

DRAFT Site Information Summary
HLB Wetland Mitigation Bank
Rabbit Creek Watershed Mitigation Sites

Sponsor: Municipality of Anchorage
Real Estate Department - Heritage Land Bank

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RABBIT CREEK WATERSHED MITIGATION PROJECTS

Watershed:

Rabbit Creek Watershed (HUC12-*note this is technically a sub-watershed*); located within the Rabbit Creek-Frontal Turnagain Arm Watershed (HUC10).

Description:

A suite of aquatic restoration and preservation projects in the Rabbit Creek Watershed including the drainages of Rabbit Creek, Elmore Creek, Little Rabbit Creek, Little Survival Creek, and Potter Marsh.

Purpose:

To restore, maintain, preserve and protect the aquatic ecosystem functions in the Rabbit Creek watershed.

Objectives:

1. Restore anadromous fish passage in Rabbit Creek Watershed streams through rehabilitation of culverts beneath road crossings at selected sites;
2. Restore natural stream flow and associated aquatic functions in headwater streams that are impacted by fill, diversion, or channelization;
3. Restore natural wetlands in the watershed that are impacted by fill or groundwater diversion;
4. Preserve and protect natural wetlands and headwater streams.

PROJECT NO. 1: FISH PASSAGE RESTORATION

Location(s): Specific sites to be identified within the Rabbit Creek watershed (HUC12) at locations documented with impaired fish passage by ADF&G within the anadromous waters of Rabbit Creek, Little Rabbit Creek, and Little Survival Creek. (Figure 1).

Surface Ownership: Varies – HLB will work with MOA and private landowners to establish access and work permits.

Subsurface Ownership: Varies– HLB will work with MOA and private landowners to identify ownership and potential conflicts.

Water Rights: (to be determined)

Aquatic Resources (Existing):

- Anadromous waters within Rabbit Creek watershed:
 - Rabbit Creek (AWC 331-00-10120; 247-60-10320)
 - Little Rabbit Creek (AWC 247-60-10320-2020)
 - Little Survival Creek (AWC 247-60-10320-2012)

Mitigation Objectives

1. Restoration
 - a. Fish passage restoration (rehabilitation) at one impaired culvert crossing site.
 - b. Several candidate sites are identified by ADF&G in the watershed (see Figure 1).
 - c. The design of the new culvert will follow the stream simulation design criteria developed by the U.S. Forest Service (USFS, 2008). The design will be prepared by a professional engineer coordinating with the owner of the crossing and any easement holders (e.g., MOA, private, ADOT&PF, or others). The stream simulation design of the culvert will result in a self-maintaining, sustainable fish passage.

PROJECT NO. 2: SECTION 36 WETLANDS AND HEADWATER STREAMS

Location: Consists of two parcels: Tract 1 (91.60 acres) and Tract 5 (137.69 acres); 229.29 acres total. SEC 36, T12N, R3W, SM; MOA Parcels 01713105000 and 01713106000; USGS Topo Anchorage A-8(NW); N61.08° W149.74°; Bear Valley Community District, Municipality of Anchorage, Alaska. (Figures 1 and 2).

Surface Ownership: Municipality of Anchorage, Heritage Land Bank

Subsurface Ownership: Municipality of Anchorage, Heritage Land Bank

Water Rights: (to be determined)

Aquatic Resources (Existing):

- Wetlands and streams recognized by the Anchorage Wetlands Management Plan, designated class “A” (wetland #81) & “B” (wetland #84).
- Field delineation in summer of 2016 and JD issued by Corps on 9-22-2017 (POA-2009-874). See Figure 3.
- Wetlands occupy nearly half (47%) of the 229-acre site. Little Rabbit Creek and several headwater tributaries flow across the property. See Tables 1 and 2.
- Mosaic of headwater streams, forested, shrub-scrub, and emergent wetlands, and forested upland buffers.
- Slope-discharge springs are prevalent along north and east side of site merge to form several of the headwater streams.
- Site is dissected by a street, Heights Hill Road, which separates the two parcels. The road footprint intercepts cross-drainage, which has resulted in drying out of 6 acres of prior wetlands downslope (west) of the road.

Mitigation Objectives

1. Wetland Restoration
 - a. Restore an estimated 6.2 acres of palustrine shrub-scrub and emergent wetlands along the west side of Heights Hill Road that were impacted by groundwater interception and diversion caused by the construction of Heights Hill Road.
2. Stream Restoration
 - a. Restore an estimated 1,000 lineal feet (approx. 1,500 sq ft) of headwater stream segment lost by interception and diversion of Stream LRC-20-X-3 caused by the construction of Heights Hill Road.
3. Wetland Preservation
 - a. Preserve and protect the aquatic resources and upland buffers with a site protection instrument and limit access with signage, bollards, fencing, or other measures;
 - b. Maintain and monitor the site for invasive species, impacts by off-road vehicles (ORVs), and the condition of signs, fencing, gates, or other access control structures.
 - c. Establish a long-term stewardship fund based on estimated management and maintenance costs.
 - d. Implement long-term management and property transfer to an approved long-term steward.

MITIGATION WORK PLAN

1. Fish Passage Restoration (Rabbit Cr, Little Rabbit Cr, Little Survival Cr)
 - a. Candidate sites will be screened for practicability based on ownership, priority for rehabilitation, cost, access, and other criteria developed in consultation with ADF&G and MOA.
 - b. Designed by a professional engineer following the *stream simulation* design criteria developed by the U.S. Forest Service (USFS, 2008) and other state and local requirements.
 - c. HLB will secure permits for construction, which may include a Corps Section 404 permit for impacts to waters of the U.S. (may qualify for one or more Nation Wide Permits), ADF&G Fish Habitat Permit, ADEC 401 Water Quality Certification/Waiver, and ADNR Temporary Water Use Permit.
 - d. Monitoring of the restoration site will be performed for a period of 5 years.
2. Wetland Restoration Section 36
 - a. Install French drains and/or culverts to divert water west under Heights Hill Road and Jamie Drive to rehydrate the area.
 - b. Restore ORV damage in wetlands (not credit-generating).
3. Stream Restoration Section 36
 - a. Install stream culvert to convey Stream LRC-20-X-3 under Heights Hill Rd. and re-connect with former channel. Clear relic channel and install erosion control structure as appropriate.
 - b. Evaluate/upgrade stream culvert for LRC-20-01 at Heights Hill Rd. and Jamie Dr. intersection.
 - c. Upgrade stream culvert for LRC-20-07 under Jamie Dr.
4. Preservation Section 36
 - a. Installation and maintenance of appropriate signage, fencing, gates, and/or bollards to restrict access as appropriate.
 - b. Inspection, planning, and field work to restore ORV-impacted areas.
 - c. Monitoring conducted annually for five years during operation for invasive species, signs/access control structures, ORV damage, trash, vandalism, or other impacts.

Proposed Service Area

- Municipality of Anchorage per the Umbrella Mitigation Bank Instrument (UMBI)

Site Protection Instrument

- Section 36: Conservation Easement held by MOA

- Fish Passage Restoration Sites: Protection is the responsibility of the owner. (The water is owned by the State of Alaska and cannot be subjugated by a conservation easement or restrictive covenant on the land including the streambed).

Long-Term Management Plan

- Section 36: Transfer management to MOA Parks & Recreation Dept.
- Fish Passage Restoration Sites: Monitoring conducted annually for five years by HLB. Corrective actions during monitoring period are responsibility of HLB, afterward the responsibility of the owner.

Qualifications of Sponsor

- HLB is a professional land management organization with the administrative and financial resources to successfully manage the Bank and implement the mitigation plan.
- HLB is designated by the Assembly (AO-2009-68) as the only entity to hold conservation easements on MOA property.

Determination of Credits

- Fish Passage
 - Credits will be based on the degree of fish passage impairment, the area of anadromous habitat located upstream, and the area of the watershed located upstream.
- Section 36
 - Credits will be determined using the Anchorage Debit-Credit Method.
 - Credits calculations utilize buffers and indirect impact zones to identify polygons as illustrated in Figures 4, 5, and 6.
 - Wetland restoration of 6.2 acres along the west side of Heights Hill Rd. could generate an estimated 3.34 credits (Table 3; Figure 7).
 - Restoration of Stream LRC-2 0-X- 1 to its estimated pre-road alignment by installing a stream culvert beneath Heights Hill Rd. and restoring the abandoned channel that extends to the west where it would discharge into channel LRC-20-1 could generate an estimated 3.95 credits (Table 4; Figure 9).
 - Preservation of the existing wetlands and buffers in the two Section 36 parcels would generate an estimated 72.65 credits (Table 5).
 - An additional 1.2 credits were estimated to be gained by removing the indirect impacts of ORV (ATV) trails in the southwest part of the site (Table 4). This does not include repair of damage to natural habitats by ORVs.

Performance Standards and Credit Release Schedule

- A fish passage restoration project will be completed prior to the initial credit release.
- Section 36 wetland and stream restoration projects will be contingent upon release of credits for the fish passage project and preservation of Section 36, i.e., the sale of

credits for the initial fish passage project and preservation of Section 36 will provide the funding for the Section 36 wetland and stream restoration.

- A credit release schedule with performance standards will be developed. Performance standards will be based on the work plan elements.
- A minimum of 5 years of monitoring is required prior to the final credit release.

Table 1 - Section 36 Wetlands

ADCM Classification	Acres
Upland Natural	121
Upland Developed	0.2
Wetlands - Inundation Rare	86
Wetlands - Inundation Spring and Fall	15
Wetlands - Inundation Through June	7
Total	229

Table 2 - Section 36 Streams

Stream Type / Name	Map Label	MOA Reach	Cowardin Class	Lineal Feet
Perennial Streams				
Little Rabbit Creek (LRC)	LRC-00-05	LRC-00 05.00	R3US5	906
LRC Tributary	LRC-20-01	LRC-20 01.01	R3US5	3,065
LRC Tributary	LRC-20-07	No ID; "20-07"	R3US5	386
LRC Tributary	LRC-20-X-1	No ID	R3US5	2,644
LRC Tributary	LRC-20-X-2	LRC-20 02.01	R3US5	1,195
LRC Tributary	LRC-20-X-3	No ID	R3US5	657
LRC Tributary	LRC-20-X-4	No ID	R3US5	439
LRC Tributary	LRC-20-X-5	No ID	R3US5	1,097
LRC Tributary	LRC-20-X-6	No ID	R3US5	428
LRC Tributary	LRC-20-X-7	No ID	R3US5	492
LRC Tributary	LRC-20-X-8	No ID	R3US5	981
LRC Tributary	LRC-20-X-9	No ID	R3US5	1,194
Perennial Total				13,484
Seasonal Streams				
LRC Tributary	LRC-20-X-10	No ID	R3US5	661
LRC Tributary	LRC-20-X-11	No ID	R3US5	723
LRC Tributary	LRC-20-X-12	No ID	R3US5	160
Intermittent Total				1,544
Grand Total				15,028

Table 3

Preliminary Credit Calculations – Section 36 Wetland Restoration

Project Credits Summary								
R.	S.	Number of Credits per Landform						Z.
		T.	U.	V.	W.	X.	Y.	
Type of Project	REV	Subtidal Zone	Intertidal Zone	Waterways	Waterbodies	Wetlands	Uplands	Total Credits (T+U+V+W+X+Y)
Restoration	1	N/A				3.12	N/A	3.12
	2						N/A	0.00
	3		N/A				N/A	0.00
Totals		0.00	0.00	0.00	0.00	3.12	0.00	3.12

Table 4

Preliminary Credit Calculations – Section 36 Stream Restoration

Project Credits Summary								
R.	S.	Number of Credits per Landform						Z.
		T.	U.	V.	W.	X.	Y.	
Type of Project	REV	Subtidal Zone	Intertidal Zone	Waterways	Waterbodies	Wetlands	Uplands	Total Credits (T+U+V+W+X+Y)
Restoration	1	N/A					N/A	0.00
	2			0.83			N/A	0.83
	3		N/A				N/A	0.00
Totals		0.00	0.00	0.83	0.00	0.00	0.00	0.83

Table 5

Preliminary Credit Calculations – Section 36 Preservation

Scenario	Project Credits Summary								
		REV	Number of Credits per Landform					Z. Total Credits	
			Subtidal Zone	Intertidal Zone	Waterways	Waterbodies	Wetlands		Uplands
Current Condition	Preservation	1	N/A				3.84		3.84
		2					16.70	20.73	37.42
		3		N/A			7.23	24.15	31.38
		4	N/A	N/A					0.00
	Totals		0.00	0.00	0.00	0.00	27.77	44.87	72.65

HLB Wetland Mitigation Bank Rabbit Creek Watershed Mitigation Projects

Figure 1



ANCHORAGE, ALASKA

Project 2
Section 36 Wetlands
Restoration & Preservation

Project 1
Fish Passage Restoration
Location To Be Determined

**Rabbit Creek Watershed
(12-Digit HUC)**

Cook Inlet

Turnagain Arm



Legend

- ADFG Priority Fish Passage Sites
- Anadromous Waters
- Section 36 Mitigation Site
- Streams
- ▭ Rabbit Creek Subwatershed (HUC12)
- Streets

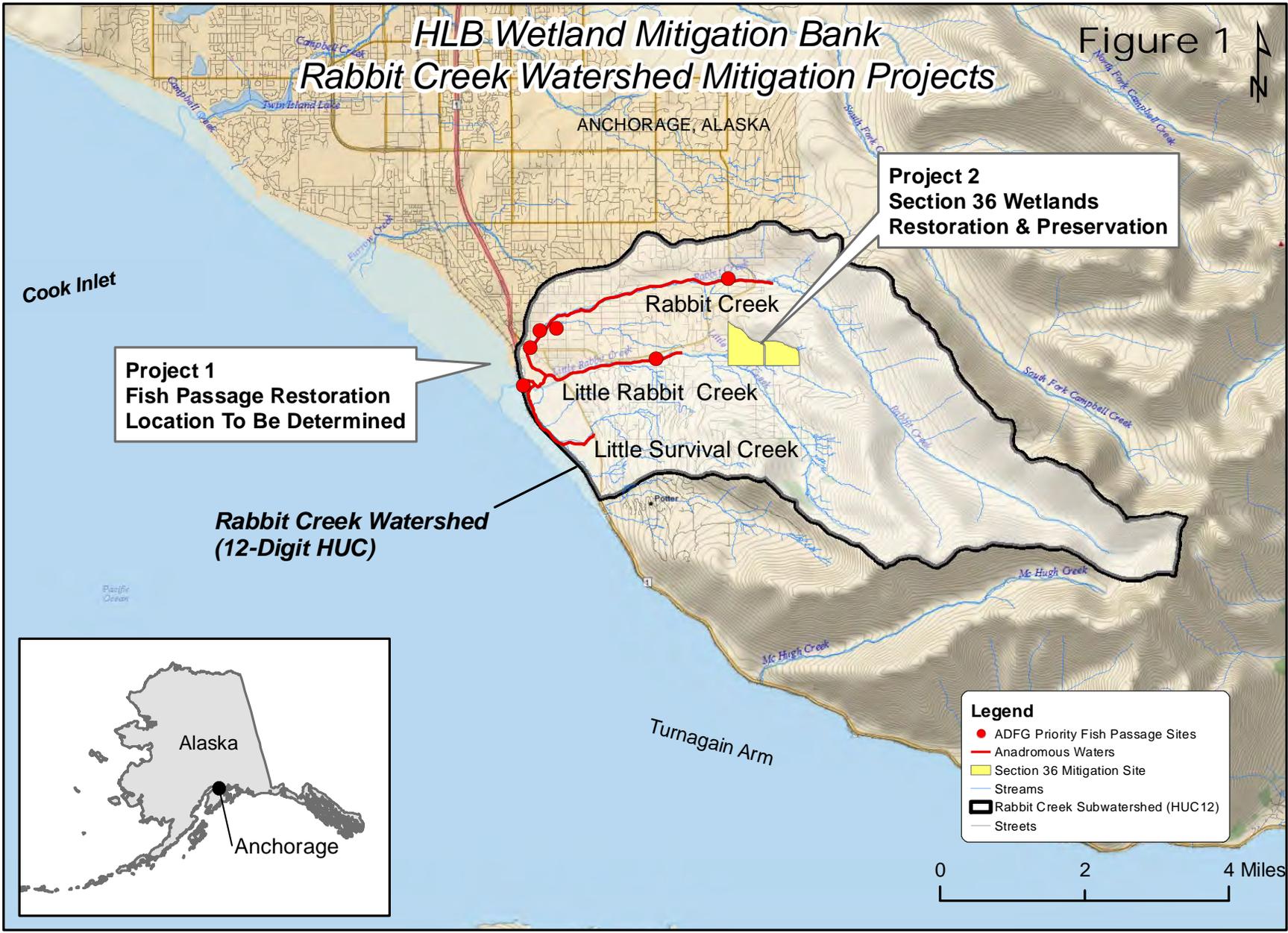


Figure 2

Section 36 Mitigation Site

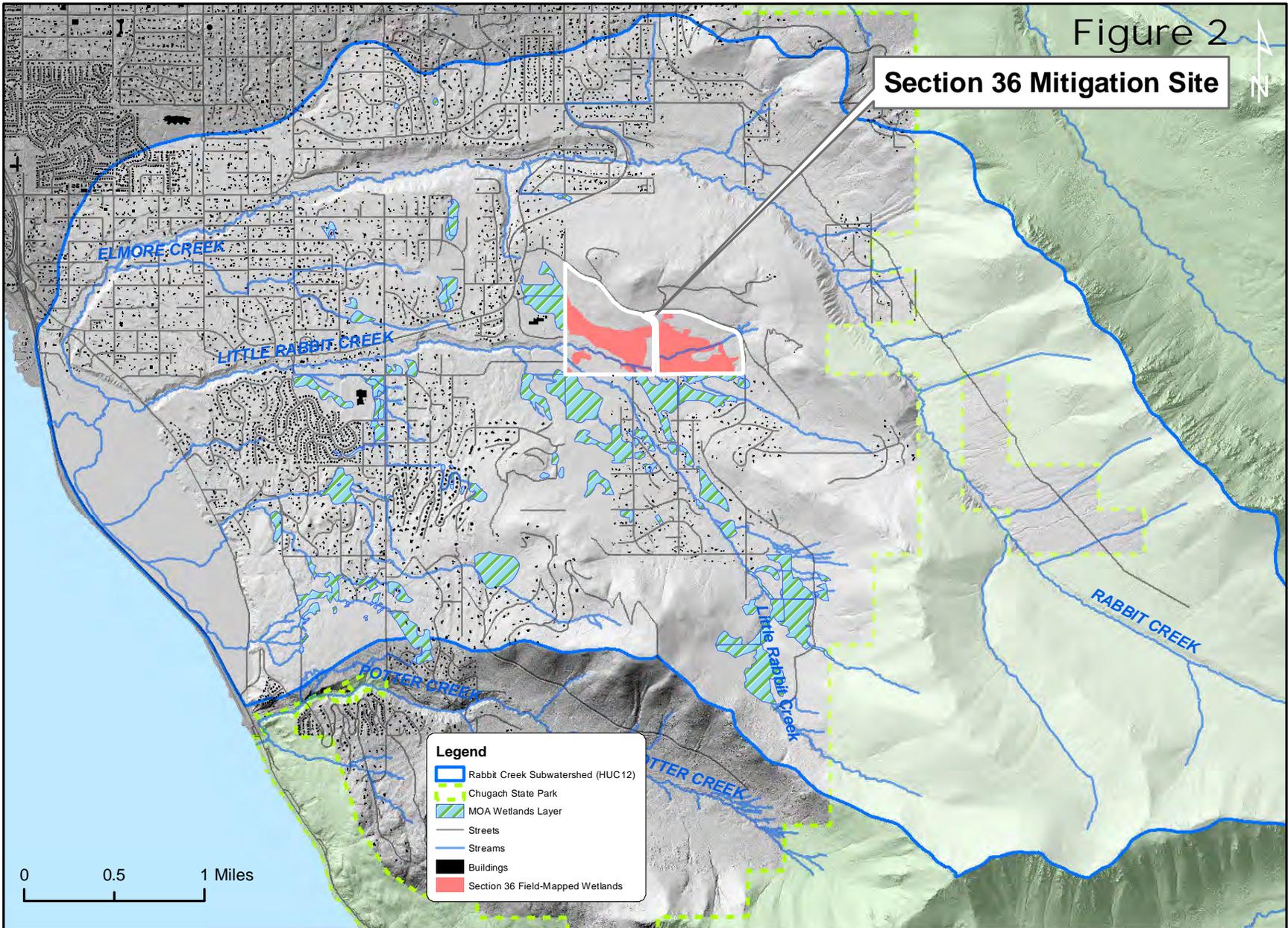


Figure 3



Wetlands & Streams

Legend

- Section 36 Mitigation Site Parcels
- ADCM Wetland Types
 - Inundation Rare
 - Inundation Spring & Fall
 - Inundation Through June
- Perennial Stream
- Seasonal Stream

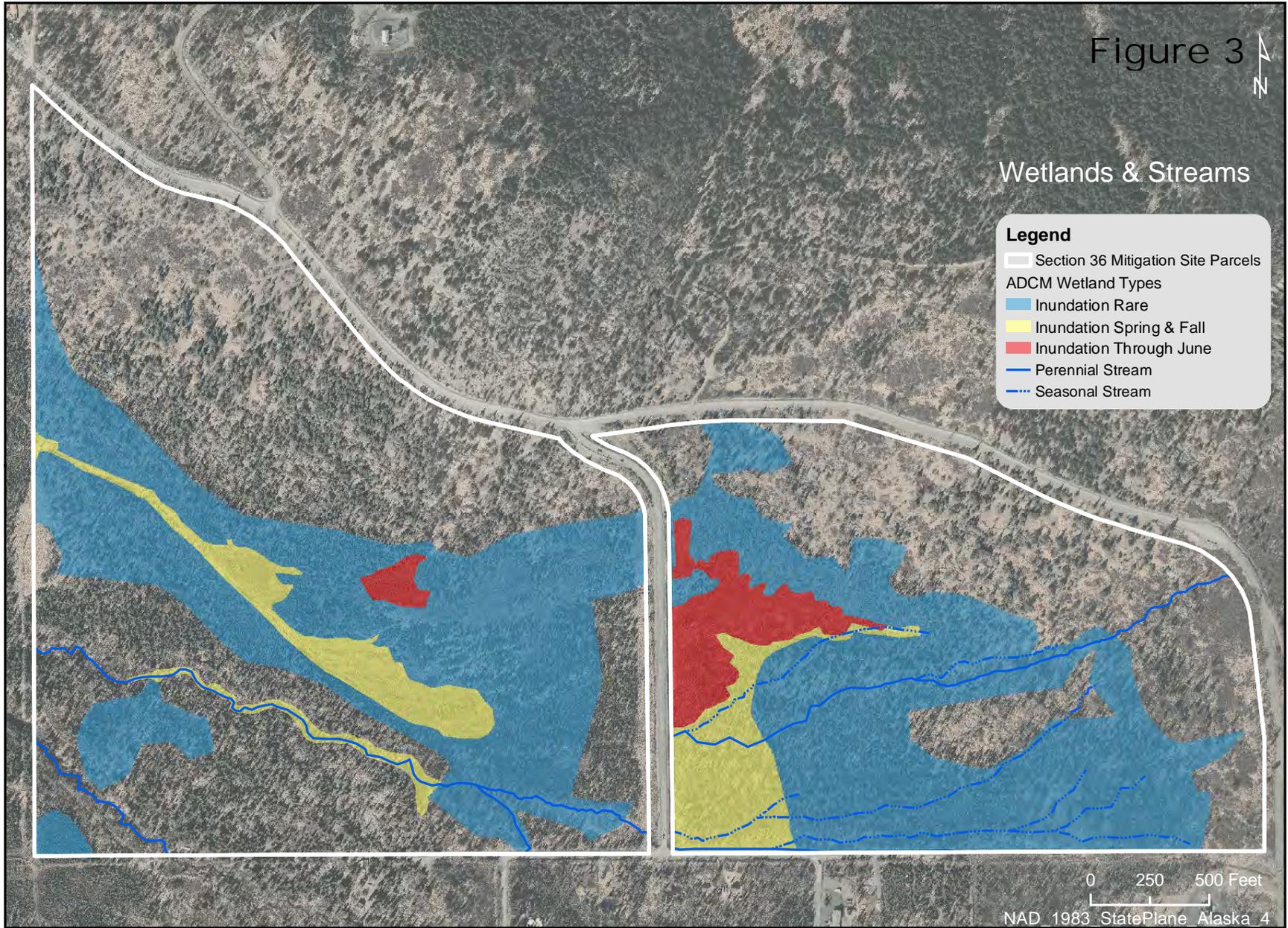


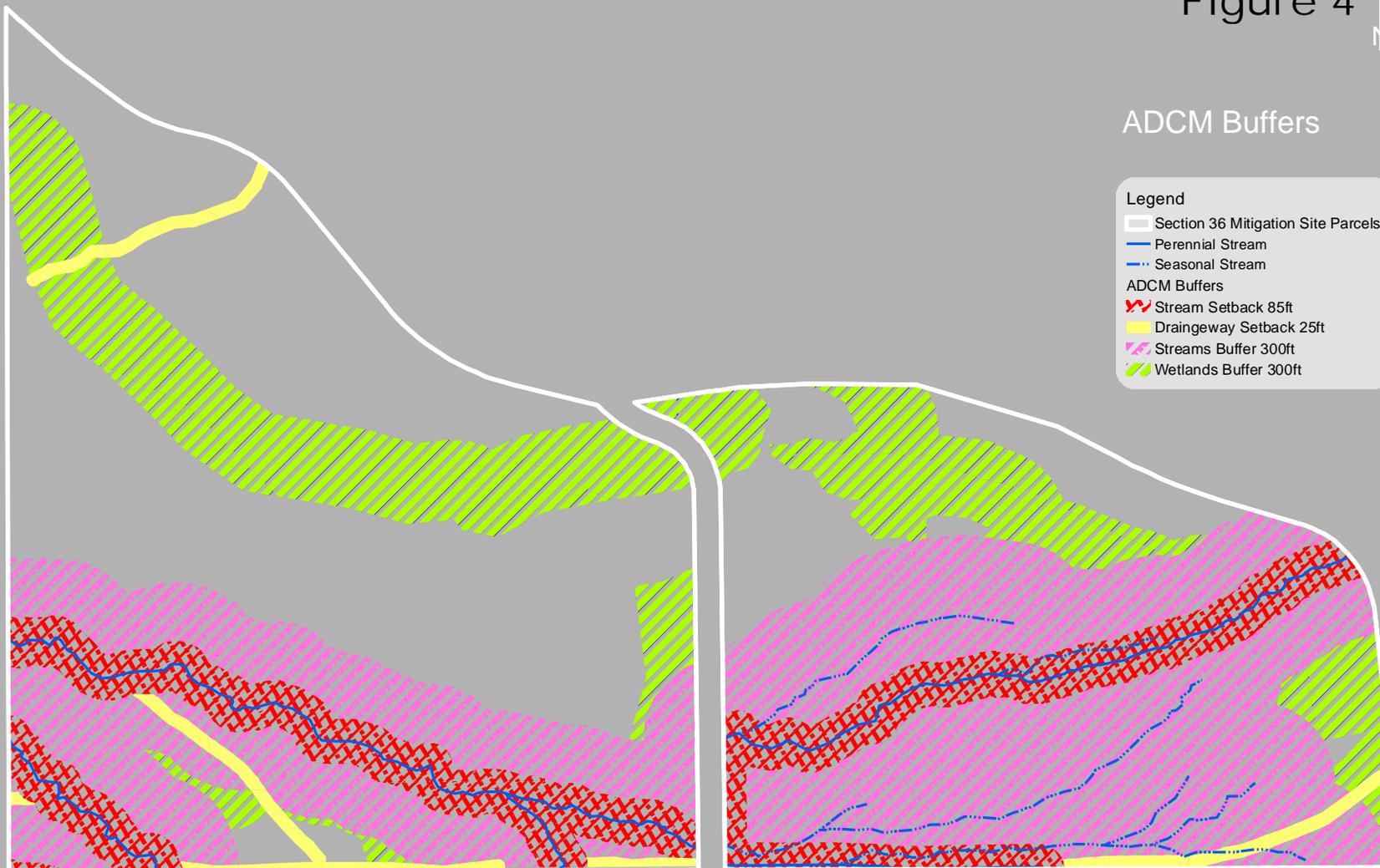
Figure 4



ADCM Buffers

Legend

- Section 36 Mitigation Site Parcels
- Perennial Stream
- Seasonal Stream
- ADCM Buffers
 - Stream Setback 85ft
 - Drainage Setback 25ft
 - Streams Buffer 300ft
 - Wetlands Buffer 300ft



0 300 600 Feet

NAD_1983_StatePlane_Alaska_4

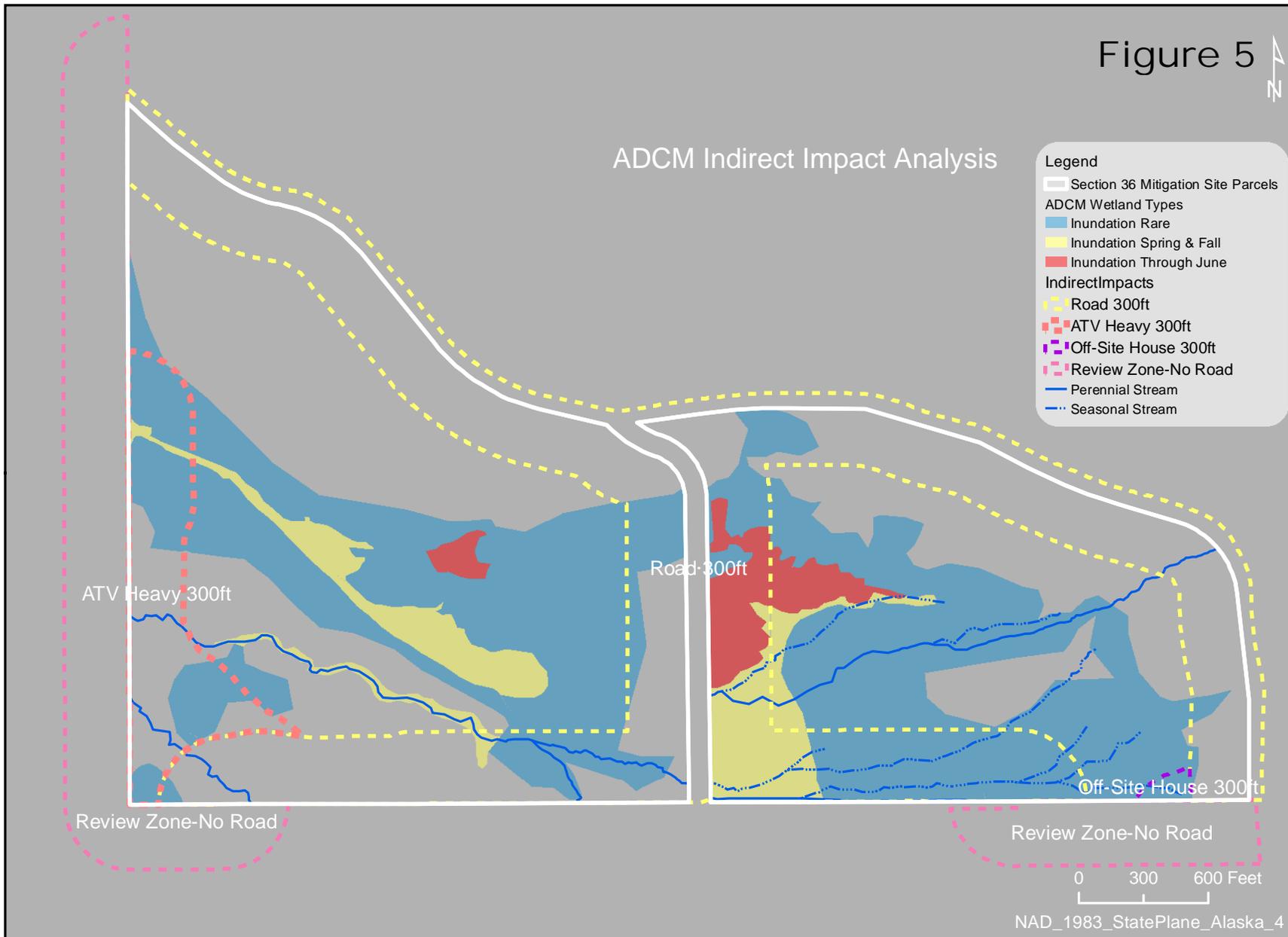
Figure 5



ADCM Indirect Impact Analysis

Legend

- Section 36 Mitigation Site Parcels
- ADCM Wetland Types
 - Inundation Rare
 - Inundation Spring & Fall
 - Inundation Through June
- IndirectImpacts
 - Road 300ft
 - ATV Heavy 300ft
 - Off-Site House 300ft
 - Review Zone-No Road
- Perennial Stream
- Seasonal Stream



0 300 600 Feet
NAD_1983_StatePlane_Alaska_4

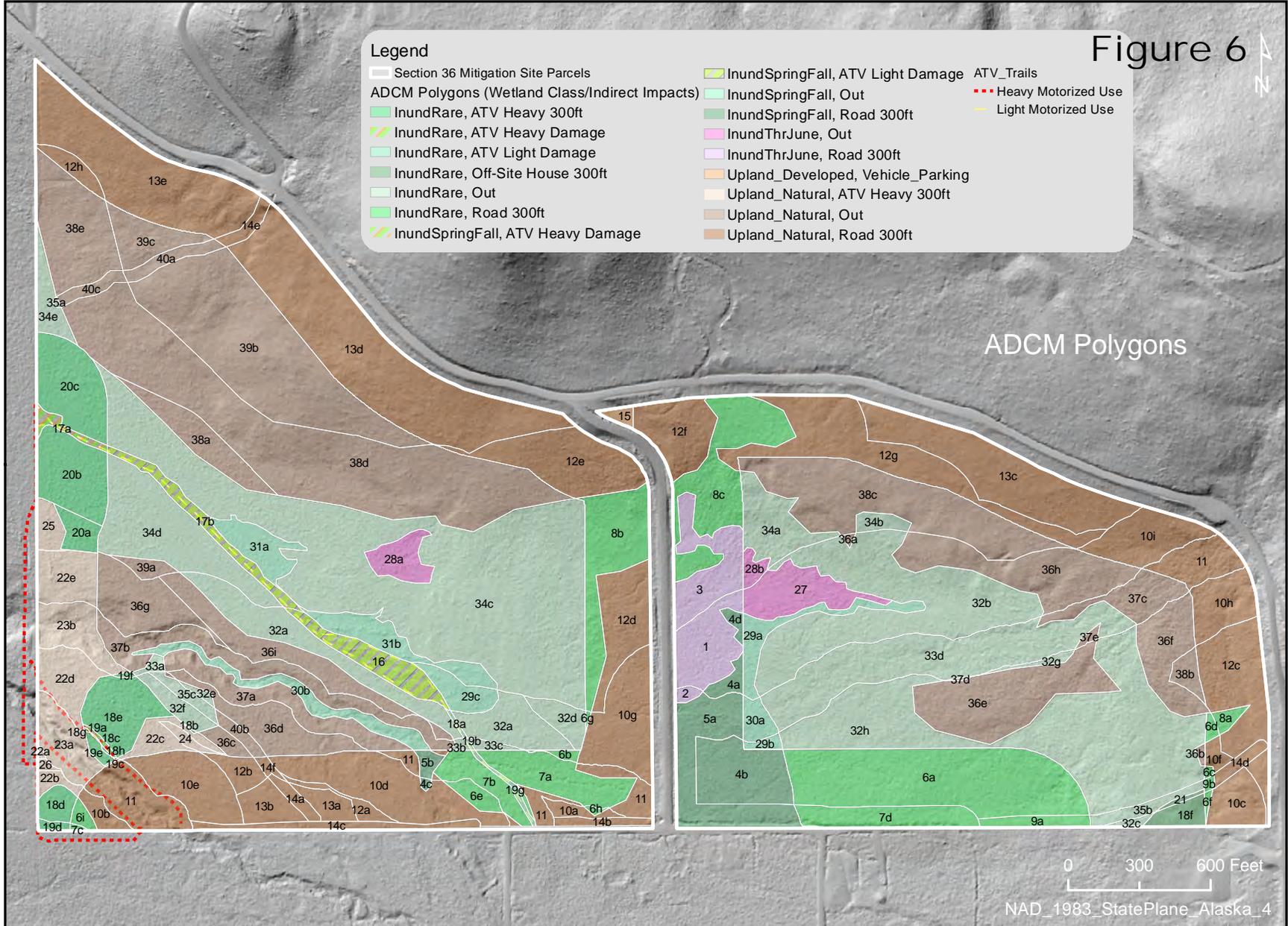
Figure 6



Legend

Section 36 Mitigation Site Parcels	InundSpringFall, ATV Light Damage	ATV_Trails Heavy Motorized Use
ADCM Polygons (Wetland Class/Indirect Impacts)	InundSpringFall, Out	Light Motorized Use
InundRare, ATV Heavy 300ft	InundSpringFall, Road 300ft	
InundRare, ATV Heavy Damage	InundThrJune, Out	
InundRare, ATV Light Damage	InundThrJune, Road 300ft	
InundRare, Off-Site House 300ft	Upland_Developed, Vehicle_Parking	
InundRare, Out	Upland_Natural, ATV Heavy 300ft	
InundRare, Road 300ft	Upland_Natural, Out	
InundSpringFall, ATV Heavy Damage	Upland_Natural, Road 300ft	

ADCM Polygons



0 300 600 Feet

NAD_1983_StatePlane_Alaska_4

Figure 7

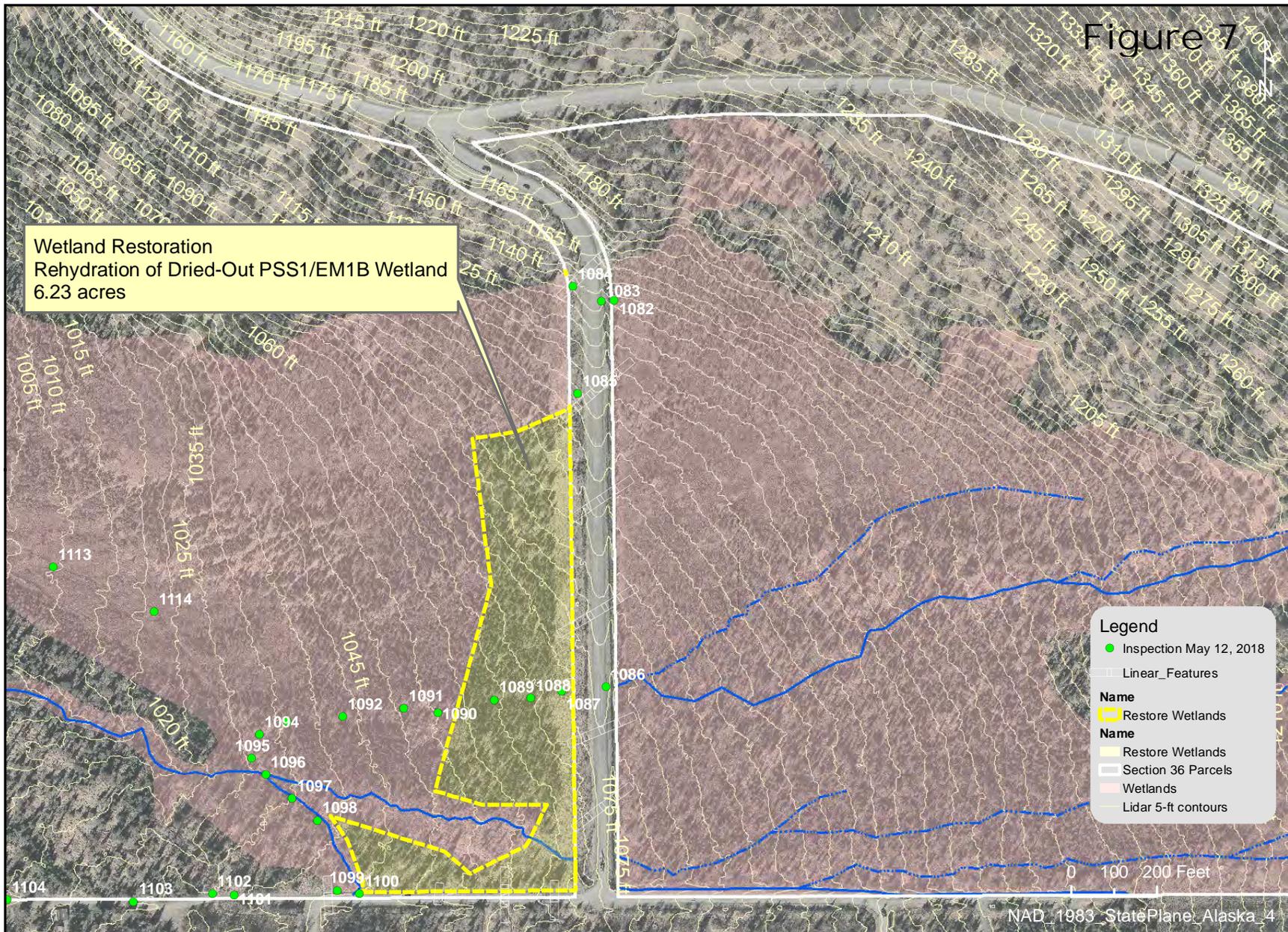


Figure 8



Figure 9

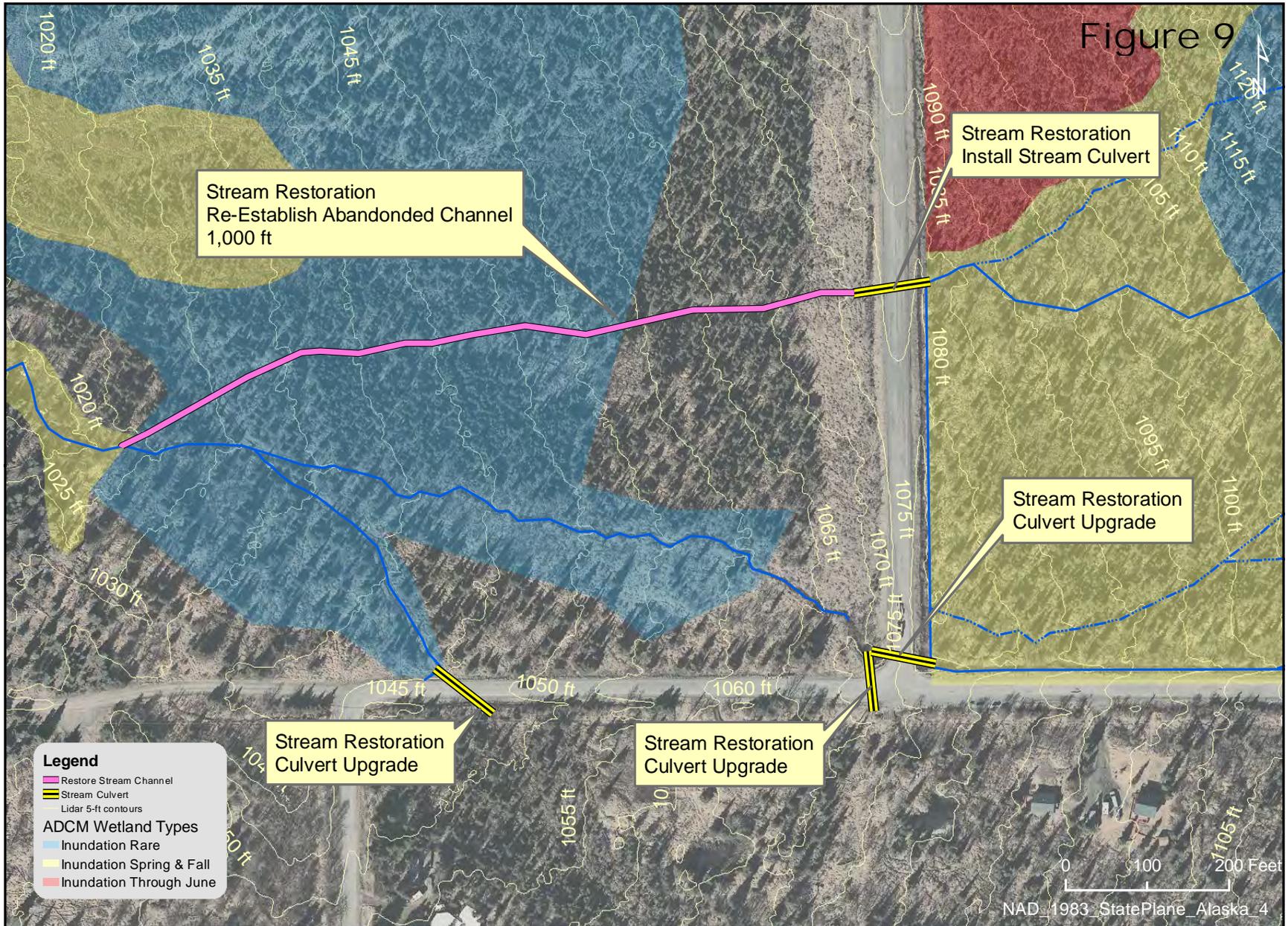


Figure 10



Stream Restoration
Re-Establish Abandoned Channel
Old Channel Remains Visible on Ground

Stream Restoration
Install Stream Culvert



1092

1091

1090

1089

1088

1087

1086

Legend
● Inspection May 12, 2018

0 100 200 Feet

NAD_1983_StatePlane_Alaska_4

1996

Figure 11



Image U.S. Geological Survey

Imagery Date: 9/2/1996 6



6-17-2002



8-3-2002

Image U.S. Geological Survey



4-14-2011

