



State of Alaska  
Department of Fish and Game  
Division of Sport Fish

Nomination Form  
Anadromous Waters Catalog

*M*

Region 3 SCN USGS Quad(s) 057-VALDEZ A7.5E (18-19)

Anadromous Waters Catalog Number of Waterway 221-60-11350

Name of Waterway ALLISON CREEK  USGS Name  Local Name

Addition  Deletion  Correction  Backup Information

For Office Use

Nomination #	<u>11-184</u>	<u>[Signature]</u>	<u>10/14/11</u>
Revision Year:	<u>2012</u>	Fisheries Scientist	Date
Revision to:	Atlas _____ Catalog _____	<u>[Signature]</u>	<u>10/14/11</u>
	Both <u>X</u>	Habitat Operations Manager	Date
Revision Code:	<u>B2, C-7, E-9</u>	<u>[Signature]</u>	<u>7/8/11</u>
	<u>D-1</u>	AWC Project Biologist	Date
		<u>[Signature]</u>	<u>11/16/11</u>
		Cartographer	Date

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
PINK SALMON	JULY 14, 2007, JULY 15 2010	YES			<input checked="" type="checkbox"/>
COHO SALMON	SEPTEMBER 14, 2010	YES			<input checked="" type="checkbox"/>
CHUM SALMON	SEE ATTACHED				<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>

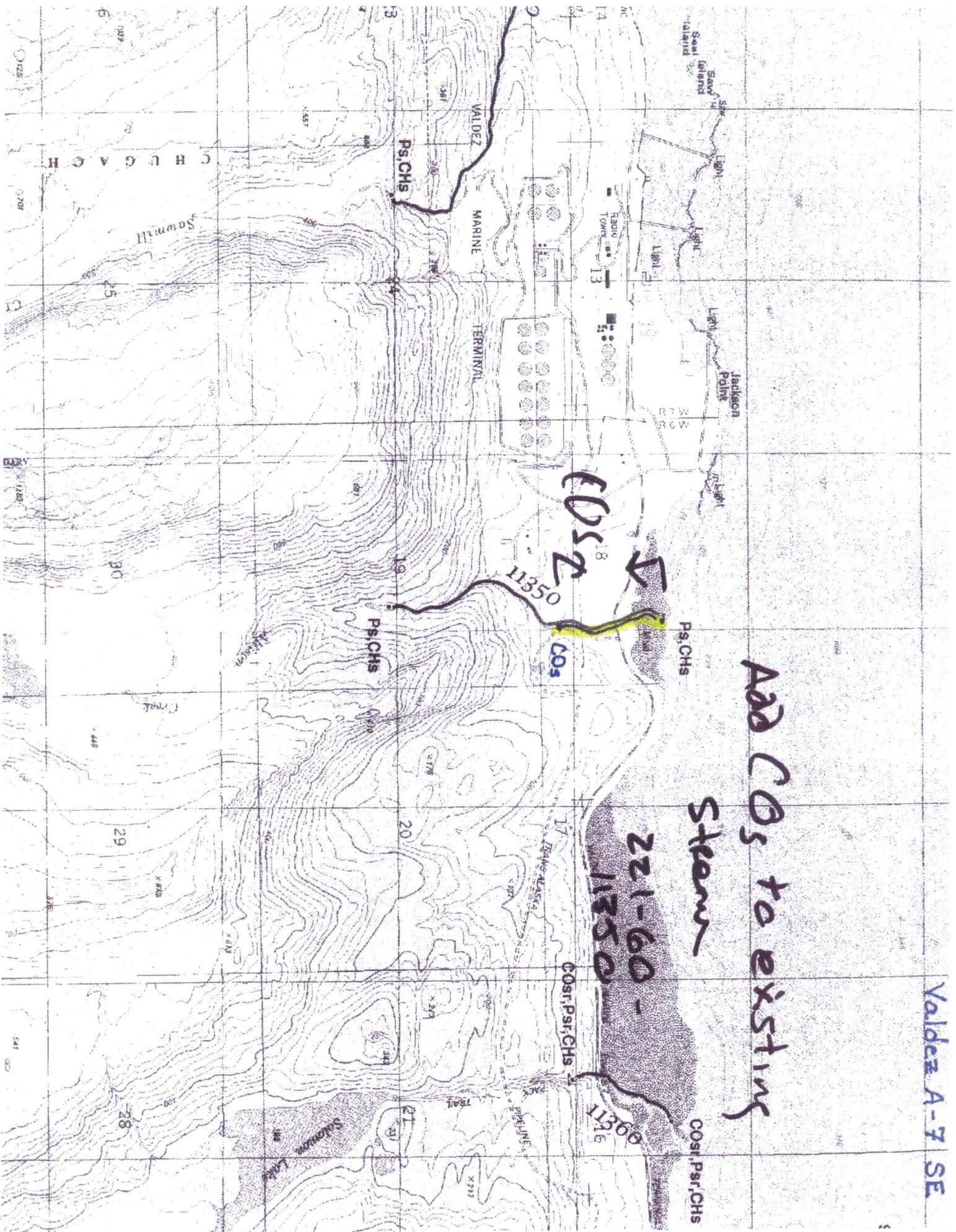
**IMPORTANT:** Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments: PLEASE SEE ATTACHED.  
Reposition upper & lower pts as indicated  
add beaver, move P&C to downstream of beaver  
@ Dolly Varden observation point.

Name of Observer (please print): JOHN SEIGLE  
Signature: [Signature] Date: 2-28-2011  
Agency: ABR-ENVIRONMENTAL RESEARCH & SERVICES  
Address: PO BOX 240268  
ANCHORAGE, AK 99524

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Anadromous Waters Catalog.

Signature of Area Biologist: \_\_\_\_\_ Date: \_\_\_\_\_ Revision \_\_\_\_\_  
02/08



Add CO3 to existing Stream

Valdez A-7 SE

COSE

11350

CO3

221-60-

11350

11350

11350

Ps,CHS

Ps,CHS

Ps,CHS

COsr,Psr,CHS

COsr,Psr,CHS

WALDEZ MARINE TERMINAL

Sawmill

Jackson Point

Selenow Lake

CHUGACH

Seal Island

Radio Tower

TRAIL

PIPELINE

TRAILS ALASKA

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**Johnson, J D (DFG)**

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**From:** John Seigle [lseigle@abrinco.com]  
**Sent:** Tuesday, March 01, 2011 12:49 PM  
**To:** Johnson, J D (DFG)  
**Cc:** jgottschalk  
**Subject:** Correction/nomination to AWC 221-60-11350 Allison Creek  
**Attachments:** Comments-AWC correction for 221-60-11350 Allison Creek.docx; AllisonLake\_Fish\_Sampling\_Points\_2010\_Photo.pdf; Nomination form for 221-60-11350\_Allison Creek\_Seigle.pdf

J,

I have been working on a hydro project for the last 3 summers at Allison Creek in Valdez in support of environmental studies related to a proposed run of the river hydro project. During that time we discovered that the AWC catalog appeared to be a little off with regard to the location of pink and chum salmon spawning upstream on the creek. The location of the AWC points for this stream have salmon well above what would be 3 (in their own right) barriers to fish passage. We want to amend the catalog to reflect the actual upstream extent of pink and chum in the stream. I have traveled over the area with Megan Marie, Monte Miller and Bert Lewis and we have discussed this at some length. I have spoken with Megan the most on this matter and without putting words in her mouth I think it is fair to say that she agrees with me that the current location is a little bit off for these fish.

At the same time, we have viewed coho further upstream than is currently listed for the catalog and so we would like to amend this as well. The original nominations appear to be from the early 80s with coho having been nominated in the early 2000s.

Aside from simply wanting to make sure that the most correct information is in the catalog, this correction would likely have implications for the hydro project.

I am about to run some otolith samples on Dolly Varden to look for evidence of anadromy. These are the fish that we have found at the most upstream location during our minnow trapping surveys. We did not find rearing juvenile salmon in the stream so far but I think that they would have only a limited habitat available to them in the lowest reaches of the stream and high flows would likely contribute to why we have yet to see these fish.

If you would like to discuss this further over the phone I would be very happy to bring you up to date on our studies so far in order to assist you on this in anyway. I am attaching the nomination/correction form, a comment document, and a photo map we produced. I would be happy to produce a simpler map if that would be helpful.

Cheers, John

John Seigle  
ABR, Inc- Environmental Research and Services

PO BOX 240268  
Anchorage, AK 99524  
907-344-6777 x206

28 February 2011

COMMENTS (AWC#221-60-11350):

We are requesting a correction to the current AWC listing for pink and chum salmon spawning in Allison Creek, Valdez, Alaska. The upstream extent of pink salmon observed by ABR biologists is well downstream of the AWC's current upstream extent for pink salmon. The current AWC point is above an established barrier to all fishes, a 10.5' waterfall at low flow and likely higher at peak discharge (N 61.07815 W -146.35858). There are also at least 2 more barriers above this waterfall that would impede the progress of any fishes moving upstream. As this is very steep, cavernous terrain we do not have exact heights of these barriers, but believe that they are greater than 20' each. This section of stream is marked by high gradient flow (> 40%) and several waterfalls.

ABR has been minnow trapping and conducting habitat evaluations over the full extent of Allison Creek for 3 years. The high gradient, turbulent flows and multiple barriers make it the opinion of ABR biologists that the current upstream AWC point is a simple clerical error. In July of 2009 and 2010, ABR biologists observed spawning pink salmon extending to a location approximately 100m upstream of the Alyeska pumphouse (N 61.08243 W -146.35405). In 2009, ~25 pink salmon were taken from below the pumphouse for otolith analyses to determine the proportion of spawning pink salmon in Allison Creek that were of hatchery origin.

In September 2010, ABR biologists and several agency officials including ADG&G's Megan Marie and Monte Miller observed spawning coho salmon extending to the base of a series of steep bedrock cascades that we have dubbed 'The Chutes'. This location is upstream of the current extent for the midstream AWC point that is near the Alyeska pumphouse (N 61.08243 W -146.35405). It is the opinion of ABR, supported by agency observations, that this point (spawning coho) should be moved upstream to (N 61.08101 W -146.35384).

28 February 2011

COMMENTS CONTINUED (AWC#221-60-11350):

We have not observed chum salmon, but do not see reason to believe that the upstream extent of this species would differ significantly from those established for pink or coho salmon. We do not believe that these fish can spawn above the previously described barriers. Thus we are suggesting that the current AWC upstream point for all three species be moved to the previously mentioned upstream extent observed by ABR with agency personnel (N 61.08101 W - 146.35384). However, we recognize that this is problematic in the case of chum salmon as we did not personally observe them. It is still our assessment that they cannot possibly reach the current AWC point upstream.

We have observed Dolly Varden at a point higher than The Chutes and at the base of Barrier #1 (waterfall). We are performing otolith microchemistry studies to determine anadromy in fish captured below the first barrier.



State of Alaska  
Department of Fish and Game  
Sportfish Division

Nomination Form  
Fish Distribution Database

RECEIVED

SEP 27 2005

STATE OF ALASKA  
FISH & GAME

Region SouthCentral USGS Quad(s) Valdez A-7 Valdez A-7 SE  
Fish Distribution Database Number of Waterway 221-60-11350

Name of Waterway Allison Creek  USGS Name  Local Name  
 Addition  Deletion  Correction  Backup Information

For Office Use

Nomination # <u>05-064</u>	<u>[Signature]</u> ADF&G Fisheries Scientist Date <u>1/6/06</u>
Revision Year: <u>2007</u>	<u>[Signature]</u> ADNR OHMP Operations Mgr. Date <u>1/6/06</u>
Revision to: Atlas <input type="checkbox"/> Catalog <input type="checkbox"/> Both <input checked="" type="checkbox"/>	<u>[Signature]</u> FDD Project Biologist Date <u>10/20/05</u>
Revision Code: <u>B-1</u>	<u>[Signature]</u> Cartographer Date <u>2/21/06</u>

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
Coho salmon	9/18/2004	~ 1000			<input type="checkbox"/>
Coho salmon	9/26/2005	42			<input checked="" type="checkbox"/>
Coho salmon	9/26/2005			12 - Carcasses	<input checked="" type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>

**IMPORTANT:** Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

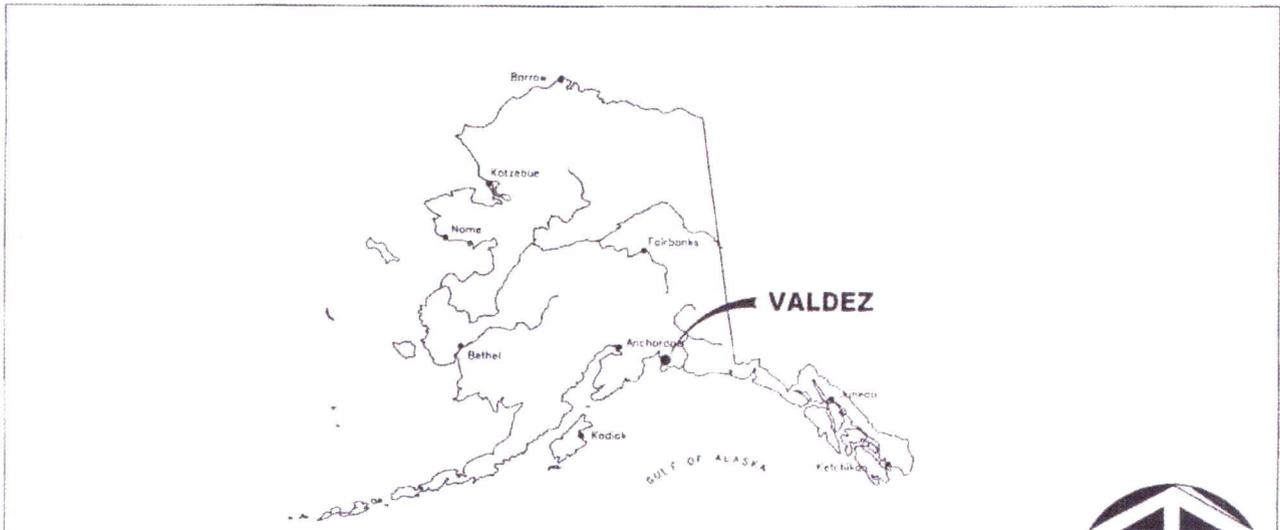
**Comments:** On September 26, 2005 at 1:50 pm, I conducted a brief foot survey of Allison Creek. The water level was below ordinary high and clarity was good, under overcast sky conditions. The survey was conducted to verify the presence of spawning coho salmon, which were observed in Allison Creek (on September 18, 2004) several months after a weir removal project was completed in May 2004. The stream reach surveyed (on September 26, 2005) began 125 meters downstream of the Trans-Alaska Pipeline System (TAPS) below ground crossing to a point 75 meters upstream of the TAPS crossing. I also visually verified the presence of a few spawning and several dead coho salmon at the Dayville Road bridge crossing of Allison Creek (stream mouth).

Add coho salmon spawning to existing stream 221-60-11350

Name of Observer (please print) Dennis G. Gnath  
Signature [Signature] Date: 9/27/2005  
Agency: ADNR / OHMP / JPO  
Address 411 W 4th Avenue  
Anchorage, AK 99501

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Fish Distribution Database.

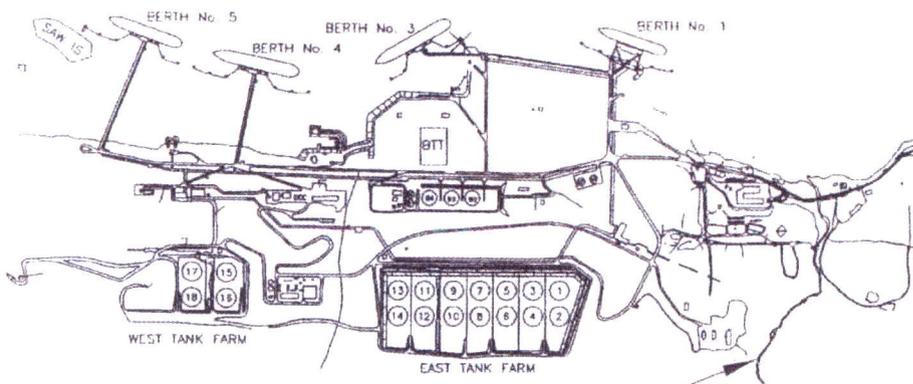
Signature of Area Biologist: [Signature] Date: 10/21/05 Revision 02/05  
Name of Area Biologist (please print): \_\_\_\_\_



**LOCATION MAP**

**LOCATION COORDINATES**  
 LATITUDE 61°05' N  
 LONGITUDE 146°22' W

**PORT VALDEZ**



**ALASKA STATE PLANE**  
 N 2,587,968.026  
 E 437,690.357

**THIS PROJECT**  
 Allison Creek

FILE: S:\Arch\Files\Alyeska\2433-Alyeska\Valdez\port\plan01.dwg

JOB No. 16098101 FIVE

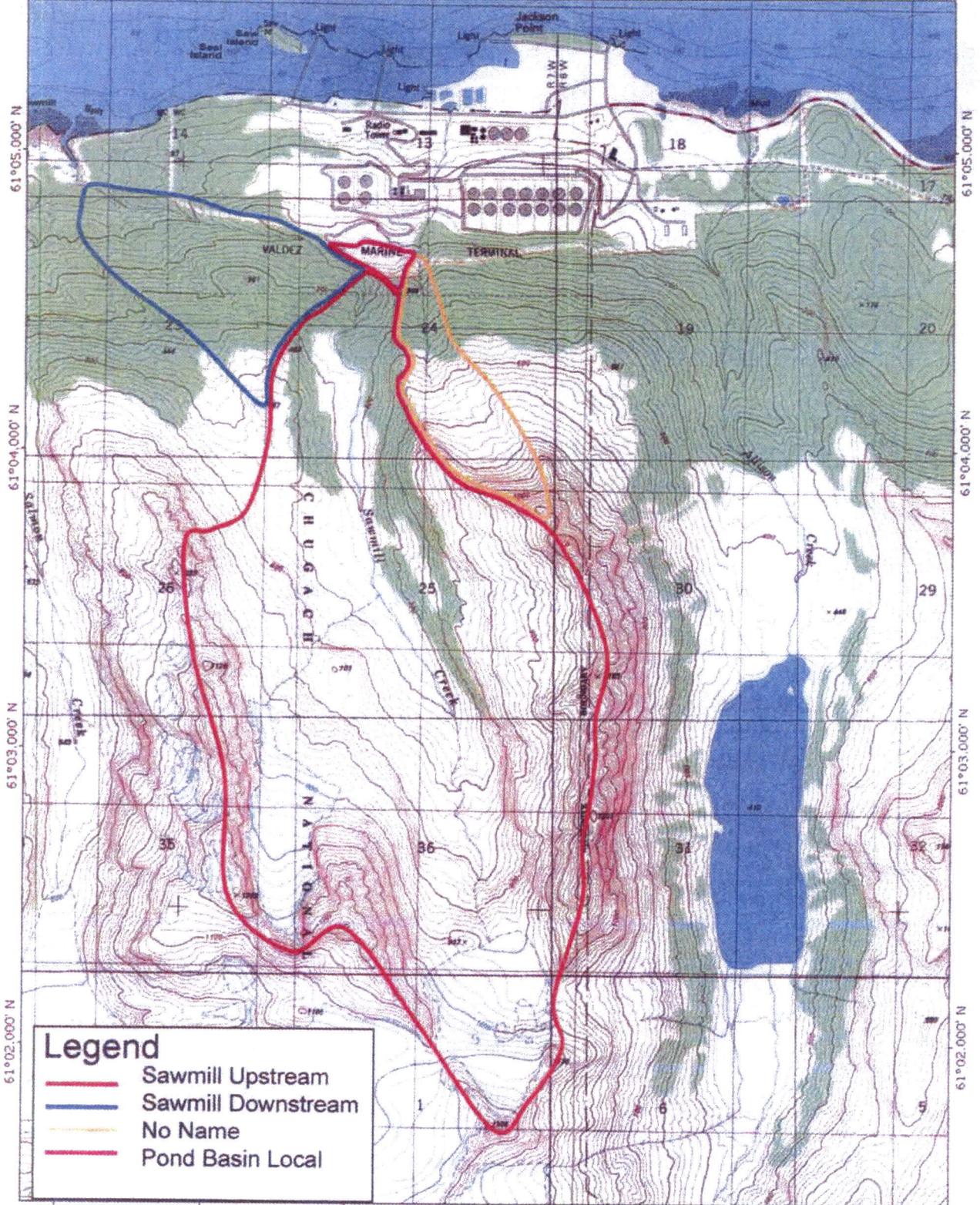
**PURPOSE:** FISH PASSAGE ENHANCEMENT  
**DATUM:** VALDEZ MARINE TERMINAL = MEAN LOWER LOW WATER  
**ADJACENT PROPERTY OWNERS:**  
 TAPS OWNERS  
 VALDEZ MARINE TERMINAL  
 VALDEZ, ALASKA

**LOCATION AND VICINITY MAP**

**ALLISON CREEK WEIR REMOVAL**  
 SECTION 19, T.9S, R.6W  
**IN:** ALLISON CREEK NEAR VMT  
**AT:** VALDEZ, ALASKA  
**LOCATION:** VALDEZ, ALASKA  
**APPLICATION BY:** ALYESKA PIPELINE  
 SHEET 1 OF 5      DATE: 03-06-03

+

146°26.000' W 146°25.000' W 146°24.000' W 146°23.000' W 146°22.000' W WGS84 146°20.000' W



61°05.000' N  
61°04.000' N  
61°03.000' N  
61°02.000' N

61°05.000' N  
61°04.000' N  
61°03.000' N  
61°02.000' N

146°26.000' W 146°25.000' W 146°24.000' W 146°23.000' W 146°22.000' W WGS84 146°20.000' W



0.0 0.5 1.0 1.5 miles  
0.0 0.5 1.0 1.5 km

Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

9/26/05 1350+

→ Allison Creek fish

resource observations

**Point:** 50 meters upstream

of APSC pump house

Start 150 meter downstream

of APSC pump house

Coho salmon

• 42 adult (live)

• 12 " (carcass)

54 adult total

→ active spawning obs.

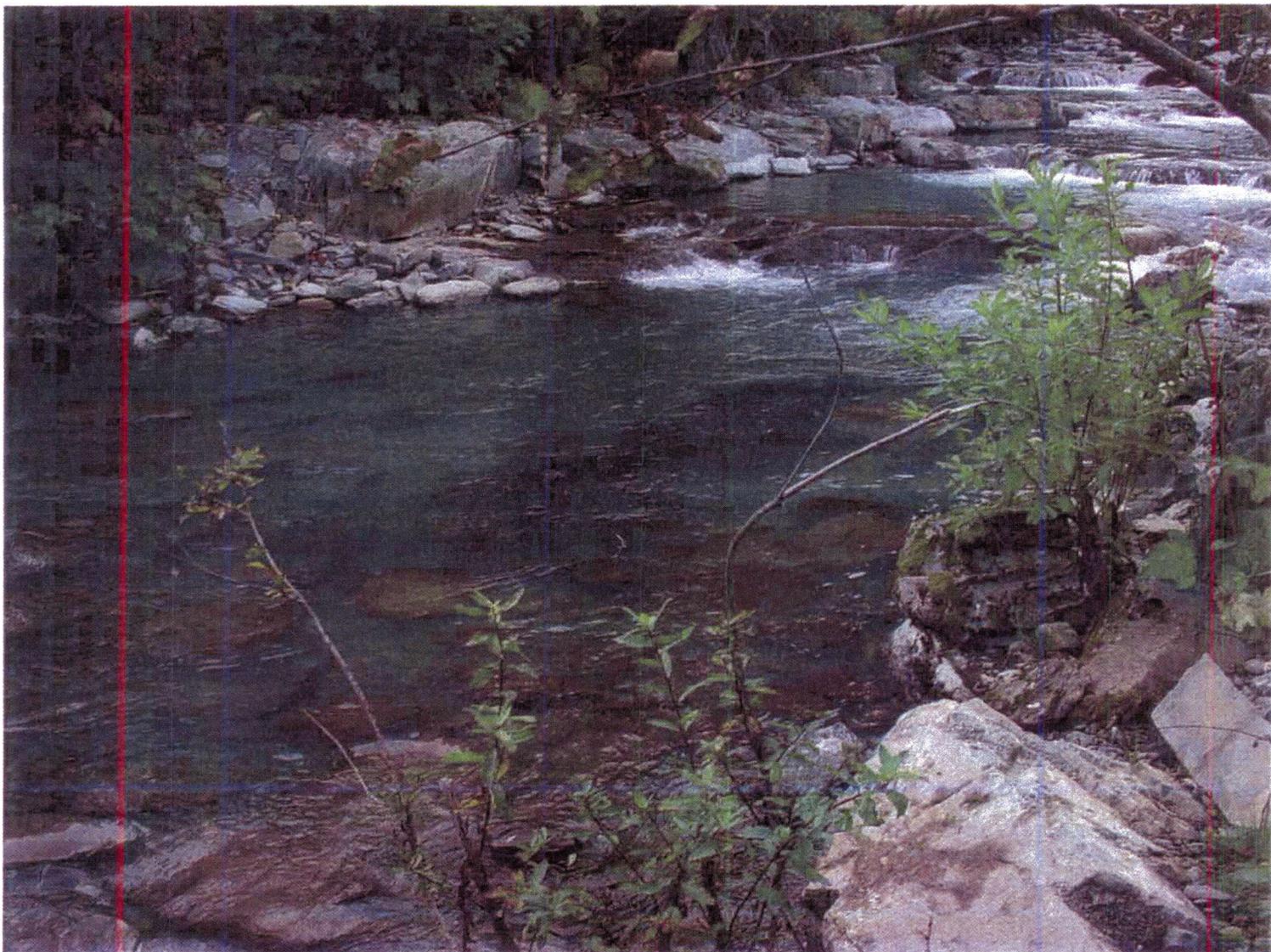
Dayville Rd bridge  
→ several live & dead coho  
gull activity high



**From:** "Koszarek, Phil T." <KoszarekPT@alyeska-pipeline.com>  
**To:** "Wilson, Kenneth" <WilsonK@alyeska-pipeline.com>, "Shoulders, Macnamara C." <ShouldersMC@alyeska-pipeline.com>, "Gnath, Dennis" <dgnath@jpo.doi.gov>  
**Date:** Sun, Sep 19, 2004 11:06 AM  
**Subject:** Allison Creek Cohos

Coho salmon seem to really like the pools that were created in the project to remove the dam. We are estimating perhaps as many as 1000 fish in the lower portion of the stream. Fish have also made it to the upper portion but we don't have an estimate. We are defining the lower portion as the area from the salt water to just above the pump house. The upper portion is the area upstream from the pump house and south of the steep rapids you see while standing at the pump building.

I believe these are hatchery fish, but I have no way of knowing. PHIL



Allison Creek coho salmon - 9/18/2004. Photo by: Phil Koszarek  
Environmental Coord.  
APSC/VMT



Allison Creek coho salmon - 9/18/04. Photo by: Phil Koszarek  
Environmental Coord.  
APSC/VMT

on Point

Lt

Fort Liscum  
(Site)

VALDER

TRAV

221-60-11350  
CHs,Ps

Creek

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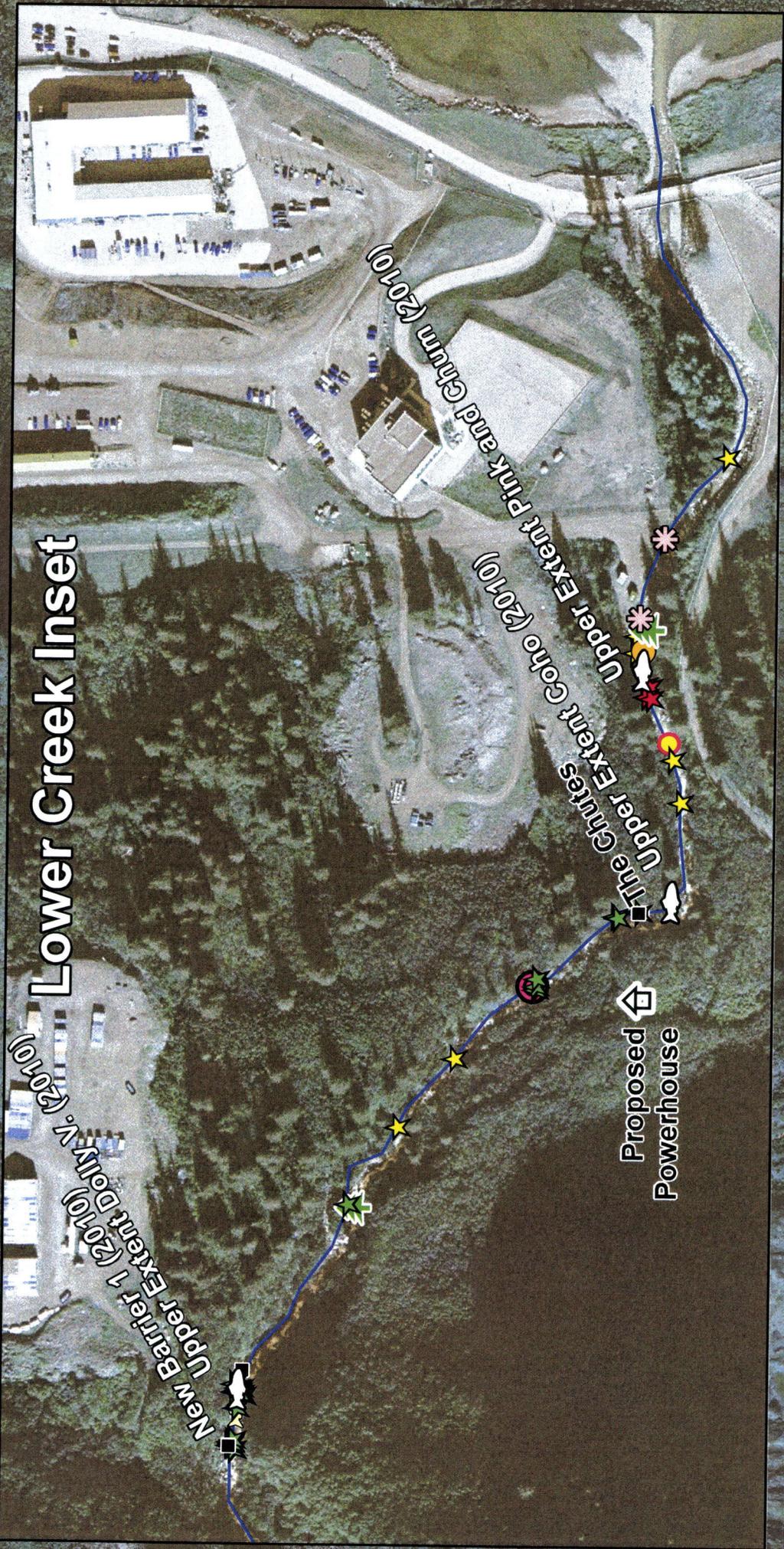
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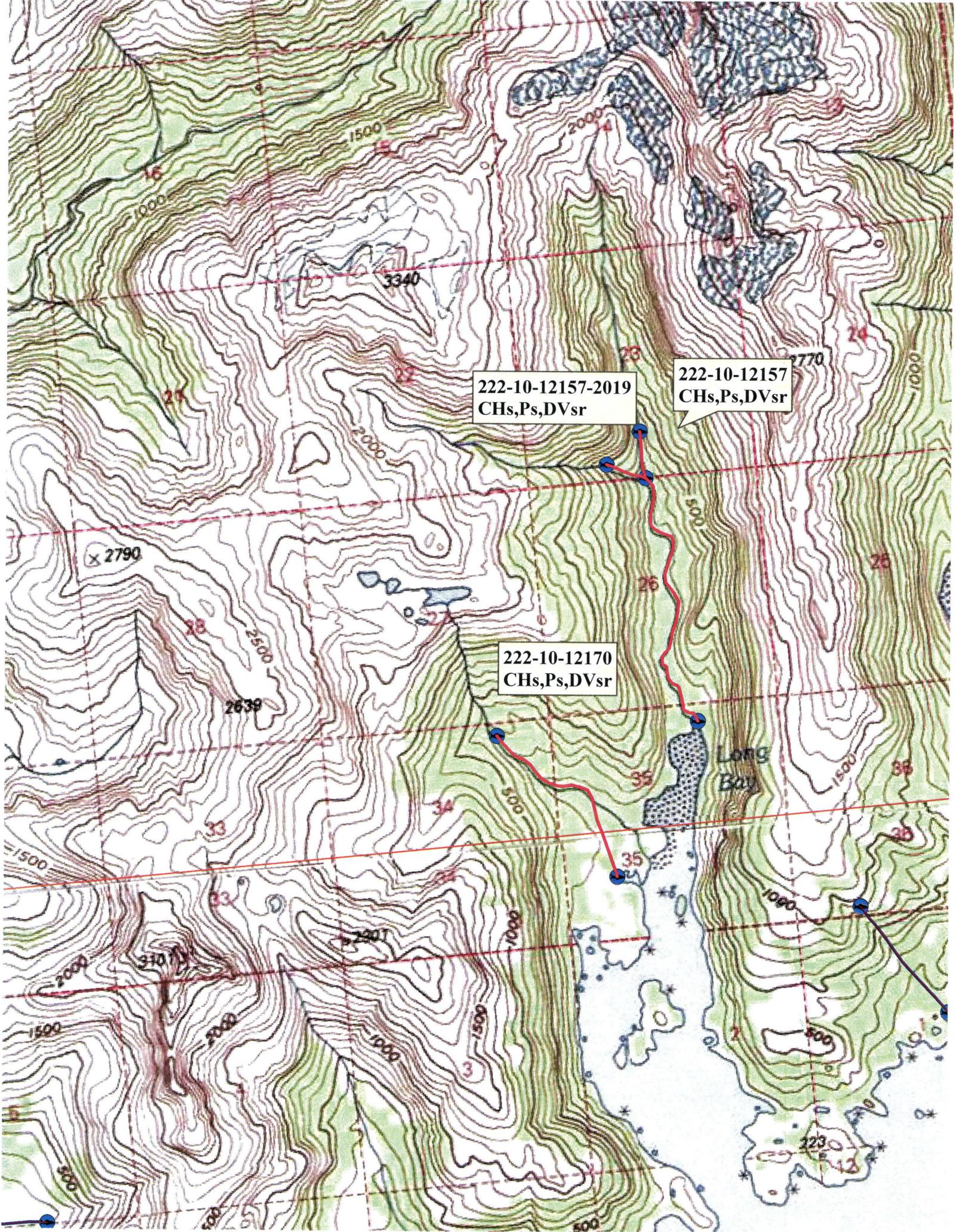
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# Lower Creek Inset



61°3'30"N  
61°4'N  
61°3'30"N  
61°4'30"N

Upper Extent  
Proposed

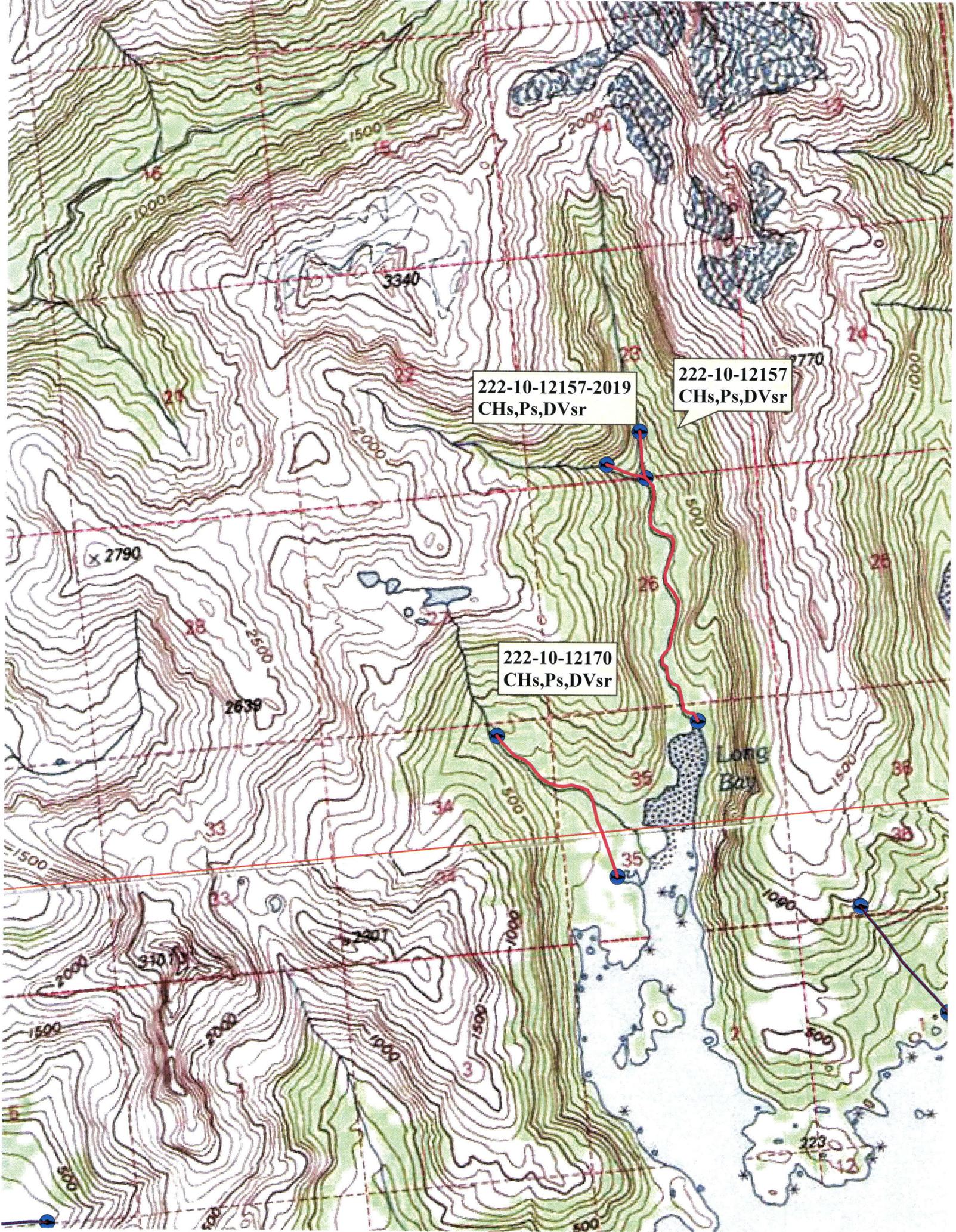


222-10-12157-2019  
CHs,Ps,DVsr

222-10-12157  
CHs,Ps,DVsr

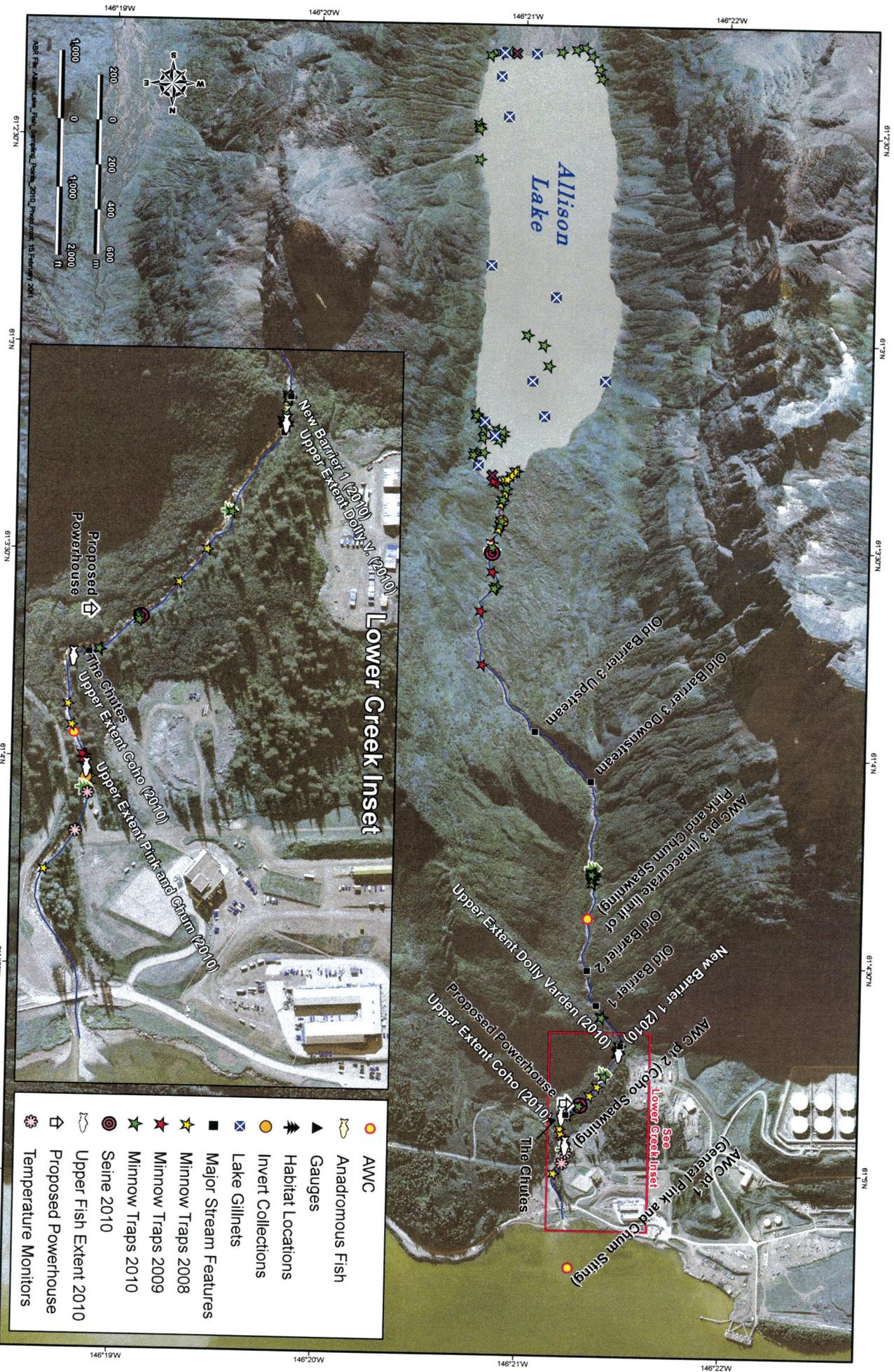
222-10-12170  
CHs,Ps,DVsr

Long Bay





221-60-11350  
CHs,Ps





**BIOLOGICAL RESOURCES IN THE ALLISON CREEK  
HYDROELECTRIC PROJECT AREA:  
2008–2010 STUDIES AND IMPACT ANALYSIS**

**REV. 0**

Prepared for  
**Hatch Acres**  
6 Nickerson, Suite 101  
Seattle, WA 98109

By  
**ABR, Inc.—Environmental Research & Services**  
P.O. Box 80410  
Fairbanks, AK 99708-0410

May 2011



*Printed on recycled paper.*

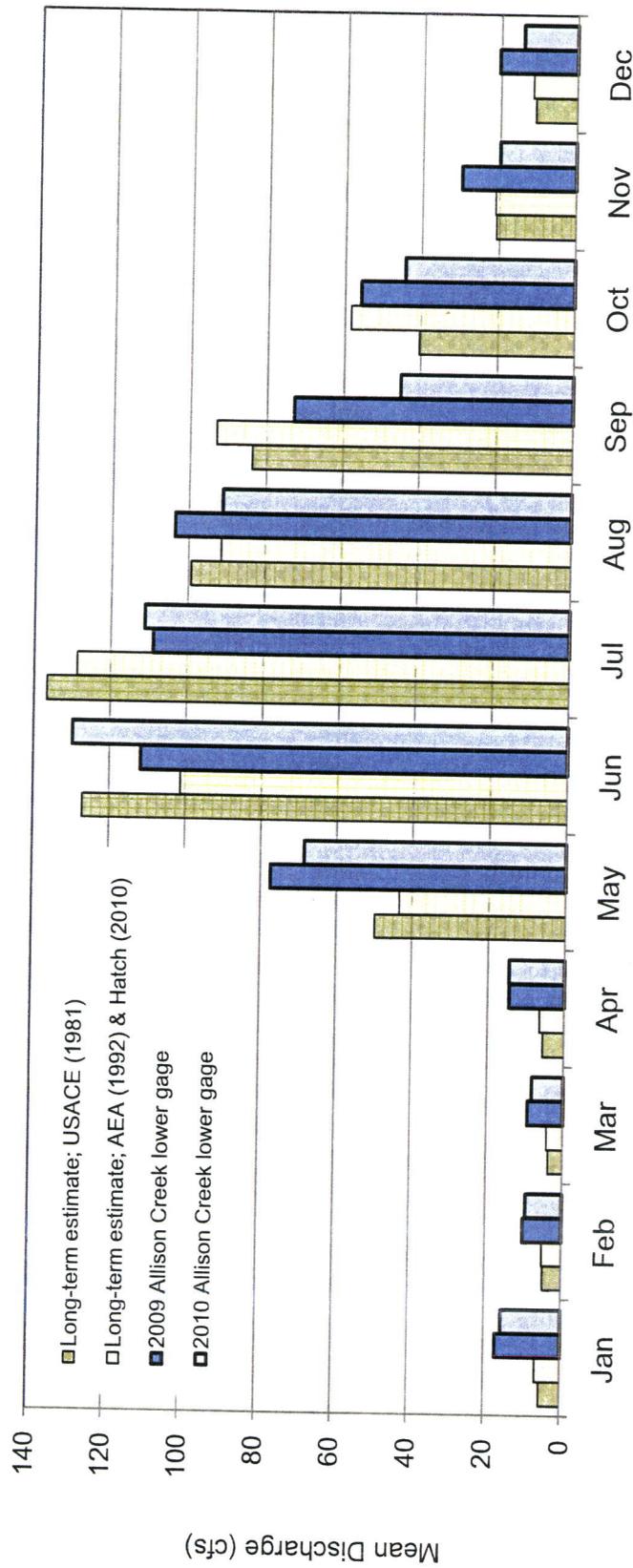


Figure 8. Monthly mean discharge at the lower stream gage location in Allison Creek, 2009 and 2010 (R&M Consultants, Inc., unpublished data) and long-term monthly mean discharge at lower Allison Creek as estimated by correlation with long-term data records from nearby streams (USACE 1981, AEA 1992, and Hatch 2010).

[adfg.state.ak.us/OTO/reports/VoucherSummary.asp?mi=SGH07](http://adfg.state.ak.us/OTO/reports/VoucherSummary.asp?mi=SGH07)) and clearly defines the marking pattern that is associated with fish released from Solomon Gulch hatchery later in 2008.

Of 22 fish analyzed for hatchery marks, 15 (68%) show clear evidence of origin from the Solomon Gulch hatchery. The mark from 2007 brood year fish is marked by a regular pattern of 6 alternating dark and light bands. The other 7 fish appear to have regular banding patterns near the primordia which would indicate a hatchery origin; however, they could not clearly be distinguished as Solomon Gulch hatchery fish. A search for mark patterns from other hatcheries did not confirm these fish as known hatchery fish. It is possible that these are native Allison Creek spawned fish or that they are the progeny of hatchery fish.

#### **DOLLY VARDEN OTOLITH ANALYSIS**

Dolly Varden are known to have at least 2 possible distinct life-histories, resident and anadromous types (ADFG 2008, Northcote 2010). These types show distinct differences in reproductive strategies, size, coloration, age of maturation, fecundity, and genetic diversity. In general, resident type fishes are potadromous (i.e., they require movement through fresh water systems to complete their life cycle), stunted in size (mean fork length = 135 mm), and younger at maturity (3–5 years). A USFWS survey of 66 coastal streams in Southeast Alaska support this assertion, as adult resident Dolly Varden ranged in size from 80–120 mm, and were found not to exceed 205 mm (Hastings 2005). Resident fish also have reduced genetic diversity (4 alleles total) compared to the larger and later-to-mature anadromous variety (11 or 19 alleles total). Resident female Dolly Varden produce nearly 30 times fewer eggs than their anadromous cohorts (Ihlenfeldt 2005).

The preferred habitats for Dolly Varden are pools, glides, and riffles, in that order, and their preferred spawning habitat is on the margins of pools in low-flow areas, with 1–4 cm gravel substrate. In general, resident Dolly Varden populations are constrained by limited availability of suitable spawning areas and they have genetically adapted to limited breeding habitats by reducing home ranges and reducing the energetic costs of fecundity and size.

We used chemical analysis of otoliths to determine whether the Dolly Varden in Allison Creek were resident or anadromous. Specifically, we compared the ratios of strontium (Sr) to calcium (Ca) in Dolly Varden otoliths to determine whether or not juvenile fish in Allison Creek were the progeny of sea-run mothers. Analysis of the Sr:Ca ratios within the “time-lines” created by daily and annual ring-deposition in otoliths is an important tool in determining the environment(s) in which any given anadromous fish has spent its life-history (Zimmerman and Reeves 2002). Because strontium occurs in greater concentrations in saltwater than in freshwater and because strontium alternates with calcium in hard tissues in proportion to its concentrations in surrounding waters, the occurrence of elevated Sr:Ca ratios in specific regions of otoliths indicates that the fish spent considerable time in marine waters in some past period (Zimmerman 2005). A comparison of Sr:Ca ratios in the primordia region of otoliths (developed in the egg) with Sr:Ca ratios in the freshwater growth region (developed post-hatching) can be used to determine maternal origin; substantially greater Sr:Ca ratios in the primordia region indicate that an otolith initially developed in an egg of a maternal fish while she was in marine waters (Donohoe et al. 2008). In this study, Sr and Ca levels were determined for juvenile Dolly Varden otoliths in the primordia and freshwater growth regions to determine whether or not the sampled fish from Allison Creek were the progeny of sea-run mothers.

#### **METHODS**

Twenty Dolly Varden were collected from Allison Creek in December 2010, frozen, and transported to Anchorage where otoliths were removed and prepared at the ABR fisheries laboratory. Sr and Ca levels were determined at the Oregon State University Electron Microprobe Laboratory in Corvallis, Oregon.

Sagittal otoliths were removed from each of the 20 Dolly Varden, which were 53–154 mm in length, cleaned by hand with water, and stored within individual wells of plastic pipette trays until further processing. During processing, otoliths were mounted sulcal-side-down in low-temperature glue on heated glass slides and were partially hand-polished toward the primordia

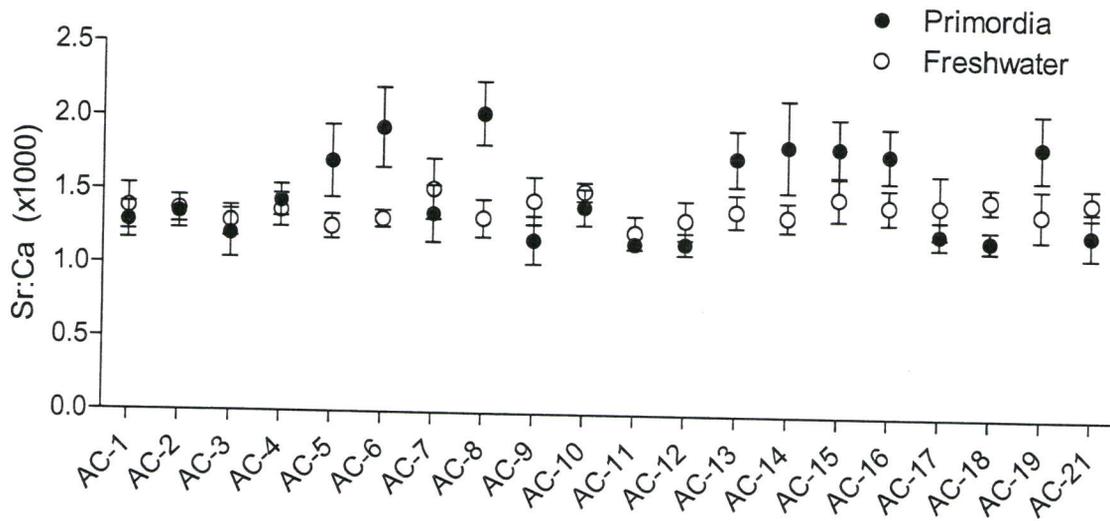


Figure 10. Sr:Ca ratios in the primordial region and first freshwater growth region of otoliths of juvenile Dolly Varden from lower Allison Creek, December 2010.

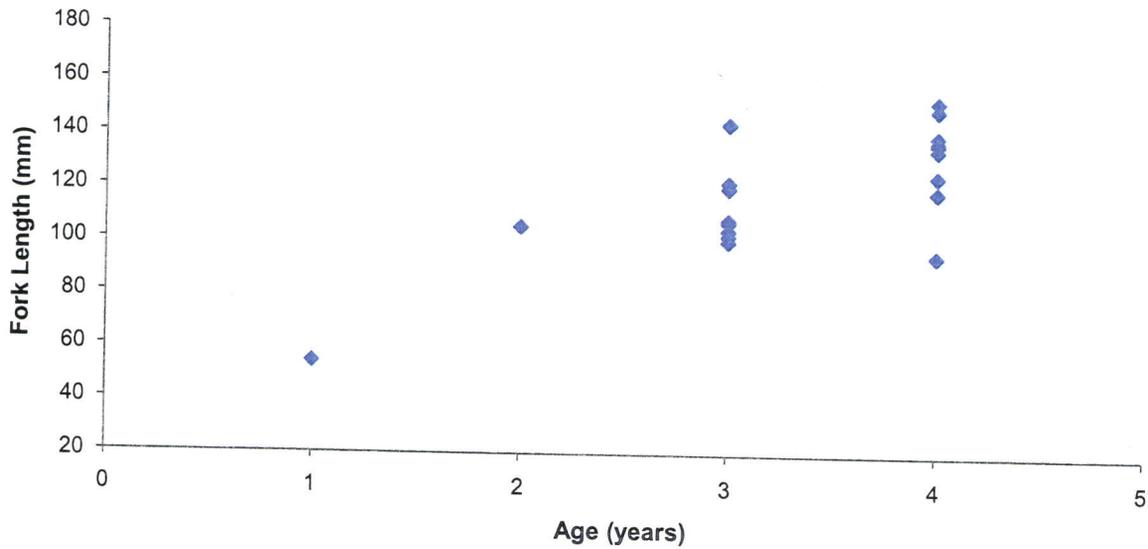


Figure 11. Relationship of fork length to age (determined by otolith analysis) for 20 Dolly Varden from Allison Creek, December 2010.

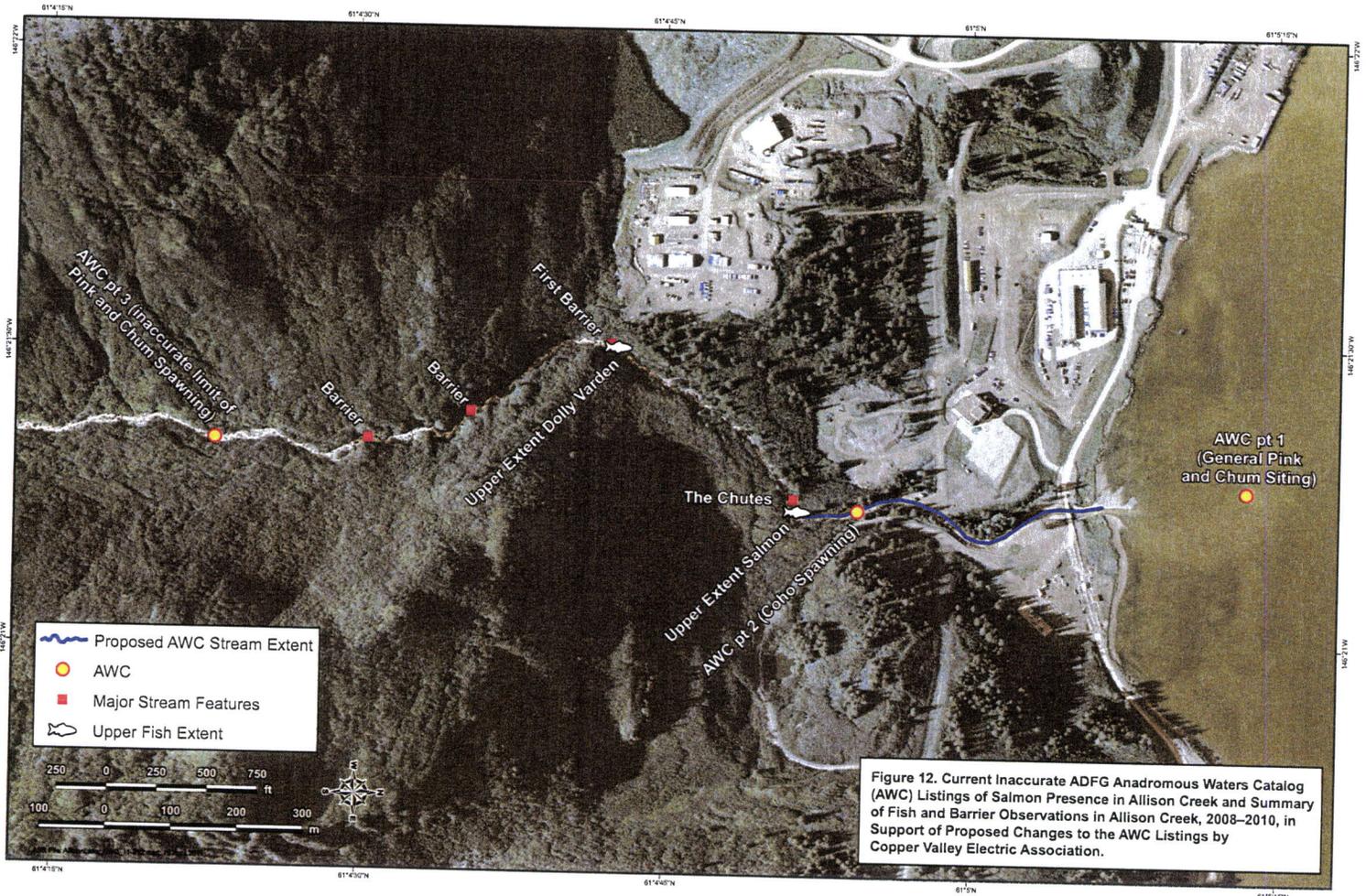


Figure 12. Current Inaccurate ADFG Anadromous Waters Catalog (AWC) Listings of Salmon Presence in Allison Creek and Summary of Fish and Barrier Observations in Allison Creek, 2008–2010, in Support of Proposed Changes to the AWC Listings by Copper Valley Electric Association.

AWC #	Species w/DV
221-60-11380-2095-3015	COsr,Ssr,DVsr
221-60-11380	COsr,Ssr,DVp
221-60-11380-2107	COsr,Ssr,DVsr
221-60-11370-2250	COr,DVr
222-50-12420	CHp,COp,Ps,Ssr,CTp,DVp
222-10-12180-2005	COr,CTr,DVr
222-10-12180	CHp,COr,Pp,Sp,DVp
222-10-12180-2010	COr,DVr
222-10-12170	CHs,Ps,DVsr
222-10-12157-2019	CHs,Ps,DVsr
222-10-12157	CHs,Ps,DVsr

oint

Lt

Fort Liscum  
(Site)

move lower pt to  
match crtho  
imagery

add  
boom to  
721-60-11350

move pink & blue  
lines spanning  
upper pt to  
direction of  
boom

