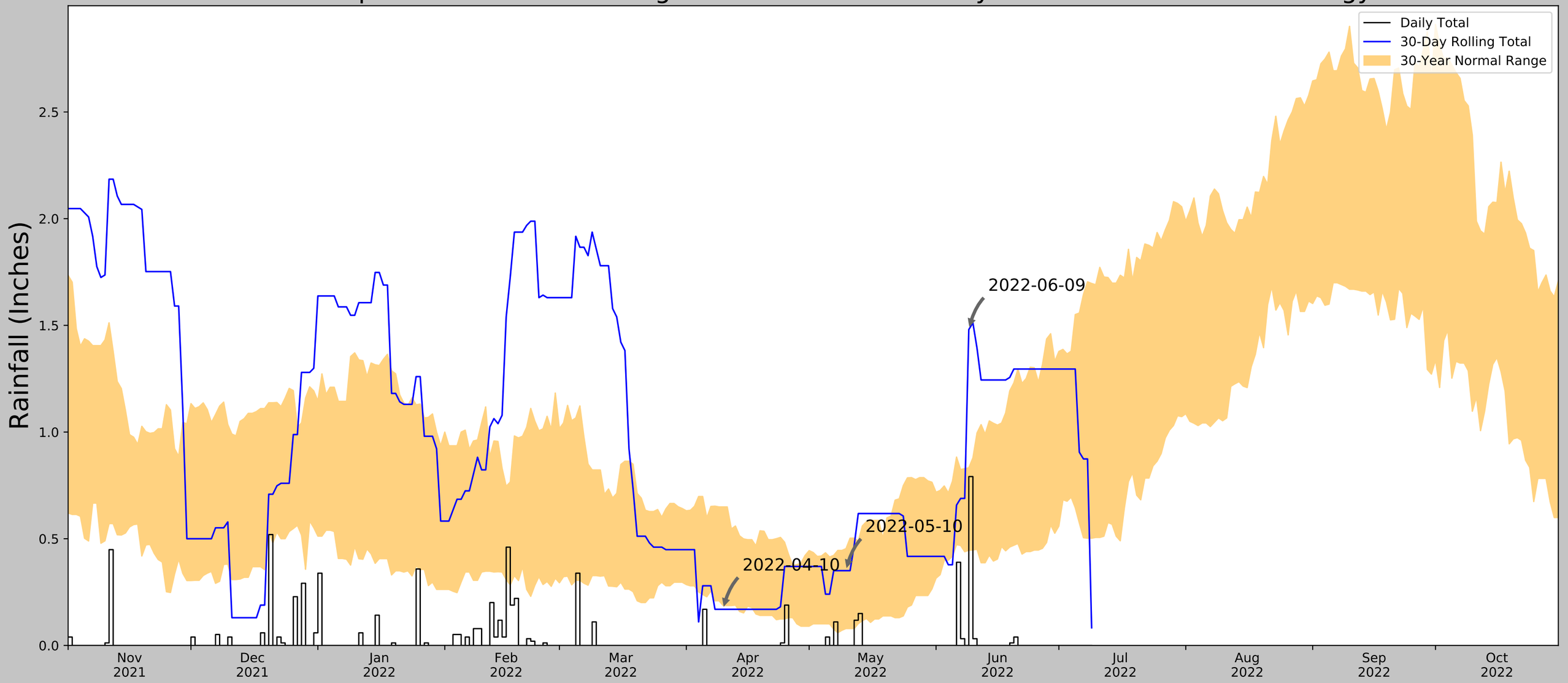
APPENDICES

Appendix A ANTECEDENT PRECIPITATION TOOL

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



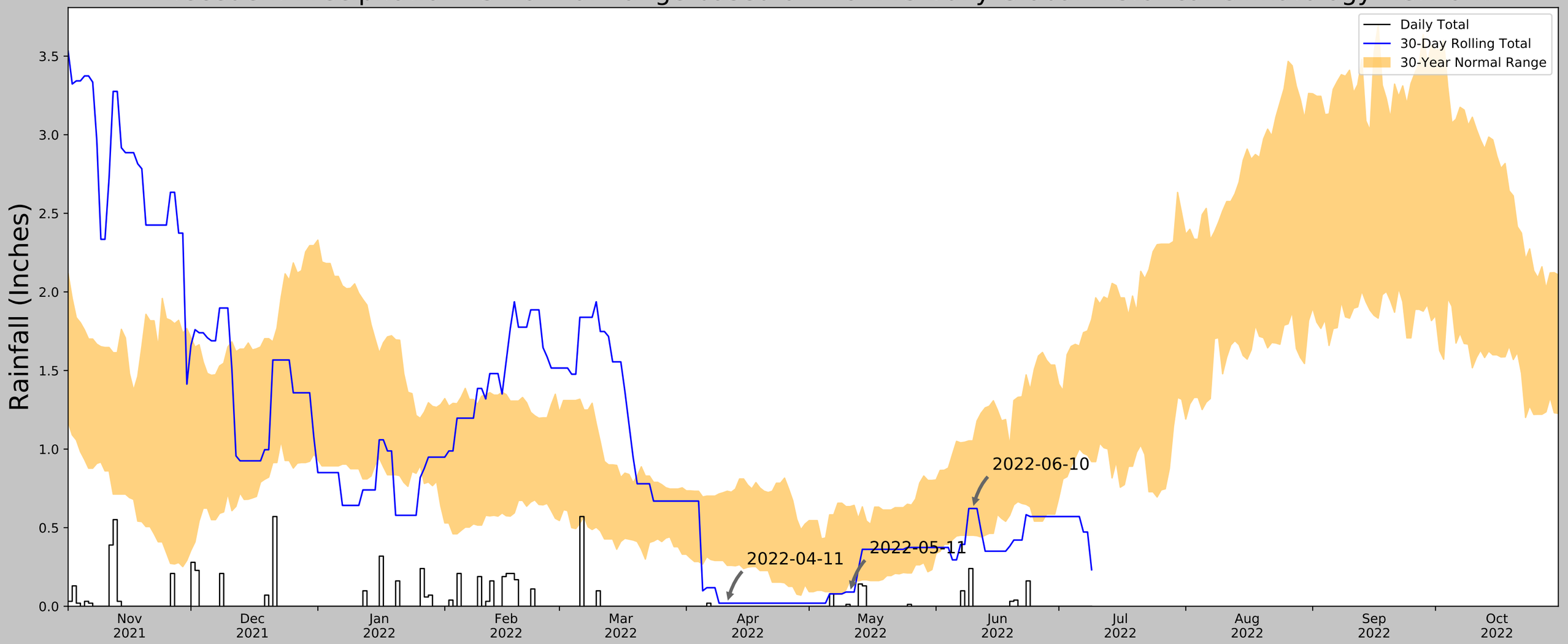
Coordinates	61.617, -149.591
Observation Date	2022-06-09
Elevation (ft)	387.39
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-06-09	0.446063	0.832283	1.480315	Wet	3	3	9
2022-05-10	0.079134	0.453543	0.350394	Normal	2	2	4
2022-04-10	0.186614	0.649213	0.169291	Dry	1	1	1
Result							Normal Conditions - 14

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
PALMER MUNI AP	61.5961, -149.0917	229.987	16.468	157.403	10.003	8544	90
PALMER JOB CORPS	61.5889, -149.0992	215.879	0.555	14.108	0.258	2675	0
PALMER 1.7 WNW	61.6185, -149.1258	435.039	1.911	205.052	1.252	18	0
BEN'S FARM	61.5633, -149.1542	126.969	3.059	103.018	1.692	109	0
LAZY MTN	61.6267, -149.0364	732.94	2.788	502.953	2.657	7	0



Coordinates	61.617, -149.591
Observation Date	2022-06-10
Elevation (ft)	387.39
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Dry Season

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 5.2 SE	61.1926, -149.7542	265.092	29.816	122.298	17.064	193	0
ANCHORAGE 5.0 ESE	61.1945, -149.7573	226.05	29.705	161.34	18.16	167	21
ANCHORAGE 4.8 E	61.2047, -149.7563	229.987	29.007	157.403	17.619	510	0
KNIK 10.0 ESE	61.4176, -149.4477	-3280.512	14.564	3667.902	59.973	1399	0
EAGLE RIVER 7.0 SE	61.2378, -149.4543	1914.042	26.587	1526.652	52.553	19	0
EAGLE RIVER 6.2 ESE	61.2869, -149.3945	633.858	23.713	246.468	16.515	119	0
ANCHORAGE 3.1 ESE	61.2059, -149.8112	133.858	29.322	253.532	20.629	4	0
EAGLE RIVER 3.1 NNE	61.3659, -149.5501	255.906	17.402	131.484	10.119	8	0
EAGLE RIVER 2.6 ESE	61.3122, -149.4958	798.885	21.293	411.495	18.344	2679	69
EAGLE RIVER 7.8 SE	61.2272, -149.4401	2155.84	27.39	1768.45	60.763	16	0
CHUGIAK 0.8	61.4069, -149.4872	190.945	14.914	196.445	9.641	74	0
ANCHORAGE 4.5 E	61.213, -149.7649	224.081	28.5	163.309	17.479	9	0
WILLOW 3.6 SE	61.6995, -149.9897	304.134	14.266	83.256	7.607	60	0
WASILLA 2.7 NW	61.6058, -149.5233	493.11	2.355	105.72	1.309	6	0
PALMER 1.7 WNW	61.6185, -149.1258	435.039	15.279	47.649	7.604	4	0
BUTTE 3NNE	61.5836, -149.0056	246.063	19.375	141.327	11.457	1563	0
CAMP TOGOWOODS	61.495, -149.7572	140.092	10.048	247.298	7.006	406	0
CASWELL 5 N	61.9736, -150.0594	250.0	29.0	137.39	17.034	620	0
BEN'S FARM	61.5633, -149.1542	126.969	14.83	260.421	10.536	2340	0

Appendix B PLANT LIST

Plants recorded in the study area during field work in 2022 are presented in the table.

Indicator status abbreviations are as follows:

- OBL: Obligate Wetland Plants (Almost always occur in wetlands)
- FACW: Facultative Wetland Plants (Usually occur in wetlands, but may occur in non-wetlands)
- FAC: Facultative Plants (Occur in wetlands and non-wetlands)
- FACU: Facultative Upland Plants (Usually occur in non-wetlands, but may occur in uplands)
- UPL: Upland Plants (Almost always occur in non-wetlands)

Latin name, common name, and indicator status rating are from the National Wetland Plant List (USACE 2020a).

Tree

Latin Name	Common Name	Indicator Status Rating
Betula neoalaskana	Alaska Paper Birch	FACU
Picea glauca	White Spruce	FACU
Picea mariana	Black Spruce	FACW
Populus tremuloides	Quaking Aspen	FACU

Shrub/Sapling

Latin Name	Common Name	Indicator Status Rating
Alnus incana	Speckled Alder	FAC
Betula glandulosa	Resin Birch	FAC
Betula neoalaskana	Alaska Paper Birch	FACU
Chamaedaphne calyculata	Leatherleaf	FACW
Dasiphora fruticosa	Golden-Hardhack	FAC
Empetrum nigrum	Black Crowberry	FAC
Linnaea borealis	American Twinflower	FACU
Myrica gale	Sweetgale	OBL
Picea glauca	White Spruce	FACU
Picea mariana	Black Spruce	FACW
Populus tremuloides	Quaking Aspen	FACU
Rhododendron groenlandicum	Rusty Labrador-Tea	FAC
Rosa acicularis	Prickly Rose	FACU
Salix barclayi	Barclay's Willow	FAC
Salix pulchra	Diamond-Leaf Willow	FACW
Vaccinium ovalifolium	Oval-Leaf Blueberry	FAC
Vaccinium uliginosum	Alpine Blueberry	FAC

Appendix B Plant List

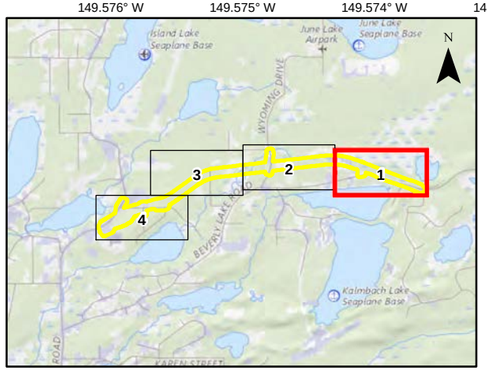
Latin Name	Common Name	Indicator Status Rating
Vaccinium vitis-idaea	Northern Mountain-Cranberry	FAC
Viburnum edule	Squashberry	FACU

Herb

Latin Name	Common Name	Indicator Status Rating
Athyrium cyclosorum	Western Lady Fern	FAC
Calamagrostis canadensis	Bluejoint	FAC
Chamaenerion angustifolium	Narrow-Leaf Fireweed	FACU
Comarum palustre	Purple Marshlocks	OBL
Cornus canadensis	Canadian Bunchberry	FACU
Equisetum arvense	Field Horsetail	FAC
Equisetum fluviatile	Water Horsetail	OBL
Equisetum sylvaticum	Woodland Horsetail	FAC
Geocaulon lividum	False Toadflax	FACU
Rubus arcticus	Northern Blackberry	FAC
Rubus chamaemorus	Cloudberry	FACW
Streptopus amplexifolius	Clasping Twistedstalk	FACU
Trientalis europaea	Arctic Starflower	FACU

Appendix C FIELD DATA FORMS AND PHOTOS

Appendix D WETLANDS AND WATERS DETAIL FIGURES



All data points have associated photographs with photo directions labeled in Appendix C.
Field data forms are presented concurrently with photos in Appendix C.

Imagery: 2021 true color orthoimagery, 0.5-foot
Location Inset Background: USGS Topographic
Coordinate System: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
Projection: Transverse Mercator
Datum: North American 1983

Study
mat_su_roads_clip

Plot Status
- RPW
- Upland
- Wetland

Stream

Wetlands and Waters by HGM
- Riverine
- Riverine Channel
- Slope

0 100 200 300 Feet
(At original document size of 11x17)
1:2,400 1 in = 200 feet

N
W E
S

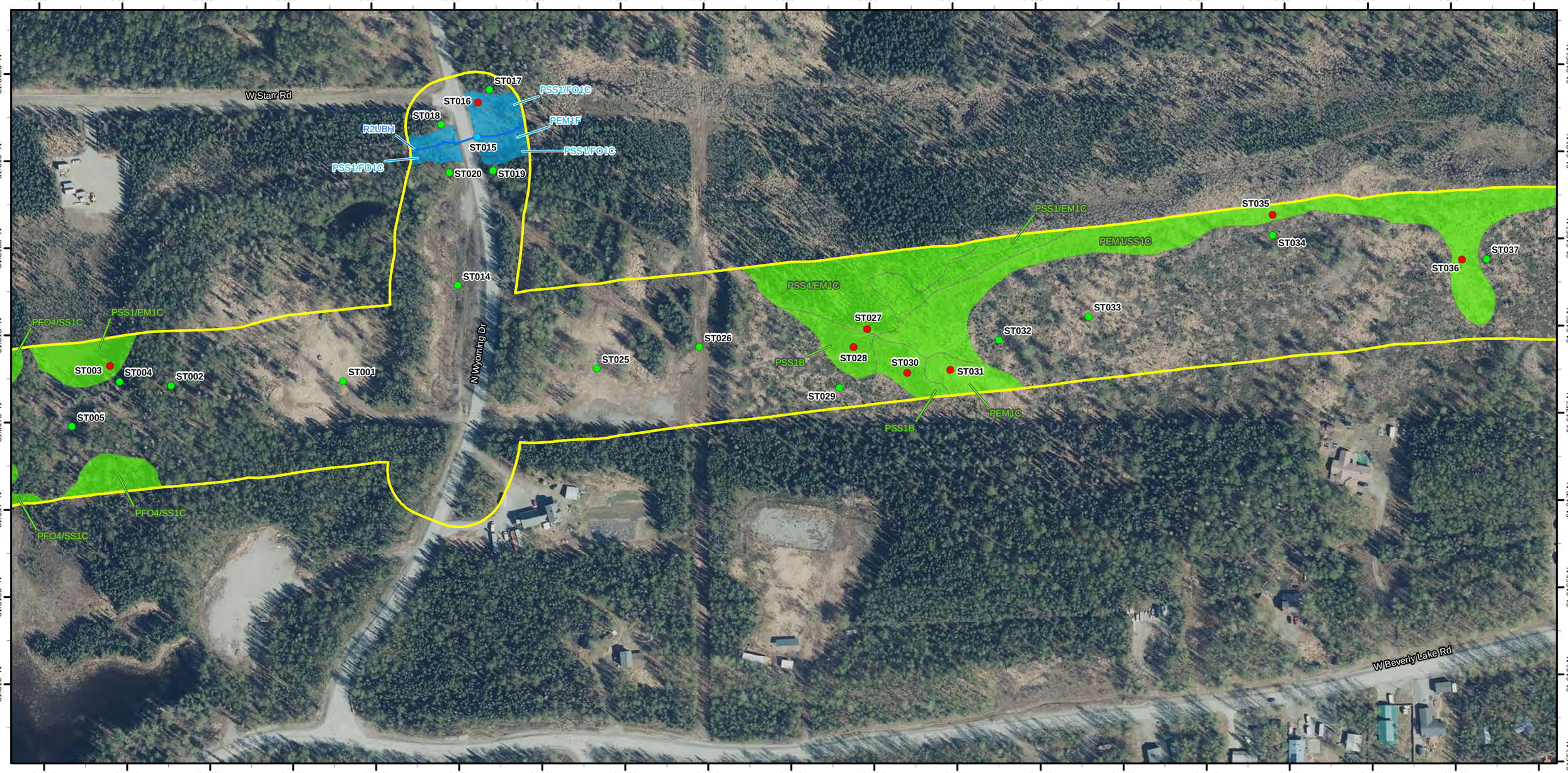
Client
Alaska Department of Transportation and Public Facilities

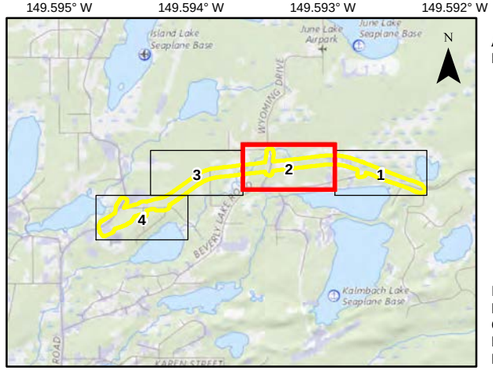
Project
Seldon Road Extension Phase II

Figure
Wetlands and Waters Detail

Figure Number
D - 1

Stantec





All data points have associated photographs with photo directions labeled in Appendix C.
Field data forms are presented concurrently with photos in Appendix C.

Study
mat_su_roads_clip

Plot Status
- RPW
- Upland
- Wetland

Stream

Wetlands and Waters by HGM
- Riverine
- Riverine Channel
- Slope

0 100 200 300 Feet

(At original document size of 11x17)

1:2,400 1 in = 200 feet

N
W E
S

Imagery: 2021 true color orthoimagery, 0.5-foot
Location Inset Background: USGS Topographic
Coordinate System: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
Projection: Transverse Mercator
Datum: North American 1983

Client

Alaska Department of Transportation and Public Facilities

Project

Seldon Road Extension Phase II

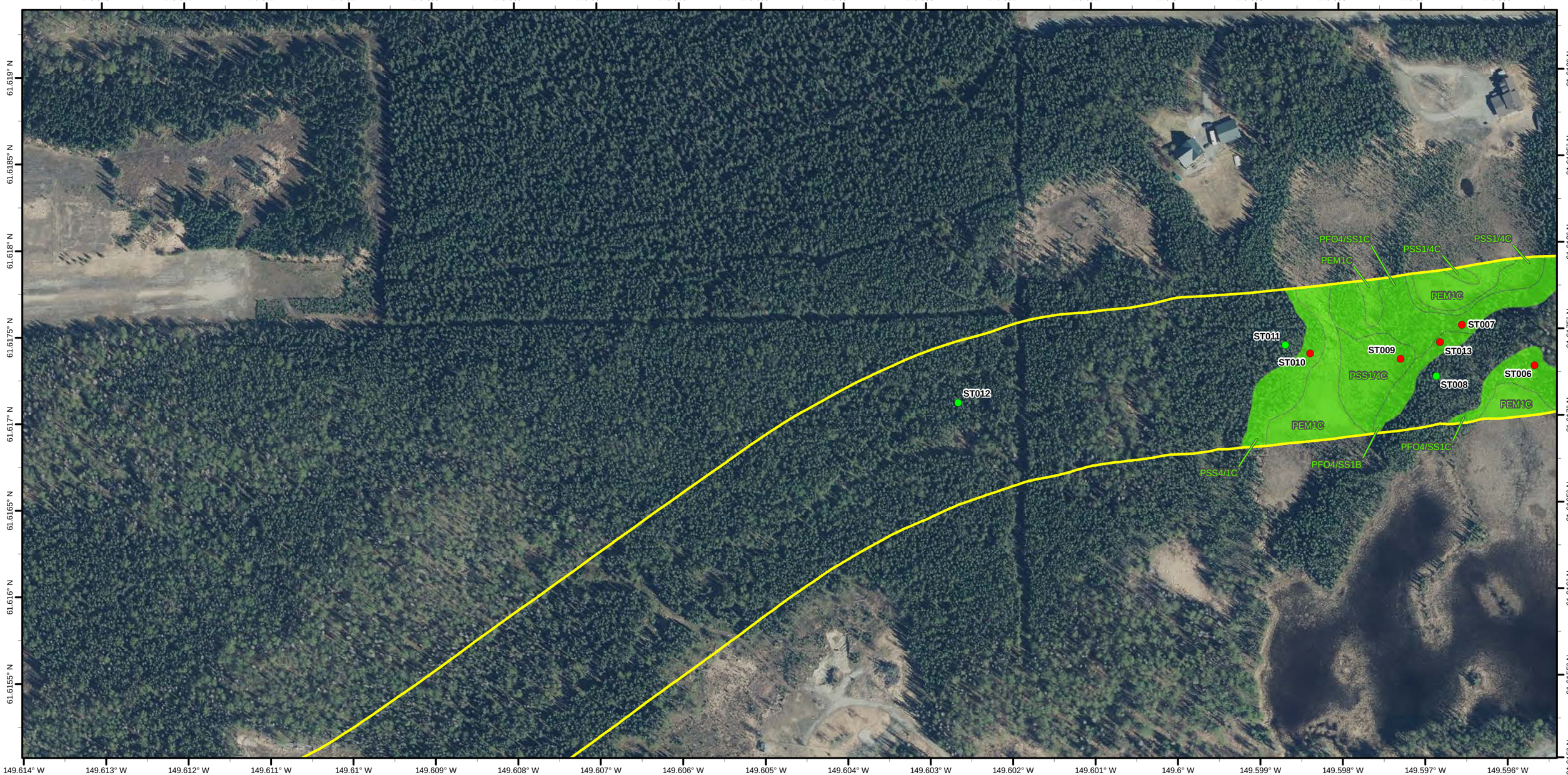
Figure

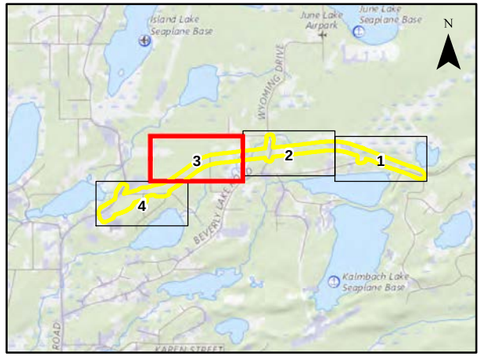
Wetlands and Waters Detail

Figure Number

D - 2

Stantec





All data points have associated photographs with photo directions labeled in Appendix C.
Field data forms are presented concurrently with photos in Appendix C.

Study
mat_su_roads_clip

Plot Status
- RPW
- Upland
- Wetland

Stream

Wetlands and Waters by HGM
- Riverine
- Riverine Channel
- Slope

0 100 200 300 Feet

(At original document size of 11x17)

1:2,400 1 in = 200 feet

N
W E
S

Imagery: 2021 true color orthoimagery, 0.5-foot
Location Inset Background: USGS Topographic
Coordinate System: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
Projection: Transverse Mercator
Datum: North American 1983

Client

Alaska Department of Transportation and Public Facilities

Project

Seldon Road Extension Phase II

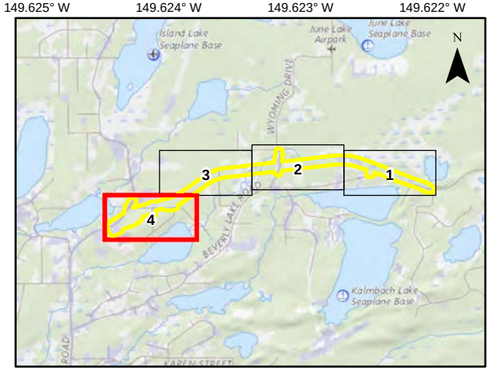
Figure

Wetlands and Waters Detail

Figure Number

D - 3

Stantec



All data points have associated photographs with photo directions labeled in Appendix C.
Field data forms are presented concurrently with photos in Appendix C.

Study
mat_su_roads_clip

Plot Status
- RPW
- Upland
- Wetland

Stream

Wetlands and Waters by HGM
- Riverine
- Riverine Channel
- Slope

0 100 200 300 Feet

(At original document size of 11x17)

1:2,400 1 in = 200 feet

Imagery: 2021 true color orthoimagery, 0.5-foot
Location Inset Background: USGS Topographic
Coordinate System: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
Projection: Transverse Mercator
Datum: North American 1983

Client

Alaska Department of Transportation and Public Facilities

Project

Seldon Road Extension Phase II

Figure

Wetlands and Waters Detail

Figure Number

D - 4

Stantec

PHOTO REPORT

Plot Number	ST001
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6177253214
Longitude (DD)	-149.591384877

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: S

Photo Type: Vegetation Direction: W

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 002

Project: SELDON RD. PHASE II	Date: 6/9/22
Applicant: ADOT+PF	Investigators: ZB + AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617708 N	Watershed: FISH CREEK
Longitude: 149.593479 W	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	NO
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	NO
Remarks:				**Is the Sampled Area within a Wetland?**	NO

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. BETNEO	FU	Y	15	3. PICGLA	FU	Y	10
2. PICMAR	FW	Y	10	4.			

Total Tree Cover: 35 — 50% of Total Cover: 17.5 — 20% of Total Cover: 7

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. PICMAR	FW	Y	5	9.			
2. BETNEO	FU	N	3	10.			
3. VIBEDU	FU	N	3	11.			
4. RHOGRO	F	Y	5	12.			
5. VACVIT	F	Y	7	13.			
6. LINBOR	FU	N	3	14.			
7.				15.			

Total Shrub Cover: 26 — 50% of Total Cover: 13 — 20% of Total Cover: 5.2

Herbaceous Stratum	IND	DOM	Cover	13.			
1. CHAANG	FU	Y	7	14.			
2. EQUARV	F	Y	5	15.			
3. ATHFYC	F	N	T	16.			
4. GYMDRY	FU	N	2	17.			
5. CALCAN	F	N	1	18.			
6. CORCAN	FU	Y	5	19.			
7. STRAMP	FU	N	T	20.			
8. GEOLIV	FU	N	3	21.			
9. TRIEUR	FU	N	T	22.			
10.				23.			
11.				24.			
12.				25. MOSS	—		40

Total Herb Cover: 23 — 50% of Total Cover: 11.5 — 20% of Total Cover: 4.6

1. Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 56 (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 15	x 2 =	30
FAC species 18	x 3 =	54
FACU species 51	x 4 =	204
UPL species 0	x 5 =	0
Column Totals: 84 (A)		288 (B)

Prevalence Index = B/A = 3.43

Hydrophytic Vegetation Indicators:

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

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

Project Vegetation Type

OMF

Cowardin Code: U

HGM Classification: N/A

Landform: MORAINE

Local Relief: UNDULATING

Microtopography:	Slope:	Aspect:
FLAT	1%	E

SOIL

Plot No: ST 002

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators								Soil Map Unit Name: KICHATNA SILT LOAM, SLOPING + MOD. STEEP		
	Horizon	Soil Matrix		Redox Features						
Depth (in.)	Name	Color (moist)	%	Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
2-0	Oe									
0-7	Bh/E	10YR 4/4	60						SIL	
7-	E	2.5Y 5/1	40						SIL	
7-22	Bw	10YR 3/4	100						SIL	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks: Cryoturbated spodosol

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- ~ Histosol or Histel (A1)
- ~ Histic Epipedon (A2)[4]
- ~ Black Histic (A3)
- ~ Hydrogen Sulfide (A4)
- ~ Thick Dark Surfaces (A12)
- ~ Alaska Gleyed (A13)
- ~ Alaska Redox (A14)
- ~ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- ~ Depleted Below Dark Surface (A11)
- ~ Depleted Matrix (F3)
- ~ Redox Dark Surface (F6)
- ~ Depleted Dark Surface (F7)
- ~ Redox Depression (F8)
- ~ Red Parent Material (F21)
- ~ Very Shallow Dark Surface (F22)
- ~ Alaska Color Change (TA4) Give details of color change
- ~ Alaska Alpine Swales (TA5)
- ~ Alaska Redox with 2.5Y Hue
- ~ Alaska Gleyed w/o Hue 5Y or Redder Underlying
- ~ AA Positive (mineral soil, 60% of horizon 4 inches thick)
- ~ Ponded/Flooded/High Water Table (12 inches or higher)
- ~ Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	NO
NRCS Drainage Class:	MWD
Depth of Organic Soils:	2
Restrictive Layer Type:	NA
Restrictive Layer Depth:	NA

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

X Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- ~ 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)
- ~ Surface Soil Cracks (B6)
- ~ Inundation Visible on Aerial Imagery (B7)
- ~ Sparsely Vegetated Concave Surface (B8)
- ~ Marl Deposits (B15)
- ~ Hydrogen Sulfide Odor (C1) (w/in 12")
- ~ Dry-Season Water Table (C2)**
- ~ Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? YES

Secondary Indicators (2 or more required)

- ~ Water-stained Leaves (B9)
- ~ Drainage Patterns (B10)
- ~ Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- NA Presence of Reduced Iron (C4)
- ~ Salt Deposits (C5)
- ~ Stunted or Stressed Plants (D1)
- ~ Geomorphic Position (D2)
- ~ Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- ~ Microtopographic Relief (D4)
- ~ FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present? Yes ____ No X Depth (inches): NA

Water Table Present? Yes ____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): NA

Episaturation ____ Endosaturation ____

Water Source:

Wetland Hydrology Present? NO

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST002
Wetland Status	Upland
Plot Type	WD
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6177068127
Longitude (DD)	-149.593455778

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST003
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	PSS1/EM1C
HGM	Slope
Latitude (DD)	61.617823906
Longitude (DD)	-149.594192248

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST004
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6177301924
Longitude (DD)	-149.59407732

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST005
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6174745809
Longitude (DD)	-149.594651309

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST006
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	PFO4/SS1C
HGM	Slope
Latitude (DD)	61.6172887143
Longitude (DD)	-149.595661378

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST007
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	PFO4/SS1C
HGM	Slope
Latitude (DD)	61.617526435
Longitude (DD)	-149.596540797

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: NE

Photo Type: Vegetation Direction: SW

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 008

Project: SELDON RD PH II	Date: 6/9/22
Applicant: ADOT+PF	Investigators: ZB + AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617230N	Watershed: FISH CREEK
Longitude: 149.596878W	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	NO
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	YES
Remarks:				**Is the Sampled Area within a Wetland?**	No

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. PICMAR	FW	Y	10	3.			
2.				4.			

Total Tree Cover: 10 — 50% of Total Cover: 5 — 20% of Total Cover: 2

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. PICMAR	FW	Y	20	9.			
2. RHOGRO	F	N	5	10.			
3. VACVIT	F	N	3	11.			
4. ROSACI	FU	N	3	12.			
5. EMPNIG	F	N	T	13.			
6.				14.			
7.				15.			

Total Shrub Cover: 31 — 50% of Total Cover: 15.5 — 20% of Total Cover: 6.2

Herbaceous Stratum	IND	DOM	Cover	13.			
1. EQUARV	F	Y	2	14.			
2. GEOLIN	FU	Y	3	15.			
3. CORCAN	FU	N	T	16.			
4.				17.			
5.				18.			
6.				19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24.			
12.				25. MOSS			80

Total Herb Cover: 5 — 50% of Total Cover: 2.5 — 20% of Total Cover: 1

1.Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	30 x 2 =	60
FAC species	10 x 3 =	30
FACU species	6 x 4 =	24
UPL species	0 x 5 =	0
Column Totals:	46 (A)	114 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0

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

N Problematic Hydrophytic Vegetation[1]

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

Project Vegetation Type

OBSF

Cowardin Code: U

HGM Classification: N/A

Landform: FOOTSLOPE

Local Relief: HUMMOCKY (MOD) CONCAVE

Microtopography:	Slope:	Aspect:
HUMMOCKY (MOD	2%	

SOIL

Plot No: ST 008

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYACUEPTS, DEPRESSIONAL, 0 TO 7 % SLOPES

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
2-0	Oe									
0-12	BhE	10YR 4/4	60					—	SAL	
		10YR 3/3	30							
		2.5Y 4/1	10							
12-16	BC	7.5YR 3/3	100					ST	LSA	
16-20	C	7.5YR 3/3	100					GR	CSA	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks: Cryoturbated Spodosol

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	NO
NRCS Drainage Class:	SPD
Depth of Organic Soils:	2"
Restrictive Layer Type:	NA
Restrictive Layer Depth:	NA

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

- N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2)
- N Saturation (A3)
- 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) (w/in 12")
- Y Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? YES

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- NA Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- Y Microtopographic Relief (D4)
- Y FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes ____	No X	Depth (inches): NIA
Water Table Present?	Yes X	No ____	Depth (inches): 20
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 16

Episaturation ____ Endosaturation X

Water Source:

Wetland Hydrology Present? YES

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST008
Wetland Status	Upland
Plot Type	WD
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.617227989
Longitude (DD)	-149.59685505

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 009

Project: SELDON RD PH II	Date: 6/9/22
Applicant: ADOT+PF	Investigators: ZB, AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617331 N	Watershed: FISH CREEK
Longitude: 149.597285 W	Location Notes: HISTORIC POND - EUTROPHIED
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	YES
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	YES
Remarks:				**Is the Sampled Area within a Wetland?**	YES

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1.				3.			
2.				4.			

Total Tree Cover: 50% of Total Cover: 20% of Total Cover:

Sapling/Shrub Stratum	IND	DOM	Cover				
1. PICMAR	FW	Y	10	8. LINBOR	FU	N	T
2. MYRGAL	O	Y	10	9. SALPUL	FW	N	1
3. DASFRU	F	Y	7	10. CHACAL	FW	N	T
4. BETGLA	F	N	3	11.			
5. VACCOVA	F	N	5	12.			
6. VACVIT	F	N	3	13.			
7. RHOGRO	F	N	5	14.			
				15.			

Total Shrub Cover: 44 50% of Total Cover: 22 20% of Total Cover: 8.8

Herbaceous Stratum	IND	DOM	Cover				
1. CALCAN	F	Y	10	13.			
2. EQUARV	F	Y	5	14.			
3. RUBCHA	FW	N	2	15.			
4. TRIEUR	FU	N	T	16.			
5. RUBARC	F	N	T	17.			
6. ~~POTPAL~~ COMPAL	O	N	T	18.			
7.				19.			
8.				20.			
9.				21.			
10.				22.			
11.				23.			
12.				24.			
				25. MOSS			30

Total Herb Cover: 17 50% of Total Cover: 8.5 20% of Total Cover: 3.4

1.Open Water 20 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

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 10	x 1 =	10
FACW species 13	x 2 =	26
FAC species 38	x 3 =	114
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 61 (A)		150 (B)

Prevalence Index = B/A = 2.46

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0

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

N Problematic Hydrophytic Vegetation[1]

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

Project Vegetation Type

BSW

Cowardin Code: PSS1/4C

HGM Classification: SLOPE

Landform: DEPRESSION

Local Relief: CONCAVE

Microtopography:	Slope:	Aspect:
HUMMOCKY (MED)	0	NA

SOIL

Plot No: ST 009

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: HISTOSOLS

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
8-0	Oi									
0-7	Bg	7.5YR2.5/1	95	C	7.5YR3/4	5	RC		CSACL	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks:

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- Y Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	YES
NRCS Drainage Class:	VPD
Depth of Organic Soils:	8"
Restrictive Layer Type:	CLAY
Restrictive Layer Depth:	7"

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- Y Surface Water (A1)
- Y High Water Table (A2)
- Y Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? YES

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- Y Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- — Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- Y Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2)
- Y Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- Y Microtopographic Relief (D4)
- Y FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes X	No ____	Depth (inches): 4
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0
	Episaturation ____		Endosaturation X

Water Source:

Wetland Hydrology Present? YES

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST009
Wetland Status	Wetland
Plot Type	WD
Plot Date	6/9/2022
NWI Classification	PSS1/4C
HGM	Slope
Latitude (DD)	61.6173314868
Longitude (DD)	-149.597285089

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: NE

Photo Type: Vegetation Direction: SW

PHOTO REPORT

Plot Number	ST010
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	PSS4/1C
HGM	Slope
Latitude (DD)	61.6173631984
Longitude (DD)	-149.598378318

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST011
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6174135703
Longitude (DD)	-149.598681387

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: NW

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 012

Project: SELDON RD 7H 11	Date: 6/9/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617091 N	Watershed: FISH CREEK
Longitude: 149.602653	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	No
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	No
Remarks:				**Is the Sampled Area within a Wetland?**	No

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. PICMAR	FW	Y	30	3.			
2.				4.			

Total Tree Cover: 30 — 50% of Total Cover: 15 — 20% of Total Cover: 6

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. PICMAR	FW	Y	10	9.			
2. RHOGRO	F	Y	5	10.			
3. VACVIT	F	N	2	11.			
4. LINBOR	FW	N	T	12.			
5.				13.			
6.				14.			
7.				15.			

Total Shrub Cover: 17 — 50% of Total Cover: 8.5 — 20% of Total Cover: 3.4

Herbaceous Stratum	IND	DOM	Cover	13.			
1. CAGLIV	FW	Y	2	14.			
2.				15.			
3.				16.			
4.				17.			
5.				18.			
6.				19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24. MOSS	—		80
12.				25. LICHEN	—		10

Total Herb Cover: 2 — 50% of Total Cover: 1 — 20% of Total Cover: 0.4

1.Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	40 x 2 =	80
FAC species	7 x 3 =	21
FACU species	2 x 4 =	8
UPL species	0 x 5 =	0
Column Totals:	49 (A)	109 (B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0

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

N Problematic Hydrophytic Vegetation[1]

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

Project Vegetation Type

OBSF

Cowardin Code: U

HGM Classification: N/A

Landform: MORAINE

Local Relief: CONVEX

Microtopography:	Slope:	Aspect:
HUMMOCKY (SW)	2%	E

SOIL

Plot No: ST 012

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: KICHATNA SILT LOAM, UNDULATING

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
1-0	Oi									
0-1	A	10YR 2/1	100						SIL	
1-8	Bs/E	2.5Y 4/1	60						SAL	
~~8~~		7.5YR 3/4	10							
		10YR 4/4	30							
8-11	Bw	10YR 4/4	100						CSAL	
11-~~19~~	C	10YR 3/4	100					GR	CSA	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks: CRYOTURBATED SPODOSOL

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland
- N Other (explain in remarks)

Hydric Soils Present?	No
NRCS Drainage Class:	MWD
Depth of Organic Soils:	1"
Restrictive Layer Type:	NA
Restrictive Layer Depth:	NA

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2)
- N Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? YES

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- NA Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- N Microtopographic Relief (D4)
- Y FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present? Yes ____ No X Depth (inches): NA

Water Table Present? Yes ____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): NA

Episaturation____ Endosaturation____

Water Source:

Wetland Hydrology Present? No

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST012
Wetland Status	Upland
Plot Type	WD
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6170912466
Longitude (DD)	-149.602652902

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST013
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	PFO4/SS1B
HGM	Slope
Latitude (DD)	61.6174258613
Longitude (DD)	-149.596803754

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST014
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6182700355
Longitude (DD)	-149.589996427

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST015
Wetland Status	RPW
Plot Type	SC
Plot Date	6/9/2022
NWI Classification	R2UBH
HGM	Riverine Channel
Latitude (DD)	61.6191241295
Longitude (DD)	-149.589753565

Photo Type: Hydrology Direction: NA

Photo Type: Hydrology Direction: W

Photo Type: Vegetation Direction: E

PHOTO REPORT

Plot Number	ST016
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	PSS1/FO1C
HGM	Riverine
Latitude (DD)	61.6193176007
Longitude (DD)	-149.589738094

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST017
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6193920508
Longitude (DD)	-149.589600158

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: S

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST018
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6191942133
Longitude (DD)	-149.590183315

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST019
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6189271062
Longitude (DD)	-149.58956437

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST020
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6138913815
Longitude (DD)	-149.611601005

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: SE

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST020
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6189182507
Longitude (DD)	-149.590088282

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: SE

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST022
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6135213392
Longitude (DD)	-149.618223559

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST023
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6134644957
Longitude (DD)	-149.618587645

Photo Type: Vegetation Direction: NE

Photo Type: Vegetation Direction: NW

Photo Type: Vegetation Direction: SW

PHOTO REPORT

Plot Number	ST024
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/9/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6120788323
Longitude (DD)	-149.622912781

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: S

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST025
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6177889983
Longitude (DD)	-149.588328109

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST026
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6179082931
Longitude (DD)	-149.587090345

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: W

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 027

Project: SELDON RD PHASE II	Date: 6/10/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.618008N	Watershed: FISH CREEK
Longitude: 149.585091	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	YES
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	YES
Remarks:				**Is the Sampled Area within a Wetland?**	YES

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. PICMAR	FW	Y	5	3.			
2.				4.			

Total Tree Cover: 5 — 50% of Total Cover: 2.5 — 20% of Total Cover: 1

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. PICMAR	FW	Y	20	9.			
2. BETNEO	FU	N	3	10.			
3. RHOGRO	F	N	3	11.			
4. VACVIT	F	N	T	12.			
5. BETGLA	F	N	T	13.			
6. VACOVA	F	N	2	14.			
7. SALBAR	F	N	T	15.			

Total Shrub Cover: 28 — 50% of Total Cover: 14 — 20% of Total Cover: 5.6

Herbaceous Stratum	IND	DOM	Cover	13.			
1. CALCAN	F	Y	30	14.			
2. RUBCHA	FW	N	3	15.			
3. ~~ROTBAL~~ COMPAL	O	N	2	16.			
4. EQUFLU	O	N	3	17.			
5.				18.			
6.				19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24.			
12.				25.			

Total Herb Cover: 38 — 50% of Total Cover: 19 — 20% of Total Cover: 7.6

1.Open Water 5 — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

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 5	x 1 =	5
FACW species 28	x 2 =	56
FAC species 35	x 3 =	105
FACU species 3	x 4 =	12
UPL species 0	x 5 =	0
Column Totals: 71 (A)		178 (B)

Prevalence Index = B/A = 2.51

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%

Y Prevalence Index is ≤3.0

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

N Problematic Hydrophytic Vegetation[1]

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

Project Vegetation Type

OBSF

Cowardin Code: PSS4/EMIC

HGM Classification: SLOPE

Landform: DEPRESSION

Local Relief: CONCAVE

Microtopography:	Slope:	Aspect:
HUMMOCKY (MED)	0	NA

SOIL

Plot No: ST 027

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYAQUENTS, DEPRESSIONAL, 0-7 %

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
~~9-0~~	~~Oi~~									
18-9	Oi									
9-0	Oe									

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks:

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- Y Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- Y Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	YES
NRCS Drainage Class:	VPD
Depth of Organic Soils:	18+
Restrictive Layer Type:	NA
Restrictive Layer Depth:	NA

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- Y Surface Water (A1)
- Y High Water Table (A2)
- Y Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? NO-DRIER

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- NA Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- Y Microtopographic Relief (D4)
- Y FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes X	No _____	Depth (inches): 2
Water Table Present?	Yes X	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0
	Episaturation _____	Endosaturation X	

Water Source:

Wetland Hydrology Present? YES

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST027
Wetland Status	Wetland
Plot Type	WD
Plot Date	6/10/2022
NWI Classification	PSS4/EM1C
HGM	Slope
Latitude (DD)	61.6180067072
Longitude (DD)	-149.585068083

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: NE

Photo Type: Vegetation Direction: SW

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 028

Project: SELDON RD PHASE II	Date: 6/10/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617905 N	Watershed:
Longitude: 149.585258 W	Location Notes: HISTORICALLY DISTURBED - APPEARS TO HAVE BEEN CLEARED/LOGGED 10-20 YRS AGO
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	YES
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	YES
Remarks:				**Is the Sampled Area within a Wetland?**	YES

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1.				3.			
2.				4.			

Total Tree Cover: 50% of Total Cover: 20% of Total Cover:

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. PICMAR	FW	N	5	9.			
2. BETNEO	FU	N	3	10.			
3. RHOGRO	F	Y	20	11.			
4. VACVIT	F	N	10	12.			
5. VACULI	F	Y	15	13.			
6. BETGLA	F	N	5	14.			
7.				15.			

Total Shrub Cover: 58 50% of Total Cover: 29 20% of Total Cover: 11.6

Herbaceous Stratum	IND	DOM	Cover	13.			
1. RUBCHA	FW	Y	3	14.			
2. CALCAN	F	Y	10	15.			
3. EQUSYL	F	N	T	16.			
4. CHAANG	FU	N	T	17.			
5.				18.			
6.				19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24.			
12.				25. MOSS			30

Total Herb Cover: 13 50% of Total Cover: 6.5 20% of Total Cover: 2.6

1.Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

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 0	x 1 =	0
FACW species 8	x 2 =	16
FAC species 60	x 3 =	180
FACU species 3	x 4 =	12
UPL species 0	x 5 =	0
Column Totals: 71 (A)		208 (B)

Prevalence Index = B/A = 2.93

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%

N Prevalence Index is ≤3.0

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

N Problematic Hydrophytic Vegetation[1]

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

Project Vegetation Type

LST

Cowardin Code: PSS1B

HGM Classification: SLOPE

Landform: TERRACE

Local Relief: FLAT

Microtopography:	Slope:	Aspect:
HUMMOCKY (SM)	1%	N

SOIL

Plot No: ST 028

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYAQUEPTS, DEPRESSIONAL, 0-7 %

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
11-8	O_i									
8-0	O_e									
0-2	A	10YR 2/1	100						Sil	
2-8	AC	10YR 2/1	100					GR	CSAL	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks:

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- Y Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	YES
NRCS Drainage Class:	VPD
Depth of Organic Soils:	11
Restrictive Layer Type:	N/A
Restrictive Layer Depth:	N/A

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

- N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- Y High Water Table (A2)
- Y Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? NO - DRIER

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- N Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- N Microtopographic Relief (D4)
- Y FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes ____	No X	Depth (inches): N/A
Water Table Present?	Yes X	No ____	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 6
	Episaturation ____		Endosaturation X

Water Source:

Wetland Hydrology Present? YES

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST028
Wetland Status	Wetland
Plot Type	WD
Plot Date	6/10/2022
NWI Classification	PSS1B
HGM	Slope
Latitude (DD)	61.6179034983
Longitude (DD)	-149.585234939

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: NW

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 029

Project: SELDON RD PHASE II	Date: 6/10/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617672 N	Watershed: FISH CREEK
Longitude: 149.585428 W	Location Notes: HISTORICALLY DISTURBED - CLEARED/LOGGED
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	No
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	No
Remarks:				**Is the Sampled Area within a Wetland?**	No

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1.				3.			
2.				4.			

Total Tree Cover: 50% of Total Cover: 20% of Total Cover:

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. BETNEO	FU	N	10	9.			
2. PICGLA	FU	N	5	10.			
3. RHOGRO	F	Y	30	11.			
4. VACVIT	F	N	7	12.			
5. VACULI	F	N	5	13.			
6.				14.			
7.				15.			

Total Shrub Cover: 57 50% of Total Cover: 28.5 20% of Total Cover: 11.4

Herbaceous Stratum	IND	DOM	Cover	13.			
1. CALCAN	F	Y	15	14.			
2. CHAANG	FU	N	2	15.			
3. GEOLIV	FU	N	T	16.			
4. EQUSYL	F	N	T	17.			
5.				18.			
6.				19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24.			
12.				25. MOSS	—	—	5

Total Herb Cover: 17 50% of Total Cover: 8.5 20% of Total Cover: 3.4

1. Open Water 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

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 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 57	x 3 =	171
FACU species 17	x 4 =	68
UPL species 0	x 5 =	0
Column Totals: 74 (A)		239 (B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%

N Prevalence Index is ≤3.0

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

N Problematic Hydrophytic Vegetation[1]

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

Project Vegetation Type

WMF

Cowardin Code: U

HGM Classification: N/A

Landform: TERRACE

Local Relief: FLAT

Microtopography:	Slope:	Aspect:
HUMMOCKY (SU)	0	NA

SOIL

Plot No: ST 029

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYAQUEPTS, DEPRESSIONAL, 0-7%

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
6-3	Oi									
3-0	Oe									
0-2	A	10YR 2/2	100						SIL	
2-7	BC	2.5Y 4/3	100						CSAL	
7-16	C	10YR 4/3.5	100						SA	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks:

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	NO
NRCS Drainage Class:	MWD
Depth of Organic Soils:	
Restrictive Layer Type:	N/A
Restrictive Layer Depth:	N/A

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

- N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2)
- N Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? NO - DRIER

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- N/A Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- N Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes ___	No X	Depth (inches): N/A
Water Table Present?	Yes ___	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): N/A

Episaturation ___ Endosaturation ___

Water Source:

Wetland Hydrology Present? NO

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST029
Wetland Status	Upland
Plot Type	WD
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6176703561
Longitude (DD)	-149.585404785

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: NE

Photo Type: Vegetation Direction: NW

PHOTO REPORT

Plot Number	ST030
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PSS1C
HGM	Slope
Latitude (DD)	61.6177549146
Longitude (DD)	-149.584589583

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST031
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PEM1C
HGM	Slope
Latitude (DD)	61.6177694599
Longitude (DD)	-149.584070883

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST032
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6179375685
Longitude (DD)	-149.583481416

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST033
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6180695903
Longitude (DD)	-149.582400259

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 034

Project: SELDON RD PHASE II	Date: 6/10/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.618533 N	Watershed: FISH CREEK
Longitude: 149.580205 W	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	No
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	NO
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	NO
Remarks:				**Is the Sampled Area within a Wetland?**	No

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. BETNEO	FU	Y	3	3.			
2.				4.			

Total Tree Cover: 3 — 50% of Total Cover: 1.5 — 20% of Total Cover: 0.6

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. BETNEO	FU	Y	12	9.			
2. PICGLA	FU	N	7	10.			
3. RHOGRO	F	Y	10	11.			
4. VACVIT	F	N	5	12.			
5. VACUCI	F	N	5	13.			
6.				14.			
7.				15.			

Total Shrub Cover: 49 — 50% of Total Cover: 24.5 — 20% of Total Cover: 9.8

Herbaceous Stratum	IND	DOM	Cover	13.			
1. CHAANG	FU	Y	3	14.			
2. CALCAN	F	N	T	15.			
3. EQUSYL	F	N	T	16.			
4. CORCAN	FU	Y	5	17.			
5. RUBCHA	FW	N	T	18.			
6. GEOLIN	FU	N	1	19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24.			
12.				25.			

Total Herb Cover: 9 — 50% of Total Cover: 4.5 — 20% of Total Cover: 1.8

1.Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17 (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	20 x 3 =	60
FACU species	30 x 4 =	120
UPL species	0 x 5 =	0
Column Totals:	50 (A)	180 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

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

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

Project Vegetation Type

WMF

Cowardin Code: U

HGM Classification: N/A

Landform: MOUND

Local Relief: CONVEX

Microtopography:	Slope:	Aspect:
FLAT	2%	N

SOIL

Plot No: ST 034

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYAQUEPTS, DEPRESSIONAL, 0-7%

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
3-0	Oe									
0-2	A	10YR 2/2	100						SIL	
2-5	E	2.5Y 4/1	100						SIL	
5-10	Bs	7.5YR 3/4	100						SAL	
10-18	BC	10YR 3/4	100					GR	LCSA	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks: Spodosol

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	No
NRCS Drainage Class:	MWD
Depth of Organic Soils:	3"
Restrictive Layer Type:	N/A
Restrictive Layer Depth:	N/A

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

- N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2)
- N Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? NO - DRIER

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- N/A Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- N Microtopographic Relief (D4)
- N FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present? Yes ____ No X Depth (inches): N/A

Water Table Present? Yes ____ No X Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): N/A

Episaturation ____ Endosaturation ____

Water Source:

Wetland Hydrology Present? No

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST034
Wetland Status	Upland
Plot Type	WD
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6185314337
Longitude (DD)	-149.580182032

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: N

PHOTO REPORT

Plot Number	ST035
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PEM1/SS1C
HGM	Slope
Latitude (DD)	61.6186480754
Longitude (DD)	-149.58017876

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST036
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PEM1/SS1C
HGM	Slope
Latitude (DD)	61.6183817144
Longitude (DD)	-149.577899389

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: S

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST037
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6183864204
Longitude (DD)	-149.577605219

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST038
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.617268243
Longitude (DD)	-149.570191441

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: NW

Photo Type: Vegetation Direction: SE

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 039

Project: SELDON RD PHASE II	Date: 6/10/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617580N	Watershed: FISH CREEK
Longitude: 149.570008W	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	No
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	No
Remarks:				**Is the Sampled Area within a Wetland?**	No

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. PICMAR	FW	Y	15	3.			
2. POPTRE	FU	Y	15	4.			

Total Tree Cover: 30 — 50% of Total Cover: 15 — 20% of Total Cover: 6

Sapling/Shrub Stratum	IND	DOM	Cover	8.			
1. ROSACI	FU	N	3	9.			
2. POPTRE	FU	Y	5	10.			
3. RHOGRO	F	Y	7	11.			
4. LINBOR	FU	N	2	12.			
5. VACVIT	F	N	T	13.			
6. PICMAR	FW	Y	5	14.			
7.				15.			

Total Shrub Cover: 22 — 50% of Total Cover: 11 — 20% of Total Cover: 4.4

Herbaceous Stratum	IND	DOM	Cover	13.			
1. GEOLIV	FU	Y	4	14.			
2. CALCAN	F	Y	1	15.			
3. EQUARV	F	N	T	16.			
4. CHAANG	FU	N	T	17.			
5.				18.			
6.				19.			
7.				20.			
8.				21.			
9.				22.			
10.				23.			
11.				24.			
12.				25. MOSS	—		30

Total Herb Cover: 5 — 50% of Total Cover: 2.5 — 20% of Total Cover: 1

1.Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 57 (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	20 x 2 =	40
FAC species	8 x 3 =	24
FACU species	29 x 4 =	116
UPL species	0 x 5 =	0
Column Totals:	57 (A)	180 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:

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

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

Project Vegetation Type

OMF

Cowardin Code: U

HGM Classification: N/A

Landform: TERRACE

Local Relief: CONVEX

Microtopography:	Slope:	Aspect:
FLAT	1%	N

SOIL

Plot No: ST 039

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYAQUEPTS, DEPRESSIONAL, 0-7%

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	%	Redox Features Type[1]	Color	%	Loc[2]	Mod[3]	Texture	Horizon Comments
~~0-3~~	~~O~~									
0-6	E/BS	2.5Y 4/1	50						SIL	
		7.5YR 3/4	20							
		10YR 4/2	30							
6-10	Bw	10YR 4/4	100						CSAL	
10-15	C	10YR 3/4	100					VCB ~~VST~~	SAL	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks:

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- N AA Positive (mineral soil, 60% of horizon 4 inches thick)
- N Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	No
NRCS Drainage Class:	MWD
Depth of Organic Soils:	3"
Restrictive Layer Type:	N/A
Restrictive Layer Depth:	N/A

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

- N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2)
- N Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? NO- DRIER

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- N/A Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- N Microtopographic Relief (D4)
- N FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes ____	No X	Depth (inches): N/A
Water Table Present?	Yes ____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): N/A

Episaturation ____ Endosaturation ____

Water Source:

Wetland Hydrology Present? No

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST039
Wetland Status	Upland
Plot Type	WD
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6175786055
Longitude (DD)	-149.569984421

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

WETLAND DETERMINATION DATA FORM – Alaska Region

Plot No: ST 040

Project: SELDON RD PHASE II	Date: 6/10/22
Applicant: ADOT+PF	Investigators: ZB+AL
Borough/City/Location: MAT-SU	

NAD 83, Decimal Degrees

STANTEC

Latitude: 61.617710N	Watershed: FISH CREEK
Longitude: 149.569803W	Location Notes:
Elevation (ft):	

SUMMARY OF FINDINGS

Are "Normal Circumstances" Present?			YES	Hydrophytic Vegetation Present?	YES
Significantly Disturbed?	VEG	SOILS	HYDRO	Hydric Soils Present?	YES
Naturally Problematic?	VEG	SOILS	HYDRO	Wetland Hydrology Present?	YES
Remarks:				**Is the Sampled Area within a Wetland?**	YES

VEGETATION

T< 1%, P = Present

SUBREGION:

Tree Stratum DBH ≥ 3 inch — 1/10 acre circular plot unless noted, absolute cover recorded

Species	IND	DOM	Cover	Species	IND	DOM	Cover
1. PICMAR	FW	Y	5	3.			
2. BETNEO	FU	Y	7	4.			

Total Tree Cover: 12 — 50% of Total Cover: 6 — 20% of Total Cover: 2.4

Sapling/Shrub Stratum	IND	DOM	Cover				
1. PICMAR	FW	Y	10	8. VACOVA	F	N	1
2. ALNINC	F	Y	7	9.			
3. SALPUL	FW	N	3	10.			
4. ROSACI	FU	Y	5	11.			
5. RHUGRO	F	Y	5	12.			
6. VACVIT	F	N	3	13.			
7. EMPNIG	F	N	1	14.			
				15.			

Total Shrub Cover: 35 — 50% of Total Cover: 17.5 — 20% of Total Cover: 7

Herbaceous Stratum	IND	DOM	Cover				
1. EQUARV	F	Y	15	13.			
2. CALCAN	F	Y	30	14.			
3. CORCAN	FU	N	2	15.			
4. RUBCHA	FW	N	T	16.			
5.				17.			
6.				18.			
7.				19.			
8.				20.			
9.				21.			
10.				22.			
11.				23.			
12.				24.			
				25.			

Total Herb Cover: 47 — 50% of Total Cover: 23.5 — 20% of Total Cover: 9.4

1.Open Water — 2. Bare ground

Remarks: Bryophytes and Lichens may be listed in the Herbaceous columns

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	18 x 2 =	36
FAC species	62 x 3 =	186
FACU species	14 x 4 =	56
UPL species	0 x 5 =	0
Column Totals:	94 (A)	278 (B)

Prevalence Index = B/A = 2.96

Hydrophytic Vegetation Indicators:

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

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

Project Vegetation Type

WMF

Cowardin Code: PEMI/SS4C

HGM Classification: SLOPE

Landform: DEPRESSION

Local Relief: CONCAVE

Microtopography:	Slope:	Aspect:
HUMMOCKY (MED)	0	N/A

SOIL

Plot No: ST 040

Profile Description: Describe to the depth needed to document the presence/absence of soil indicators

Soil Map Unit Name: CRYAQUEPTS, DEPRESSIONAL, 0-7%

Depth (in.)	Horizon Name	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Type[1]	Redox Features Color	Redox Features %	Redox Features Loc[2]	Mod[3]	Texture	Horizon Comments
4-0	Oe									
0-1	Bg1	5Y 4/1	90	C	7.5YR 4/4	10	PL		SIL	
1-10	2C							XGR	SA	
10-14	Bg2	5Y 4/1	85	C	7.5YR 4/4	15	PL		SICL	

[1]Type: C=Concentrations, D=Depletions, OX=Oxidized Roots, RM = Reduced Matrix. [2]Location: PL=Pore Linings, RC=Root Channels, M=Matrix, CS=Coated Sand Grains

Remarks:

[3]Texture Modifiers: Mucky (MK), Peaty (PT), Permafrost (PF) | Coarse Fragments: Gravelly (GR), Cobbly (CB), Stony (ST) (15-35%), 35-60% = Very (V), 60-90% = Extremely (X)

Hydric Soil Indicators Measure from the top of the mineral soil layer except for A1, A2, A3, A4

- N Histosol or Histel (A1)
- N Histic Epipedon (A2)[4]
- N Black Histic (A3)
- N Hydrogen Sulfide (A4)
- N Thick Dark Surfaces (A12)
- N Alaska Gleyed (A13)
- Y Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[5] (See Page 91/Section 4 for Problematic Hydric Soils Details)

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depression (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change (TA4) Give details of color change
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N Alaska Gleyed w/o Hue 5Y or Redder Underlying
- — AA Positive (mineral soil, 60% of horizon 4 inches thick)
- Y Ponded/Flooded/High Water Table (12 inches or higher)
- N Low Organic Matter/Low Iron/High pH Soil/New Wetland

Hydric Soils Present?	YES
NRCS Drainage Class:	VPD
Depth of Organic Soils:	4"
Restrictive Layer Type:	N/A
Restrictive Layer Depth:	N/A

[4]Underlain by mineral soil w/chroma of ≤2

[5]Must have Hydrophytic Vegetation and Primary Hydrology, and an appropriate landscape position unless disturbed or problematic

N Other (explain in remarks)

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- Y High Water Table (A2)
- Y Saturation (A3)
- 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) (w/in 12")
- N Dry-Season Water Table (C2)**
- N Other (Explain in Remarks)

Are Climatic/Hydrologic Conditions on Site Typical for this time of Year? NO - DRIER

Secondary Indicators (2 or more required)

- N Water-stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxidized Rhizospheres along Living Roots (C3)(w/in 12")
- — Presence of Reduced Iron (C4)
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", note as restrictive layer)
- Y Microtopographic Relief (D4)
- Y FAC-Neutral Test (D5)

Field Observations (inches from ground surface)

Surface Water Present?	Yes ____	No X	Depth (inches): N/A
Water Table Present?	Yes X	No ____	Depth (inches): 9
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Episaturation ____ Endosaturation X

Water Source:

Wetland Hydrology Present? YES

Dry Season Water Table SC, Interior, Western AK:

Mid May – late July
**Mineral Soils 12-24 inches
**Organic Soils 12-40 inches

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

Remarks:

FAC-Neutral Test = #OBL+FW dominants > #FU + UPL dominants; add non-dominants if tie

PHOTO REPORT

Plot Number	ST040
Wetland Status	Wetland
Plot Type	WD
Plot Date	6/10/2022
NWI Classification	PEM1/SS4C
HGM	Slope
Latitude (DD)	61.6177086117
Longitude (DD)	-149.569779182

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST041
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6178468392
Longitude (DD)	-149.570437564

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST042
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6172420419
Longitude (DD)	-149.568434941

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST043
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PFO4/EM1C
HGM	Slope
Latitude (DD)	61.6170619295
Longitude (DD)	-149.56774882

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST044
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PFO4/1C
HGM	Slope
Latitude (DD)	61.6168419021
Longitude (DD)	-149.566976591

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST045
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6167500021
Longitude (DD)	-149.567142272

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST046
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PFO1/EM1C
HGM	Slope
Latitude (DD)	61.6166661903
Longitude (DD)	-149.567408547

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST047
Wetland Status	RPW
Plot Type	SC
Plot Date	6/10/2022
NWI Classification	R3UBH
HGM	Riverine Channel
Latitude (DD)	61.6164863645
Longitude (DD)	-149.566683845

Photo Type: Hydrology Direction: NA

Photo Type: Hydrology Direction: NW

Photo Type: Hydrology Direction: SE

PHOTO REPORT

Plot Number	ST048
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6166076566
Longitude (DD)	-149.566463187

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST049
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PFO4/1C
HGM	Slope
Latitude (DD)	61.616684268
Longitude (DD)	-149.566276628

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST050
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.6165165022
Longitude (DD)	-149.565794211

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST051
Wetland Status	Wetland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	PEM1C
HGM	Slope
Latitude (DD)	61.6164966169
Longitude (DD)	-149.565547488

Photo Type: Hydrology Direction: NA

Photo Type: Vegetation Direction: N

Photo Type: Vegetation Direction: S

PHOTO REPORT

Plot Number	ST052
Wetland Status	Upland
Plot Type	FVP
Plot Date	6/10/2022
NWI Classification	U
HGM	N/A
Latitude (DD)	61.616483975
Longitude (DD)	-149.565213229

Photo Type: Soils Direction: NA

Photo Type: Vegetation Direction: E

Photo Type: Vegetation Direction: W

PHOTO REPORT

Plot Number	ST053
Wetland Status	RPW
Plot Type	SC
Plot Date	6/10/2022
NWI Classification	R3UBH
HGM	Riverine Channel
Latitude (DD)	61.6164245759
Longitude (DD)	-149.565039364

Photo Type: Hydrology Direction: N

Photo Type: Hydrology Direction: NA

Photo Type: Hydrology Direction: S