



State of Alaska
Department of Fish and Game
Sportfish Division

Nomination Form
Anadromous Waters Catalog

5

Region Southeastern USGS Quad(s) Sitka D-4

Anadromous Waters Catalog Number of Waterway 112-42-10080

Name of Waterway Indian River USGS Name Local Name
 Addition Deletion Correction Backup Information

For Office Use

Nomination #	<u>12-568</u>	<u>[Signature]</u>	<u>11/2/12</u>
		Fisheries Scientist	Date
Revision Year:	<u>2013</u>	<u>[Signature]</u>	<u>11/2/12</u>
		Habitat Operations Manager	Date
Revision to:	Atlas <u>Both</u>	<u>[Signature]</u>	<u>10/22/12</u>
		AWC Project Biologist	Date
Revision Code:	<u>A-1, B-1</u>	<u>[Signature]</u>	<u>11/21/12</u>
		Cartographer	Date

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
coho salmon	08/29/2012		✓		
Dolly Varden	01/01/2004				✓

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:
 Extensive minnow trapping has been ongoing in this system since the installation of a fishpass and stocking in the headwaters. The USFS has documented (reports, video weir footage) anadromous Dolly Varden successfully navigating the fish pass and I can vouch for these observations, having seen large DV in the fish pass area recently. Two coho were captured in a minnow trap at the upper most red waypoint. I did not GPS track the stream on my visit
 Coordinates (Lat,Long): Upper(57.865,-135.32) Lower(57.779,-135.183)
Extend stream w/coho rearing on present, add Dolly Varden pass +

Name of Observer (please print): Greg Albrecht
 Signature: 146.63.61.200 (Web Nomination) Date: 09/24/2012
 Agency: _____
 Address: PO Box 110024 PO Box 110024
Juneau, AK 99811

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
 Name of Area Biologist (please print): _____

Johnson, J D (DFG)

From: Albrecht, Gregory T (DFG)
Sent: Monday, October 08, 2012 1:16 PM
To: Johnson, J D (DFG)
Subject: RE: Indian River
Attachments: Indian River Monitoring TR 2012_08_28_GA.pdf

Categories: Red Category

Waypoint 164
Lat 57.789 long -135.194
2 Dolly Varden seen pursuing hook (~.5 m length) 160mm DV captured hook and line (see attached trip report)

The USFS has lots of data supporting adult DV successfully navigating the fish ladder at waypoint 163; however, I'm not sure how far up the drainage they've been confirmed

Greg Albrecht
Habitat Biologist II
ADF&G - Habitat Division
802 3rd Street
Douglas, AK 99824
ph. (907) 465-6384
fax (907) 465-4759

From: Johnson, J D (DFG)
Sent: Monday, October 08, 2012 12:51 PM
To: Albrecht, Gregory T (DFG)
Subject: Indian River

What is lat/long for upper most sighting of anadromous Dolly Varden?

J. Johnson
ADF&G
AWC Project Biologist
267-2337

Methods

We followed methods from Miller (2010) which include soaking 30 1/8" Gee minnow traps, baited with freshly punctured Whirl-paks® of salmon eggs at each of the eight sites for approximately 2 hours. All traps were set in the best available habitat, including woody debris, cut banks, and pools. We did not take all the metrics described in Miller (2010), but only recording Fork Length (FL) measurements for individual coho captures and a FL range for all Dolly Varden (DV) char captured at one site. Additionally, only 25 traps were set at site four and were allowed to soak for 6.5 hours to accommodate our need to survey the proposed hydro bypass reach in our allotted field time. A per-trap-average, calculated from the site, was used to supplement totals to reflect a 30 trap effort. Swales (1987) showed that fish captures in low density areas continue to increase after 2 hours; however, for the rate at which this occurs, the number of fish captured, and the scope of the project, this was not adjusted for. Deployment and recovery of traps at all other sites was between two and four hours.

Results

A total of 291 coho (80 coho < 70 mm and 211 coho ≥70 mm) and 1635 Dolly Varden were captured (Tables 1-8; Fig 2). A size frequency analysis of coho captured indicates fish <70 mm are likely age 0 and that fish ≥70 mm are at least one year old (Fig 3). Totals were combined with previous data to show trends over time (Tables 9 & 10; Fig 3).

Table 1 Site 1 results

Date	8/28/2012	Traps	30
Crew	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1115-1315
Flow	~ 24 inches below OHW, moderately low	Coho ≤65 mm	2
Weather	Rain, Heavy at times	Coho ≥70 mm	2
Notes	Slow section of river 3-5 feet deep in Thalweg. 15 traps placed < 500 feet upstream and downstream of flagged tree. Waypoint S1 – Walk upstream on river left for about 10-15 minutes to access site. Downed tree with flagging. 57.8083, -135.2246	Total Dolly Varden	41 (40-120 mm)
		Pictures	1189-1190

Table 2 Site 2 results

Date	8/28/2012	Traps	30
Crew	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1500-1700
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	51
Weather	Rain, Heavy at times	Coho ≥70 mm	62
Notes	Large bend in stream with lots of LWD. 15 traps placed upstream and 16 placed downstream within 300 feet of gravel bar at bend. Waypoint S2 – Directly off road, staged on gravel bars. 57.8232, -135.2492	Total Dolly Varden	521 (50-140 MM)
		Pictures	1194-1196

Table 6 Site 6 results

Site # 6			
Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1220-1620
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	5
Notes	Good rearing habitat through meadow side channel. 15 traps were set within 250 feet up and downstream of bridge. Waypoint S6 – continue down spur road past failing LSB about 300 feet. 57.8415, -135.2886	Total Dolly Varden	127 (50-140mm)
		Pictures	1220,1222

Table 7 Site 7 Results

Site # 7			
Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1030-1240
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	36
Notes	Beaver ponds on both sides of road. Right side appears to have no fish access. 10 traps were set on the upstream side of the beaver dam; however, no fish captured. 15 were set on the downstream and 5 near the confluences with the mainstem. Waypoint S7 – Adjacent to road with large fence post stuck in tree stump. 57.8577, -135.3070	Total Dolly Varden	25 (50-110mm)
		Pictures	1217-1218

Table 8 Site 8 results

Site # 8			
Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1330-1530
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	2
Notes	Primarily spawning habitat here, rearing habitat was more spread out. 14 traps were placed within 500 feet upstream of the bridge and 16 were placed within 500 feet downstream of the bridge. Waypoint S8 – Walk down alder choked spur road about 200 feet to failing LSB. 57.8642, -135.3200	Total Dolly Varden	248 (25-120mm)
		Pictures	1223, 1224, 1227

Table 3 Site 3 results

Date:	8/28/2012	Traps (adjusted)	29 (30)
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1535-1810
Flows	~ 24 inches below OHW, moderately low	Coho \leq65 mm	24
Weather	Rain, Heavy at times	Coho \geq70 mm	87
Notes	Large bend with nice gravel bar and good habitat containing LWD. 10 traps were place downstream within 300 feet of site entry and 20 were placed within 400 feet upstream. One bait package was unpunctured and this trap did not fish. One per-trap average (3 CO, 15 DV) was added to the total. Waypoint S3 – Directly off road, staged on gravel bars. 57.8261, -135.2558	Total Dolly Varden	453 (40-155mm)
		Pictures	1198, 1200

Table 4 Site 4 results

Date:	8/30/2012	Traps (adjusted)	25 (30)
Crew:	G. Albrecht and J. Zutz	Soak Time	1000-1430
Flows	~ 24 inches below OHW, moderately low	Coho \leq65 mm	0
Weather	Hot, sunny, and clear	Coho \geq70 mm	1
Notes	Beaver pond area. Only 25 traps were set around the road side perimeter of the pond, due to limited resources. Five per-trap averages (2.5 DV) added. Waypoint S4 – Left side of road about 100 feet through grass meadow. 57.8284, -135.2601	Total Dolly Varden	77 (80-1500mm)
		Pictures	1240-1241

Table 5 Site 5 results

Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	0920-1120
Flows	~ 24 inches below OHW, moderately low	Coho \leq65 mm	3
Weather	Hot, sunny, and clear	Coho \geq70 mm	16
Notes	Good rearing habitat in mainstem stretch of river. 15 traps were set within 300 feet upstream and 400 feet downstream (around the bend) of the collapsed LSB. Waypoint S5 – 300 feet down spur road on left side of road. 57.8423, -135.2866	Total Dolly Varden	143 (60-160mm)
		Pictures	1206, 1207, 1209

164	Large pool (60' long, 25' wide, 9 -11' feet at deepest, 2' at pool tail crest) 160 mm DV, and two large DV (~0.5 m) chasing lure, 1 MT here: 3 DV110-140 mm.	1249-1251, 1267
165	Photo looking down from canyon wall	1253
166	Falls number 3. Large pool (77' long, variable 20-30' wide, variable 10-15' at deepest, pool tail crest depth 2.7') 4 MT in this reach: 17 DV 80-155 mm.	1254, 1256
167	Falls number 2, powerhouse site directly below on river left.	1257, 1264

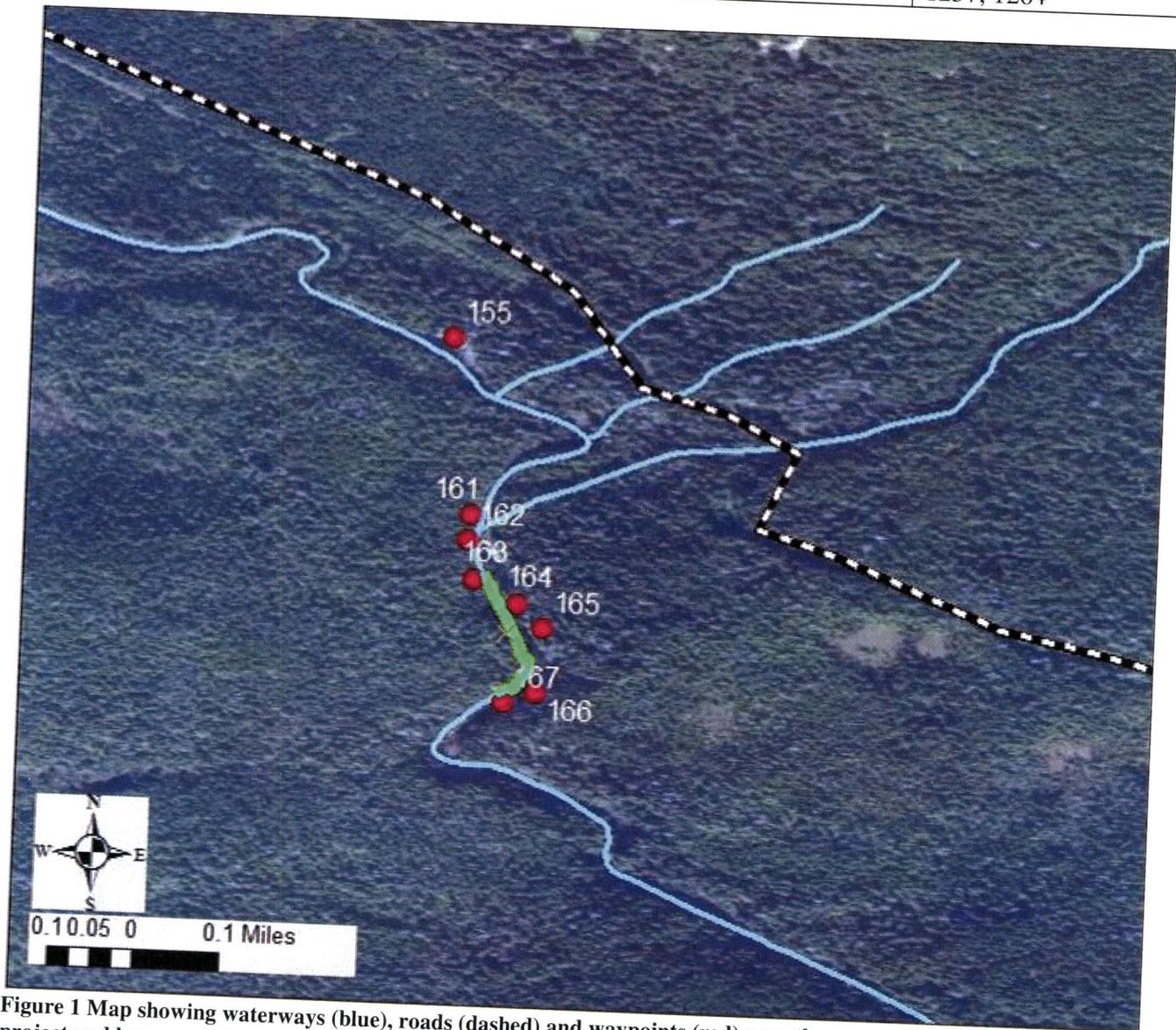


Figure 1 Map showing waterways (blue), roads (dashed) and waypoints (red) near the proposed Indian River Hydro project and bypass reach (green box).

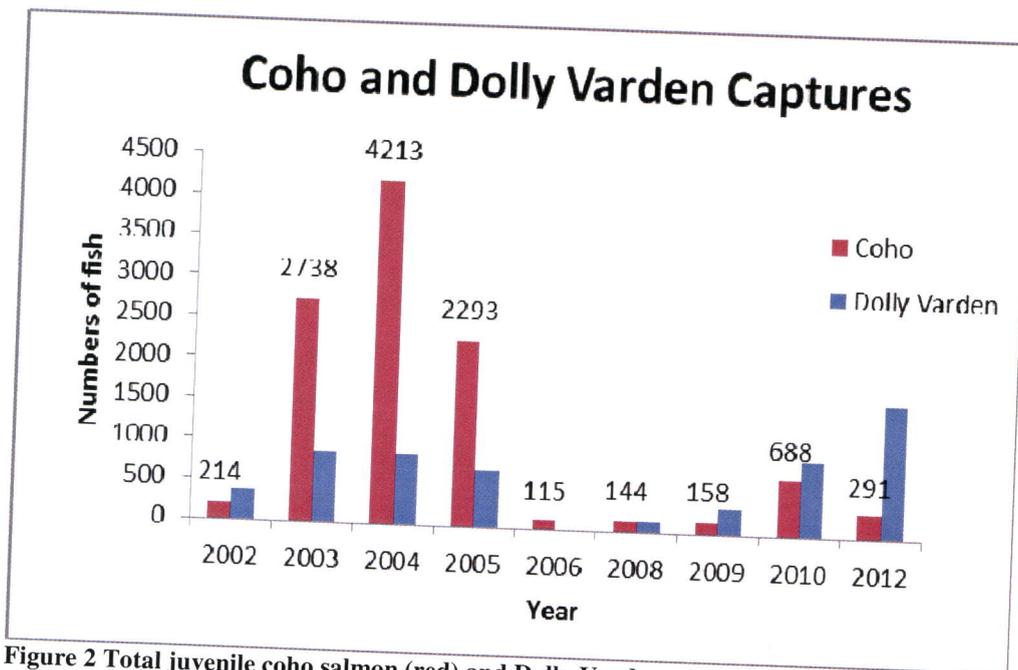


Figure 2 Total juvenile coho salmon (red) and Dolly Varden char (blue) captured during index trapping efforts from 2002 to 2012. Data from Miller (2010), 2006 Dolly Varden information unavailable.

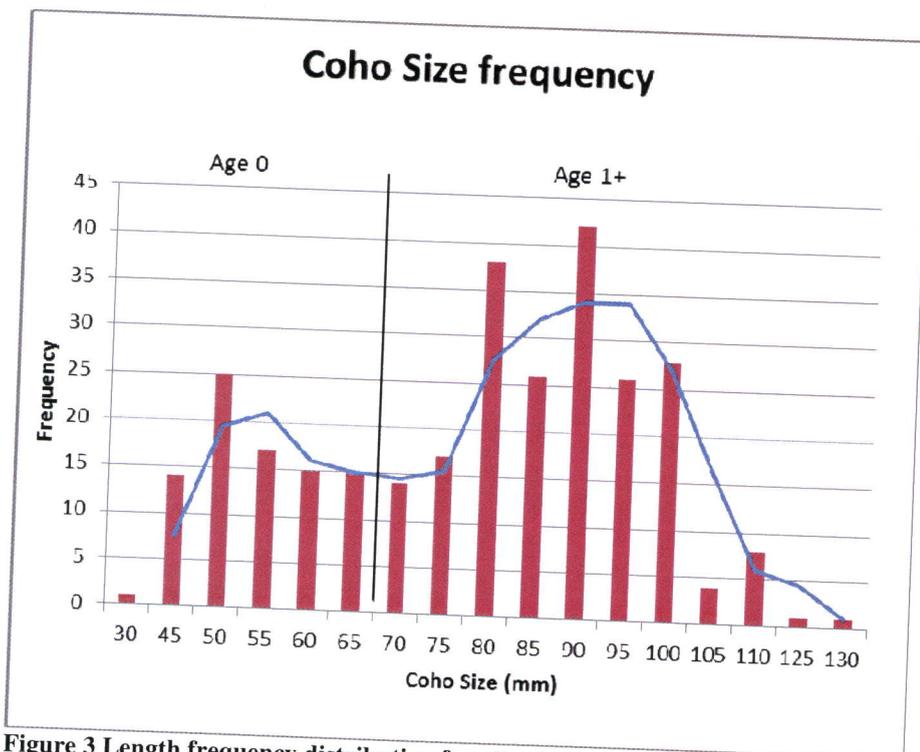


Figure 3 Length frequency distribution for all coho captures to determine approximate sizes for age class 0 and 1+ individuals.

Table 9 Annual coho fry captures at each index site. Data from Miller (2010).

	2002	2003	2004	2005	2008	2009	2010	2012
Site 1	0	6	53	23	0	0	4	4
Site 2	9	885	751	321	4	1	140	113
Site 3	120	333	1009	333	15	4	284	111
Site 4	1	135	85	53	0	2	4	1
Site 5	38	640	1165	409	38	130	221	19
Site 6	3	236	254	437	26	21	7	5
Site 7	3	110	359	373	18	0	28	36
Site 8	40	393	486	344	22	0	0	2
TOTAL	214	2738	4162	2293	123	158	688	291

Table 10 Annual Dolly Varden captures at each index site. Data from Miller (2010).

	2002	2003	2004	2005	2008	2009	2010	2012
Site 1	34	70	76	202	1	15	62	41
Site 2	76	203	265	111	5	66	208	521
Site 3	39	156	109	58	20	60	192	453
Site 4	92	323	140	111	15	70	116	77
Site 5	21	24	106	45	10	11	122	143
Site 6	41	26	21	43	50	49	75	127
Site 7	7	9	18	25	0	7	30	25
Site 8	74	55	121	88	15	50	128	248
TOTALS	384	866	856	683	116	328	933	1635

Discussion

Previous index trapping results were combined with results from this effort and show that coho juvenile numbers are holding at relatively low and consistent numbers. Coho captures from 2003 to 2005 were large due to juvenile transplants made to the river from 2001 to 2005. Stocked coho can be identified by a clipped adipose fin; however, adipose fin clipped individuals have not been captured since 2006. The overall trend since 2006 is still positive and demonstrates that adult fish can navigate the falls; however, this year's total is lower than 2010 and the magnitude of juvenile coho is still relatively low.

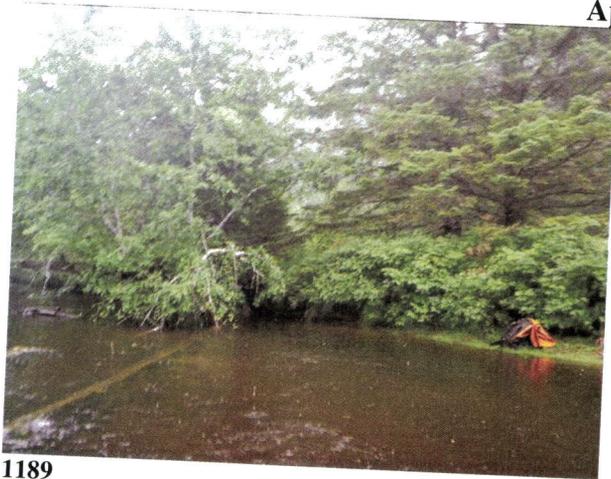
In our survey we trapped approximately 5,800 linear feet of river. The USFS estimates there are 34 stream miles available for habitat on the Indian River. If we assuming the 8 index sites represent a subsample of the 34 miles of habitat and juvenile coho densities therein, the total number of juvenile coho would be somewhere in the neighborhood of 9,000, 2500 of which would be age 0. Bradford (2000) estimates average fry production for one female coho to be 413, indicating that about 6 coho pair successfully spawned last fall. A simple estimate based on historical stocking and trapping results provides similar results, where the number of coho trapped during 2002 – 2006 efforts (9,787) represents about 15% of the total stocked during 2001 – 2005 (140,000). Therefore, a capture of 291 would indicate a population of 1,940 juvenile coho in the entire system.

Coho and Dolly Varden captures at each site followed trends from previous years, with the exception of site five, where fewer coho were captured than in previous years (Table 9). Dolly Varden captures have continued to increase in recent years and appear to track with coho numbers. Although Dolly Varden are predators of coho fry, research shows that coho are a small portion of their diet. Therefore, the correlation between Dolly Varden and coho captures is only partly explained by predation and may be more indicative of river conditions affecting both species.

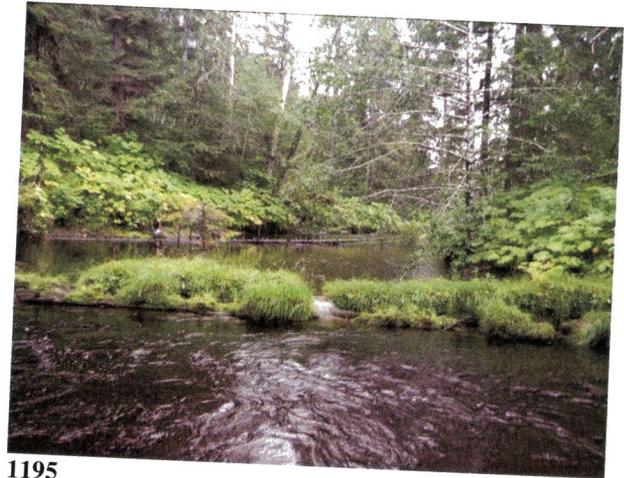
Literature Cited

- Bradford, MJ, Myers, RA, & Irvine, JR. 2000. Reference points for coho salmon (*Onchorhynchus kisutch*) harvest rates and escapement goals based on freshwater production. *Can. J. Fish. Aquat. Sci.* 57:677-686.
- Miller, RJ. 2010. Indian River Fry Monitoring 2010. US Forest Service Report.

Appendix A



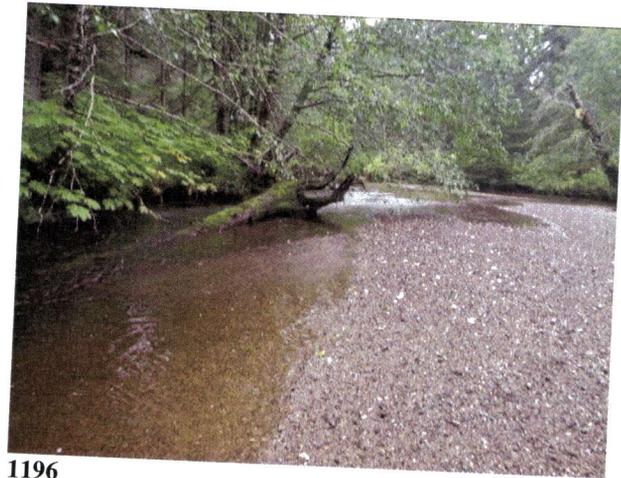
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1195



1190



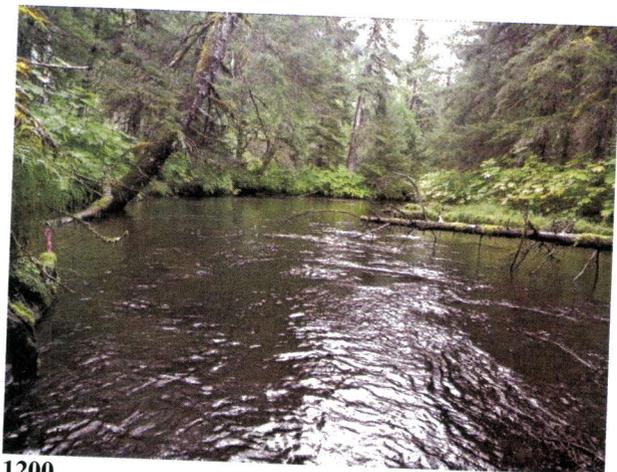
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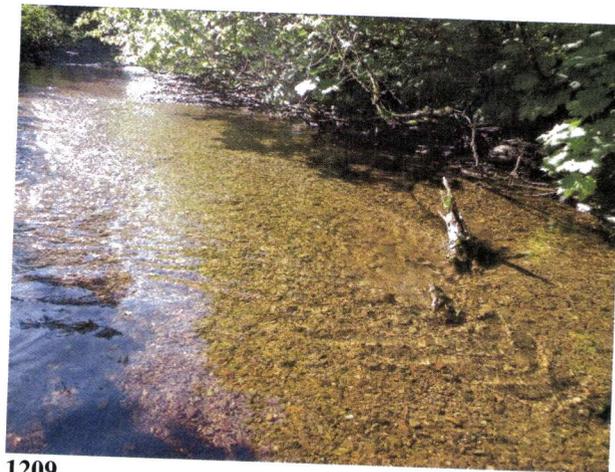
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1198



1200



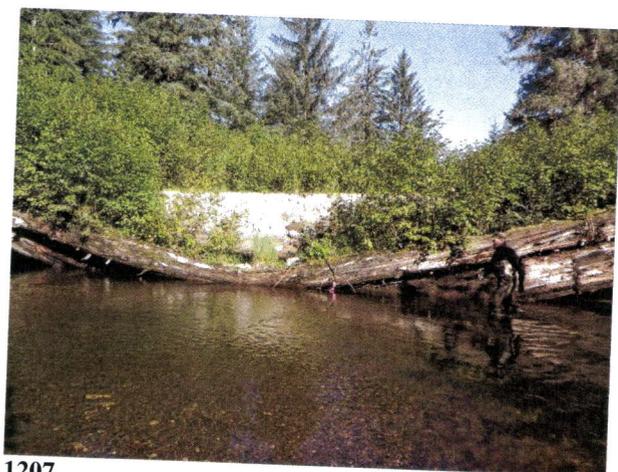
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1206



1217



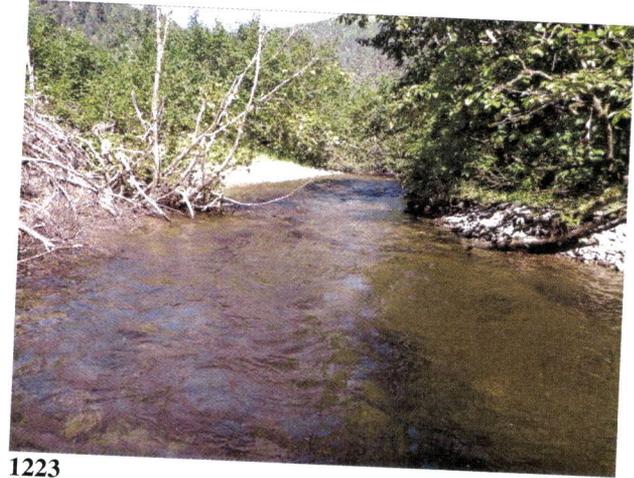
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1218



1220



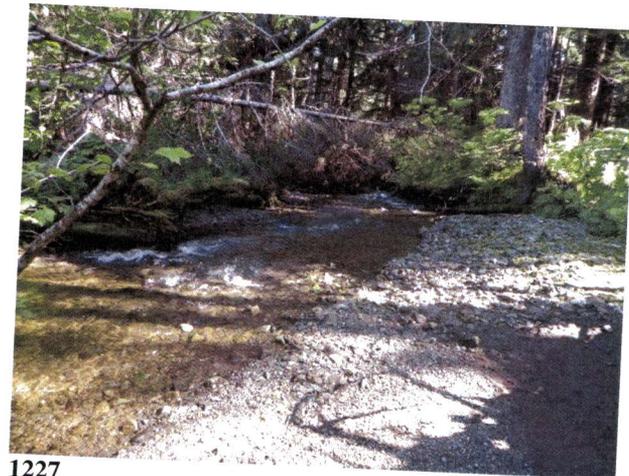
1223



1222



1224



1227



1240



1241

cc:
Al Ott, ADF&G Habitat, Fairbanks
Brian Glynn, ADF&G/SF, Juneau
David Harris, ADF&G/CF, Juneau
Ryan Scott, ADF&G/WC, Juneau
All, Douglas Habitat staff
Steve Brockmann, USFWS, Juneau
Randy Vigil, USACE, Juneau
Rob Miller, USFS, Sitka
Art Bloom, City of Tenakee

MEMORANDUM

State of Alaska
Department of Fish and Game
Division of Habitat

TO: Jackie Timothy
Southeast Region Supervisor

DATE: 10/1/2012

THRU:

FILE NO: 1973

SUBJECT: Indian River Coho Fry Index
Trapping Report
8/28 – 8/30/2012

FROM: Greg Albrecht
Habitat Biologist

PHONE NO: (907) 465-6384

Background

The US Forest Service (USFS) Sitka Ranger District has conducted salmon enhancement activities on the Indian River (ADF&G Stream no. 112-42-10080; CHp, COp, Pp) beginning in the late 1990s. Following the installation two fish passes in 1999 and modification to a partial barrier falls in 2005, over 140,000 coho fry were transported during 2001 to 2005 into the upper reaches of the Indian River (Miller 2010). Beginning in 2002, the USFS established eight index fry trapping locations in a variety of upstream habitats to monitor coho numbers.

In 2011, ADF&G Habitat issued a Fish Habitat Permit (FH12-I-0125) to the City of Tenakee for a run-of-the-river hydroelectric project to be installed near the fish pass at falls number four on Indian River (Fig 1). The USFS has not conducted fry monitoring since 2010; however, ADF&G Habitat has a shared interest in monitoring the drainage to assess potential impacts from the hydroelectric project and is seeking to continue monitoring through a cooperative effort involving both USFS and the City of Tenakee.

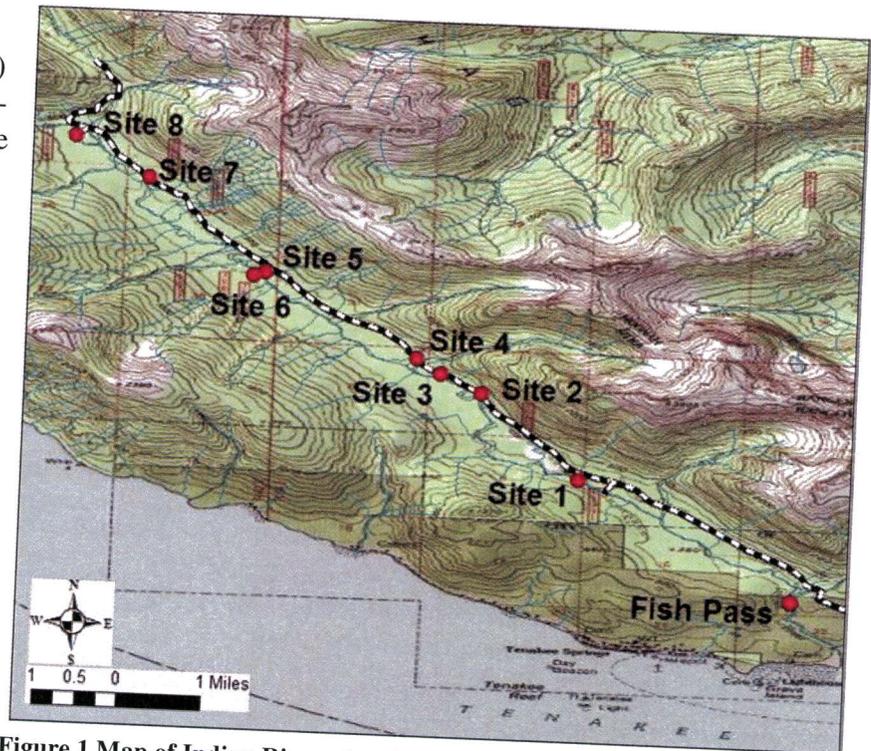


Figure 1 Map of Indian River showing index trapping site and fish pass locations

MEMORANDUM

State of Alaska

Department of Fish and Game
Division of Habitat

TO: Jackie Timothy
Southeast Region Supervisor

DATE: 10/1/2012

FILE NO: 1973

THRU:

SUBJECT: Indian River Hydro Monitoring
Trip Report
8/28 – 8/30/2012

FROM: Greg Albrecht
Habitat Biologist

PHONE NO: (907) 465-6384

On August 28th, 2012, I traveled with Johnny Zutz (Habitat Biologist) to the city of Tenakee where we met with Art Bloom (City of Tenakee Rep.) to conduct coho index fry trapping in the upper Indian River (ADF&G Stream no. 112-42-10080; CHp, COpr,Pp) and survey the bypass reach of the proposed Indian River hydroelectric project (see Indian River Coho Fry Monitoring Report for index trapping results). Aside from a downpour on day one, weather was hot and dry and the Indian River was at its seasonal low, which was still relatively high due to a large snow year.

With flows approximately 2 feet below the ordinary high water mark, we were able to cross the stream above the fish pass and place minnow traps in river pools and the fish ladder cells (Table 1, Fig 1). We removed a log from the fish ladder that appeared to be blocking upstream fish passage (figs 2 & 3). We walked the rest of the bypass reach (approximately 1500 feet), which is an incised bedrock channel with large cobbles and boulders, placing minnow traps in available habitat (Table 1, Fig 1). We encountered two large pools measuring 60 and 70 feet long, respectively (Table 1). At extreme low flows, or in the event that the bypass reach was dewatered, the footprint area of the pools would be reduce by only 10-20 percent and would maintain maximum depths of 9 and 12 feet, respectively. Dolly Varden char ranging from 80 to 500 mm were sampled or visually observed and one coho smolt (110 mm) was captured within the fish ladder.

Table 1 Waypoints, notes and corresponding figure numbers for data collected in the proposed bypass reach of the Indian River

Waypoints	Notes	Pictures in Appendix
155	Falls number 5, with step pools blasted in river left side	1232
161	Crossing location, 1 minnow trap (MT) in small pool: 0 fish	1242
162	Slow water above fish ladder. Exposed gravel bar shows water ~2 feet below ordinary high water. 1 MT above fish ladder: 6 Dolly Varden (DV) 80-140 mm	1243, 1244
163	Falls number 4, Fish ladder, 5 MT distributed in cells: 5 DV 100-160 mm, 1 coho 110 mm, Large pool at base of ladder, estimated 40' long, 25' wide, 10' deep	Figs 2, 3 & 4

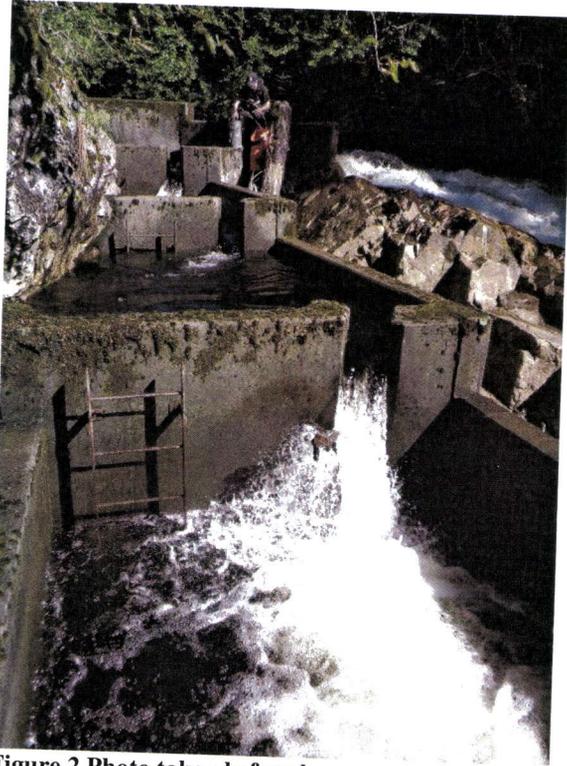


Figure 2 Photo taken before log was removed from fish ladder

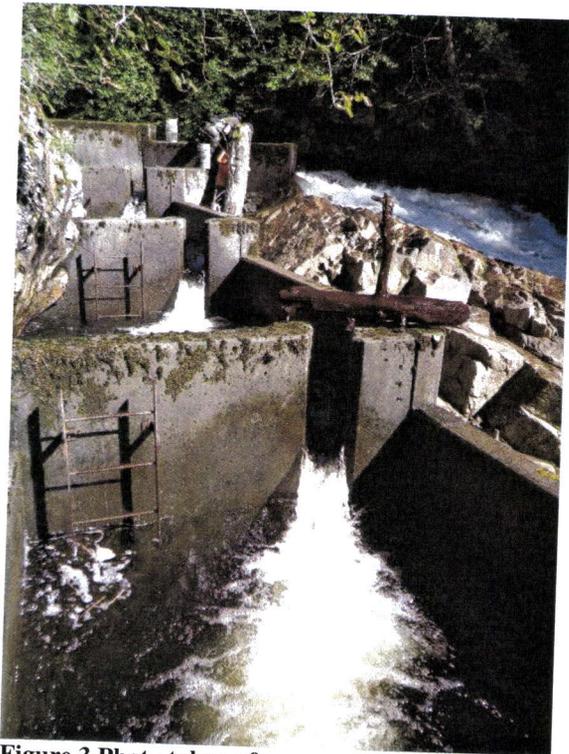


Figure 3 Photo taken after removal of log

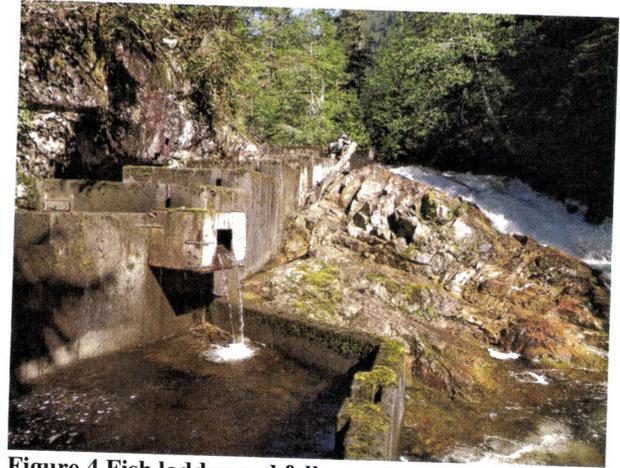
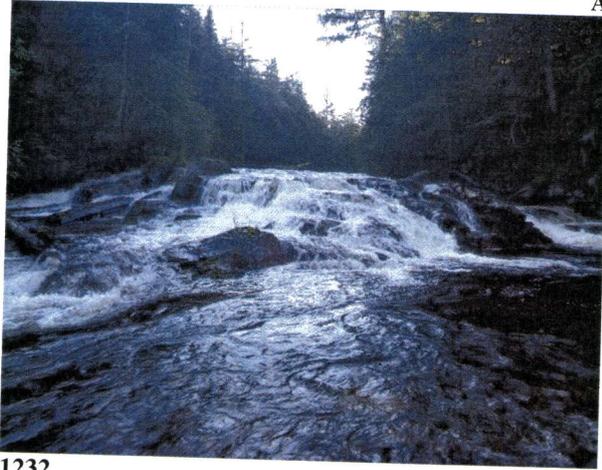


Figure 4 Fish ladder and falls number 4

APPENDIX



1232



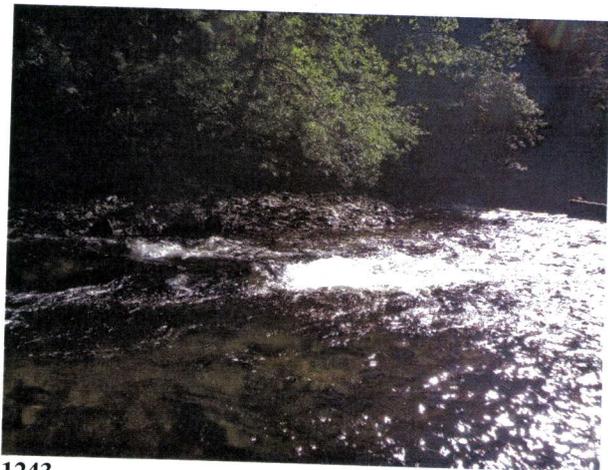
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1242



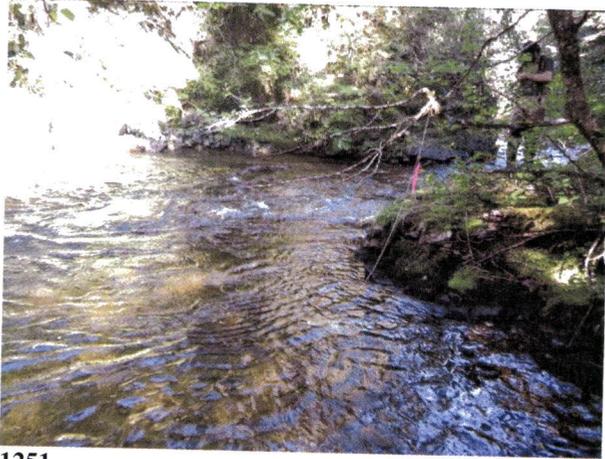
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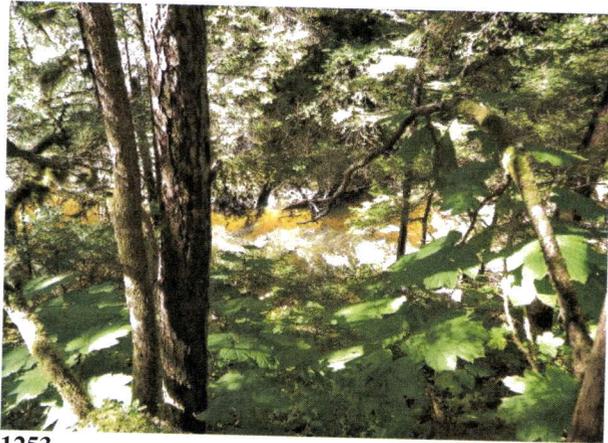
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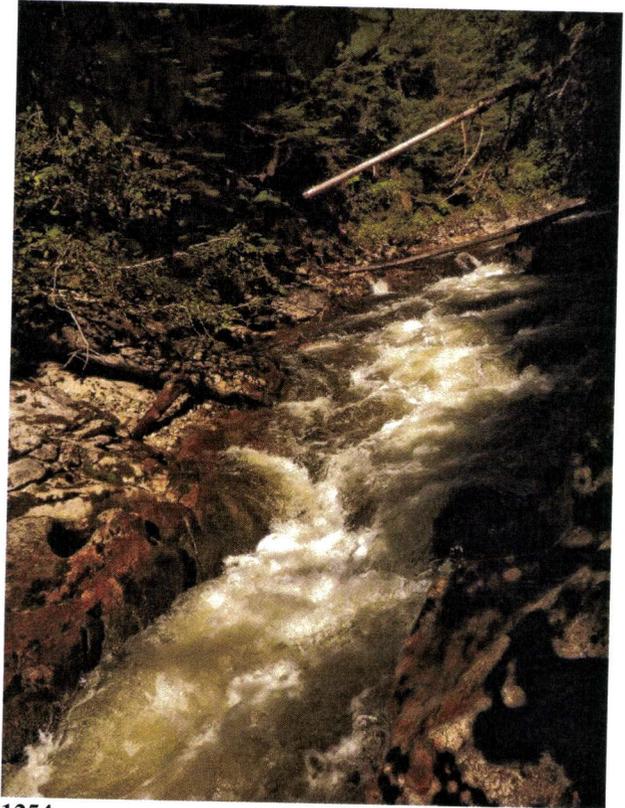
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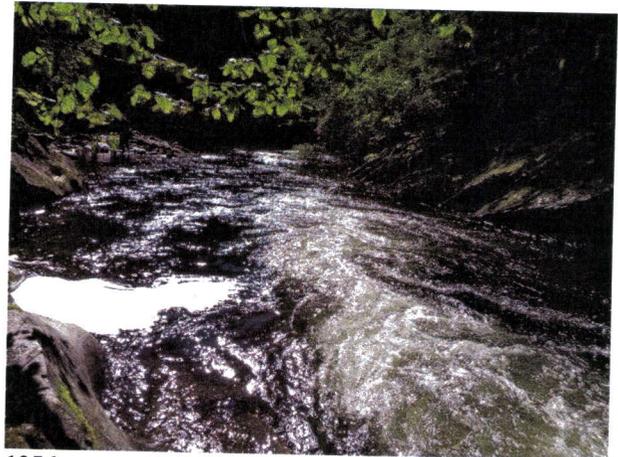
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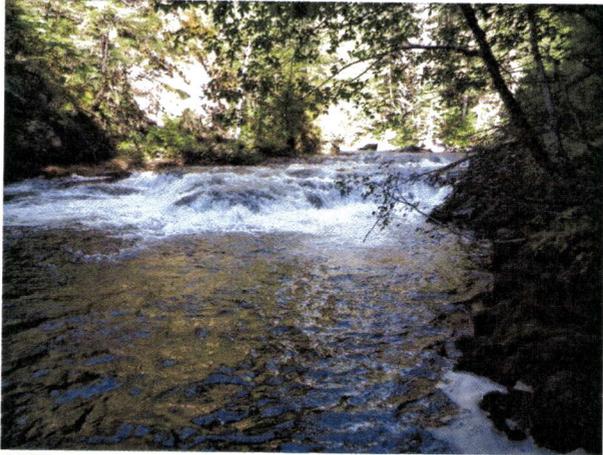
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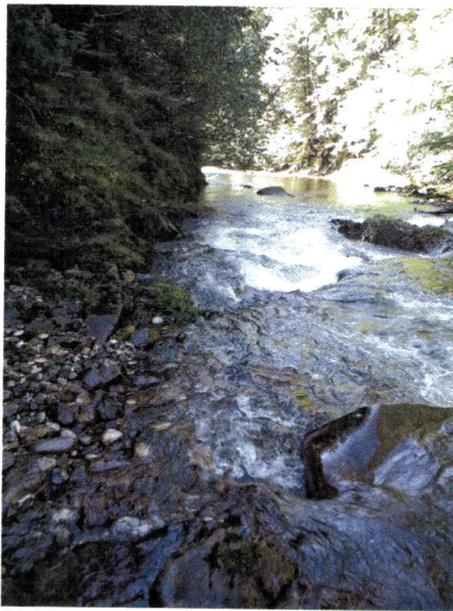
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1257



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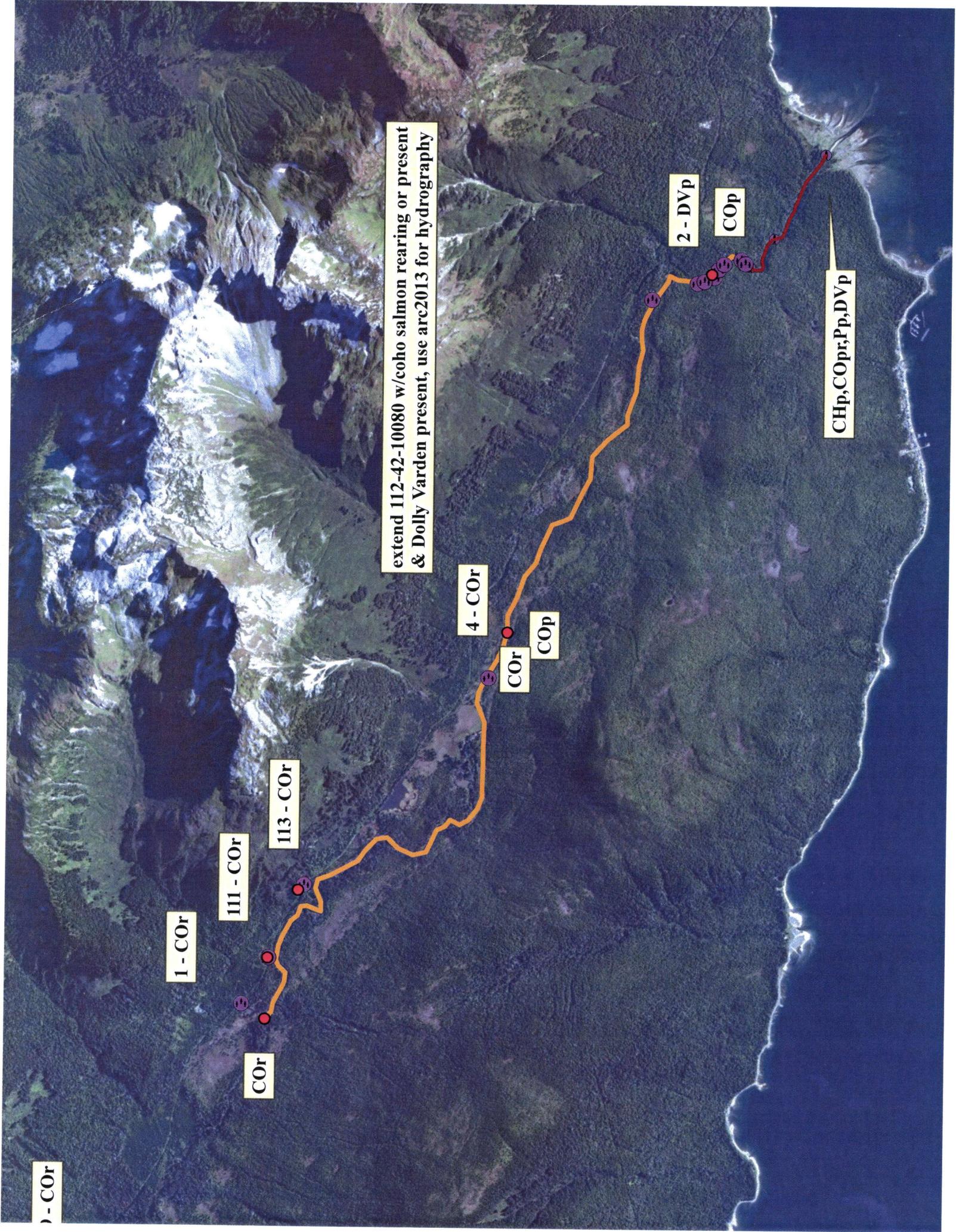


1264

cc:

Al Ott, ADF&G Habitat, Fairbanks
Brian Glynn, ADF&G/SF, Juneau
David Harris, ADF&G/CF, Juneau
Ryan Scott, ADF&G/WC, Juneau
All, Douglas Habitat staff
Steve Brockmann, USFWS, Juneau
Randy Vigil, USACE, Juneau
Rob Miller, USFS, Sitka
Art Bloom, City of Tenakee





extend 112-42-10080 w/coho salmon rearing or present
& Dolly Varden present, use arc2013 for hydrography

0 - COR

1 - COR

111 - COR

113 - COR

COR

4 - COR

COR

COP

2 - DVp

COP

CHp, COpr, Pp, DVp