Technical Report No. 13-04

Documenting Anadromous Water Bodies Southeast Alaska

by

Tess Quinn

and

Nicole M. Legere

August 2013

Alaska Department of Fish and Game **Division of Habitat**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

TECHNICAL REPORT NO. 13-04

DOCUMENTING ANADROMOUS WATER BODIES SOUTHEAST ALASKA

by
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and
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August 2013

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ABSTRACT

This report is used as a reference by Alaska Department of Fish and Game Division of Habitat Southeast Region habitat biologists working to field verify and update the *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* (Catalog) and its companion *Atlas.*[1] The Catalog is a numerically-ordered list of the anadromous water bodies that are afforded protection under Alaska Statute 16.05.871. This report is not used as a substitute for the Catalog; a legal document adopted by reference under 5 AAC 95.011 of the Alaska Administrative Code. We nominate the information in this report to be included in the Catalog for that purpose. Instead, habitat biologists use this report to guide field work by informing of water bodies requiring further investigation.

Key words: *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes*; Northern Southeast Alaska; Stream Cataloging; Stream Survey; Juneau; Haines; Sitka; Coho (*O.kisutch*); Pink (*O. gorbuscha*); Sockeye (*O. nerka*); Chum (*O.keta*); Chinook (*O. tshawytscha*); Steelhead trout (*O. mykiss*); DV (*S. malma*); CT (*O. clarkii*)

INTRODUCTION

The mission of the Alaska Department of Fish and Game (ADF&G) is to protect, maintain, and improve the fish, game, and aquatic plant resources of the state, and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained yield principle. The mission of the ADF&G Division of Habitat is to protect Alaska's valuable fish & wildlife resources and their habitats as Alaska's population and economy continue to expand.

Pacific salmon and steelhead habitats in Alaska have been protected to some degree since 1889 with territorial laws implemented in 1919. Shortly after statehood in 1959, territorial laws protecting Pacific salmon and steelhead were imitated and then codified at AS 16.05.870 in 1962. The statutes remain unchanged to this day, except for the numbering; they are now found at AS 16.05.871.

Though the 1962 law required ADF&G to specify water bodies important for anadromous fish, the department did not compile a list. Instead, ADF&G asserted authority to regulate all water bodies up to two tributaries above a known anadromous water body. Policy interpretation varied, occasionally providing protection to non-fish bearing tributaries.

Therefore, in 1980, the legislature ordered ADF&G to list the water bodies that contained any life stage of Pacific salmon, as the law required, and imposed a deadline. ADF&G was tasked to complete the list, covering 1,717,856 square kilometers of land and 1.2 million kilometers of streams, in just two years. To complete the work, ADF&G relied heavily on the field experience of biologists throughout the State, but there was not time to field verify nominations.[2]

This project provides field verification of anadromous streams along the roaded communities in Southeast Alaska using the accurate location and mapping technology available at this time. We have updated the AWC in the communities of Juneau, Haines, and Sitka and have identified areas requiring additional field verification.

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[1] Johnson, J. and M. Daigneault. 2013 Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Southeastern Region, Effective July 1, 2013. Alaska Department of Fish and Game, Special Publication No. 13-09, Anchorage, Alaska.

[2] Frank, M. J., C. M. Rozen, and E. W. Weiss. 2000. Legislative history of Alaska Statutes pertaining to the protection of anadromous fish. Unpublished report. Alaska Department of Fish and Game, Division of Habitat, Anchorage, Alaska.

OBJECTIVE

The objective of this project is to update the *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes* and its companion *Atlas* along the Juneau, Haines and Sitka road systems.

METHODS

Anadromous water bodies in Southeast Alaska contain salmon species that include: coho, *Onchorynchus kisutch*; pink, *O. gorbuscha*; sockeye, *O. nerka*; chum, *O.keta*; and Chinook, *O. tshawytscha.* To document anadromous use of a newly identified stream, or to add an anadromous salmonid to the Catalog, two of the same specie must be captured during one sampling event. Other potential anadromous salmonid species that may be present, but cannot be used as a sole indicator of anadromy[3], include: rainbow trout, *O. mykiss*; DV, *S. malma*; and CT *O. clarkii*.[4]

We plan the logistics for our fieldwork using the Catalog as a guide. Biologists, fish and wildlife technicians and interns track a stream mainstem and all tributaries, from the mouth to a suspected barrier on foot using a Garmin GPS 76CSx.

We rely on the Anadromous Fish Block guide from the Alaska Forest Resources & Practices Regulations handbook[5] to determine whether fish can pass a suspected barrier using formulas at high water that include the maximum fall height, pool depth, channel distance and gradient, and jumping capability of each species of salmon. If a barrier exceeds that height, or if the channel gradient exceeds a specific distance, we document the end of anadromy.

Table 1.–Anadromous Fish Block (11 AAC 95.265(g) Table A).

	Species Requirements (in feet)				
Criterion	Coho	Steelhead	Sockeye	Chinook	Pink/Chum
Maximum Fall Height. A blockage may be presumed if fall height in feet exceeds:	11	13	10	11	a) 4 with deep jump pool b) 3 without pool
Pool depth. A blockage may be presumed if the unobstructed water column depth in feet within the pool is less than:	1.25 × jump height, except that no minimum pool depth exists for falls as follows: a) less than 4 in the case of coho and steelhead; and b) less than 2 in the case of other anadromous fish species.				
Steep channel. A blockage may be presumed at the upper end of the reach if channel steepness in feet is equal to or greater than the following without resting places for fish:	>225 at 12 percent gradient >100 at 16 percent gradient >50 at 20 percent gradient >25 at 24 percent gradient				>100 at 9% gradient

[3] Since the life history of many individuals and populations is completed in fresh water without a salt water phase.

[4] J. Johnson, Alaska Department of Fish and Game, Anchorage, personal communication.

[5] Alaska Forest and Resources Practices Regulations, 2007, 11 AAC 95.265. Classification of surface water bodies, subpart (g), Table A: Anadromous Fish Blockage.

When we encounter non-cataloged streams, we sampled for salmonids using baited minnow traps[6], backpack electrofishers[7], and hand nets for juveniles, and visually identify adults. We take GPS waypoints at each sampling site, record species and life stage, and photograph and release the fish. Salmonids that can't be identified in the field[8] are verified under a Motic Digital Microscope, Model DM143, in our lab.

We generate the maps we are using in this technical report using ArcGIS mapping software. We upload geo-referenced satellite imagery into the software's data frame and then upload the AWC layer[9] on top of the imagery. This provides us a base onto which we can add features.

The stream survey documentation in this technical report includes the stream location, a table of survey data, photos of fish and habitat, and a map of the new or corrected stream route.

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[6] Magnus, D. L., D. Brandenburger, K. F. Crabtree, K.A. Pahlke, and S. A. McPherson. 2006. Juvenile salmon capture and coded wire tagging manual. Alaska Department of Fish and Game, Special Publication No. 06-31, Anchorage, Alaska.

[7] Smith-Root, Inc. User's Manual, LR-24 Electrofisher. Technology for Fisheries Conservation. Vancouver, Washington.

[8] Pollard, W.R., G.F. Hartman, C. Groot, and P. Edgell. 1997. Field Identification of Coastal Juvenile Salmonids. Department of Fisheries and Oceans, Vancouver, BC, Canada.

[9] State of Alaska, Alaska Department of Fish and Game. 2013. GIS data downloads, Anadromous Waters Catalog. Retrieved from http://extra.sf.adfg.state.ak.us/FishResourceMonitor/?mode=awc (Accessed August 14, 2013).

SPECIES CODES

K	=	Chinook salmon
CH	=	chum salmon
CO	=	coho salmon
CT	=	cutthroat trout (anadromous and non-anadromous juveniles and adults)
DV	=	Dolly Varden char
OU	=	eulachon
S	=	sockeye salmon
P	=	pink salmon
RT	=	rainbow trout (unknown juvenile or non-anadromous adult)
SC	=	sculpin-unspecified
SH	=	steelhead salmon (known adult)
TS	=	threespine stickleback

LIFESTAGE CODES

s	=	spawning
r	=	rearing
p	=	presence

SAMPLING CODES

EF	=	electrofish
VI	=	visual observation
HN	=	handnet
RS	=	route survey
MT	=	minnow trap

JUNEAU STREAM SURVEYS

Juneau, the Alaska state capital, hugs the side of Mounts Juneau and Roberts and is built upon old mine tailings from town's early gold mining days. Although Juneau is one of the nation's largest cities in area,[10] Juneau and its 30,275 residents[11] are the most geographically secluded of any state capital in the country. The city is accessible only by boat or plane, as is not connected to the state highway system. One main road stretches 45.563 miles[12] from the south at Thane to the north at Echo.

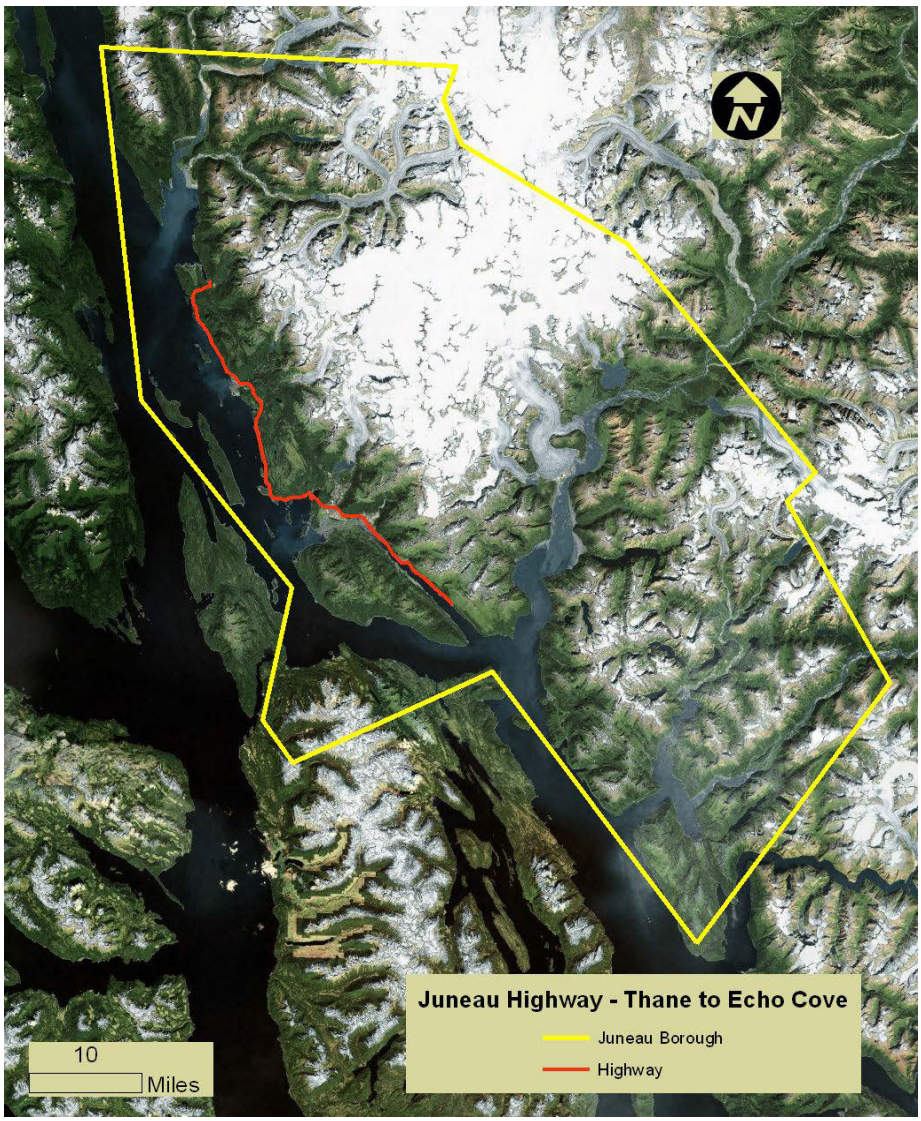

Figure 1.–Juneau Highway from Thane to Echo Cove.

[10] U.S. Census Bureau. 2010. Borough/Census area maps for Juneau City and Borough. 2010 Census: Alaska demographic profiles. Retrieved from: http://labor.alaska.gov/research/census/borcamaps/5_11_0map.pdf (Accessed August 26, 2013).

[11] U.S. Census Bureau. 2010. Demographic profile for Juneau City and Borough. 2010 Census: Alaska demographic profiles. Retrieved from: http://live.laborstats.alaska.gov/cen/dparea.cfm (Accessed August 15, 2013).

[12] C.H. Morehouse, Alaska Department of Transportation and Public Facilities, Juneau, personal communication.

BAY CREEK ROUTE CORRECTION

Stream: Bay Creek (111-50-10390 cataloged for COr and Ps).
Watershed: Auke Creek.
MTRS: Township 40S, Range 65E, NW ¼ of Section 22, Juneau B-2
Date surveyed: June 22, 2010.
Findings: We captured DV and CT above the cataloged upper limit and though we did not find any barriers to anadromous fish passage we did not catch known anadromous fish.
Recommendations: Correct route in the AWC. Continue to investigate upper portion of stream for anadromy.

Table 2.–Bay Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.3871	-134.6481	Mouth of stream enters Auke Bay.		
2	58.3896	-134.6503	Mild bank disturbance with a network of trails behind school.		
3	58.3904	-134.6498	Confluence of tributary on river right; we will come back later.		
4	58.3905	-134.6496	Set trap in shallow pool above cataloged reach.	MT	4 DV, 5 CT
5	58.3907	-134.6494	Set trap in deep pool with fine sediments below large woody debris.	MT	5 CT
6	58.3915	-134.6478	Set trap in small corner pool with overhanging vegetation, gravel, and cobble.	MT	2 DV
7	58.3918	-134.6478	Set trap in deep pool towards possible upper extent.	MT	1 DV, 2 CT
8	58.3922	-134.6473	Stop survey at fork of stream and dewatered trib. Plastic culvert and invertebrate tile in stream.		

Figure 2.–CT and DV at waypoint 5.

Figure 3.–CT and DV at waypoint 8.

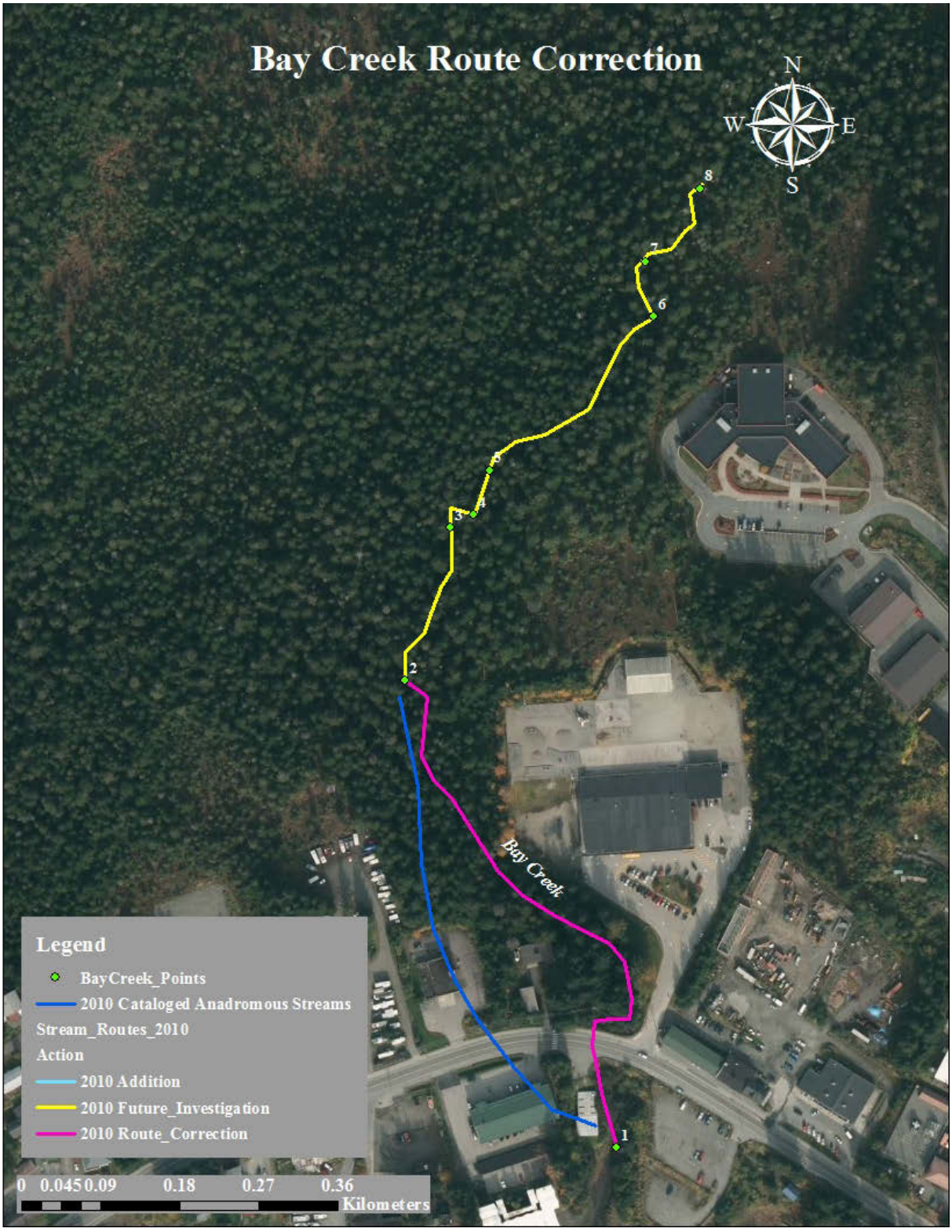

Figure 4.–Bay Creek route correction map.

BESSIE CREEK ROUTE CORRECTION

Stream: Bessie Creek (115-10-10250 cataloged for CHp, COr, Ps.
Watershed: Bessie Creek.
MTRS: Township 39S, Range 64E, Section 24, Juneau C-3.
Date Surveyed: July 14, 2010.
Findings: The physical stream route is inconsistent with the route mapped in the AWC. The following table and photos provide survey data and feature locations. The coordinates given for the upper and lower extents are for the species presently listed in the AWC.
Recommendations: Update the stream route in the AWC.

Table 3.–Bessie Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.5903	-134.9020	Tracking above the tide line.	RS	
2	58.5924	-134.9030		RS	
3	58.5928	-134.9020	16 - 20 foot barrieer falls.	RS	
4	58.5934	-134.9000	Upper barrier falls. Beauty.	RS	

Figure 5.–Barrier falls on Bessie Creek.

Figure 6.–Field staff measuring Bessie Creek.

Figure 7.–Field staff at culvert on Bessie Creek.

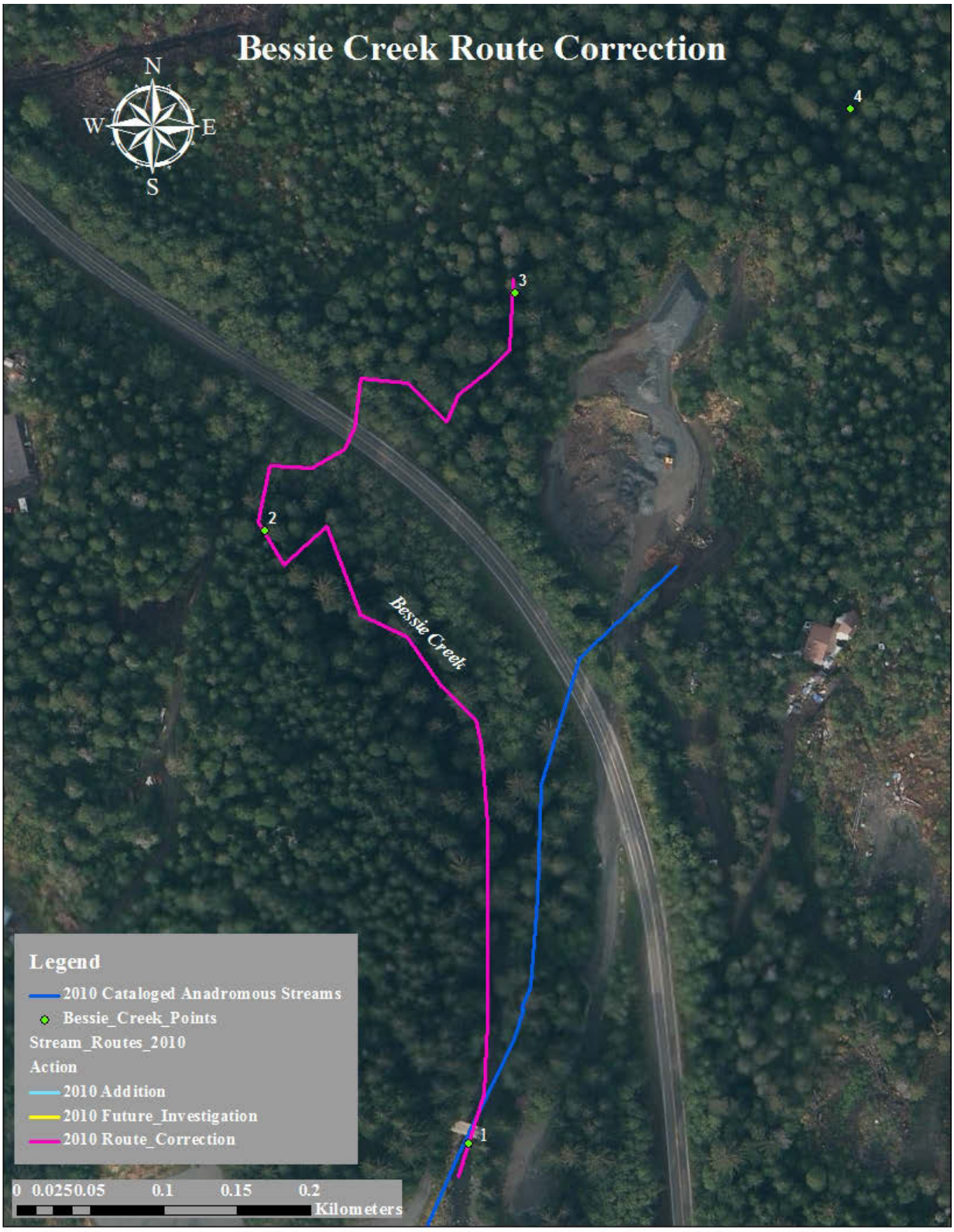

Figure 8.–Bessie Creek route correction map.

DOT CREEK ROUTE CORRECTION

Stream: DOT Creek (111-40-10050 cataloged for COsr).
Watershed: Sunny Point.
MTRS: Township 40S, Range 66E, Section 33, Juneau B-2.
Date Surveyed: August 30, 2010.
Findings: The stream is anadromous up to waypoint 49 where the last CO was captured. The stream is diverted under Egan expressway and Sunny Point road through a culvert that is approximately 300 feet long. CO smolts were captured at the inlet and outlet of the culvert using baited minnow traps. This stream is littered with trash bears drag into the woods. The following table and map provide sample data, trap locations, and features.
Recommendations: Add the stream to the AWC. Conduct further surveys of the upper reach to determine anadromy.

Table 4.–DOT Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
21	58.3590	-134.5258	Set trap at inlet of long culvert spanning expressway.	MT	9 CO
22	58.3580	-134.5252	Set trap at outlet of ~ 300 ft culvert that spans Egan Expressway.	MT	2 DV, 5 CO
47	58.3590	-134.5258	Begin track. Caught many CO smolts here last week.		
48	58.3591	-134.5252	Set trap next to overhanging spruce. Met a gentleman who said fish used to spawn here before the road was built. Hasn't seen any since.	MT	1 DV, 3 CO
49	58.3593	-134.5244	Set trap under leaning alder over stream. Outskirts of trailer park. Good spawning gravel.	MT	1 DV, 1 CO
50	58.3602	-134.5237	End survey. Trash everywhere.		

Figure 9.–CO, DV, and TS captured at outlet of 300' culvert.

Figure 10.–CO captured at inlet of 300' culvert.

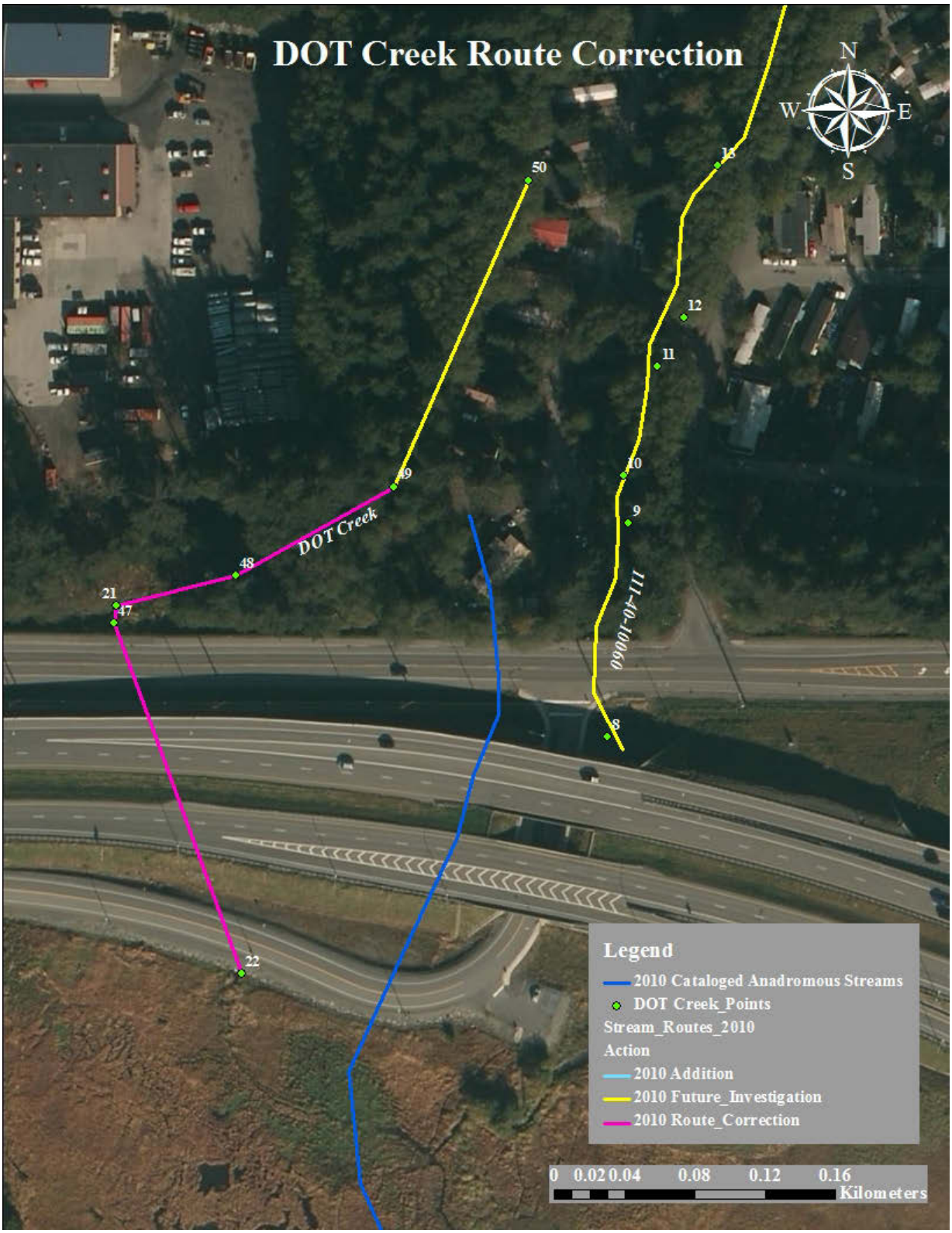

Figure 11.–DOT Creek route correction map.

EAST AUKE LAKE CREEK ADDITION

Stream: East Auke Lake Creek.
Watershed: Auke Creek.
MTRS: Township 40S, Range 65E, Section 23, Juneau B-2.
Date Surveyed: July 25, 2007, August 31, 2010.
Findings: This stream was surveyed in July of 2007 and again in August of 2010. One CO was captured at each attempt. This stream was previously trapped by habitat biologist Carl Schrader in July, 2007. He captured one CO in the lower reach. The stream was sampled again in August, 2010, and one CO was captured in the upper reach. The following table and map provide sample data and trap locations and features.
Recommendations: Continue to investigate fish presence. Does not meet ADF&G standard for addition at this time.

Table 5.–East Auke Lake Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
53	58.3812	-134.6304	Mouth of stream into Auke Lake. Begin track line.		
54	58.3808	-134.6297	Set trap in small pool. Lots of subsurface flows through root wads and vegetation up to this point.	MT	8 DV
55	58.3801	-134.6288	Pulled trap set by Fish and Wildlife along highway last week.	MT	1 CO, 7 DV
56	58.3799	-134.6273	End survey. Steep channel, flows just a trickle, nowhere to set trap.		
57	58.3801	-134.6282	Set trap in very shallow pool under mossy log. Water just a trickle.	MT	No Fish

Figure 12.–CO and DV captured in upper reach, August 2010.

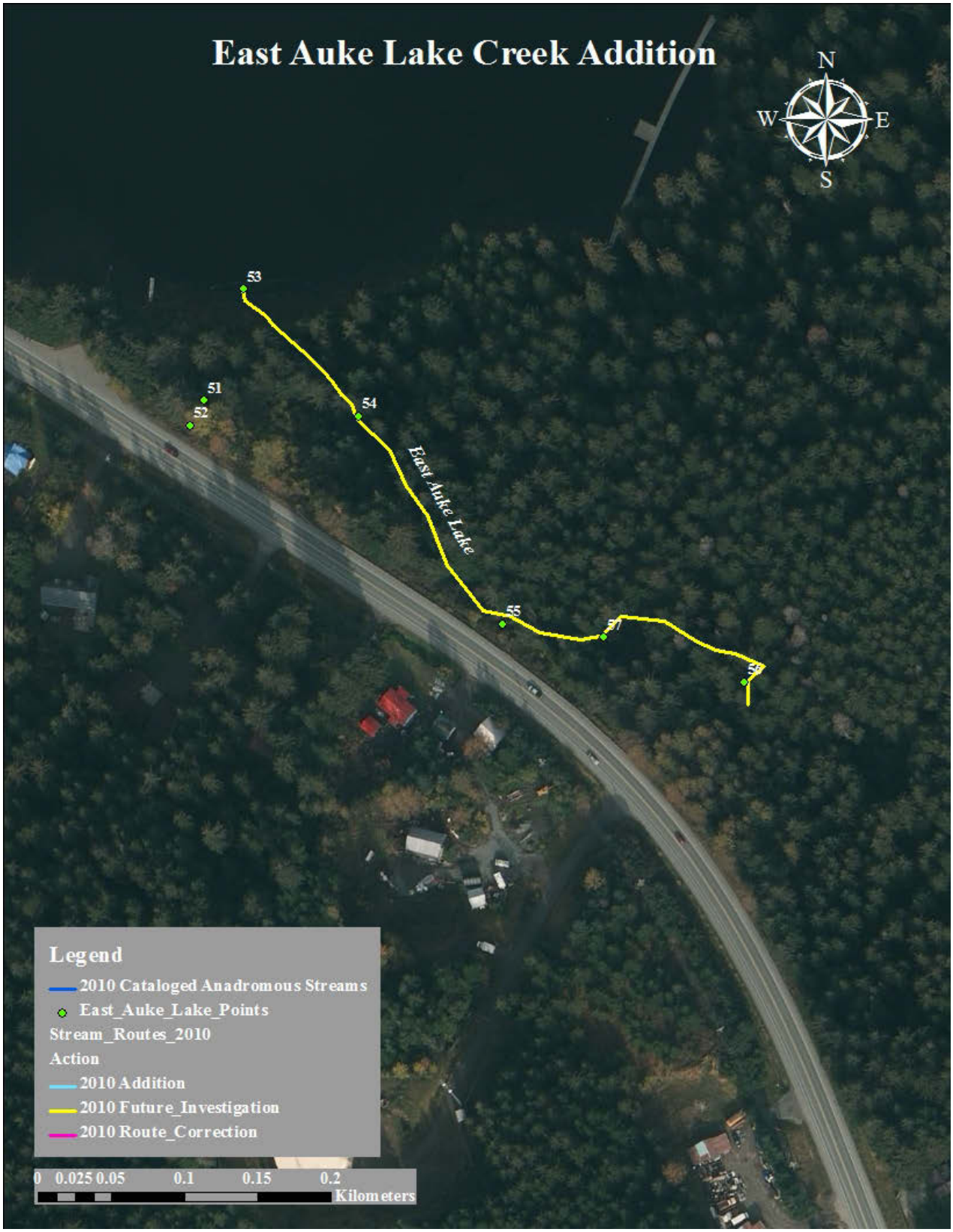

Figure 13.–East Auke Lake Creek addition map.

FALLS CREEK ROUTE CORRECTION

Stream: Falls Creek (111-40-10940 information in catalog incorrect listing only DVp).
Watershed: Bear Creek.
MTRS: Township 41S, Range 67E, Section 8, Juneau B-2.
Date Surveyed: June 17, 2010.
Findings: A culvert perched 5.5 feet passing beneath North Douglas highway is a barrier to anadromous fish. Minnow traps set above the culvert and below a large log jam yielded three DV. A trap set above the culvert yielded DV. The anadromous portion of the stream has intermittent spawning gravels, large wood debris, and large boulders with overhanging vegetation. Waypoint 8 indicates the upper limit to anadromy for the species presently listed in the AWC. Waypoint 9 is the mouth of the stream entering saltwater. The following table and map provide sample data and trap locations and features.
Recommendations: Update the stream route in the AWC to reflect the shortened route and culvert barrier. Continue to investigate lower portion of stream for anadromy.

Table 6.–Falls Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
6	58.3228	-134.4825	Set trap 75' above culvert, below 4' falls created by large woody debris.	MT	3 DV
7	58.3234	-134.4818	Inside mouth of 90' culvert with 8% gradient and a 5.5' perch.		
8	58.3232	-134.4819	Base of perched culvert with large boulders beneath, and 2' deep plunge pool.		
9	58.3237	-134.4814	Begin track log in lower extent of stream.		

Figure 14.–Perched culvert on Falls Creek.

Figure 15.–Elevated streambed and log jam on Falls Creek.

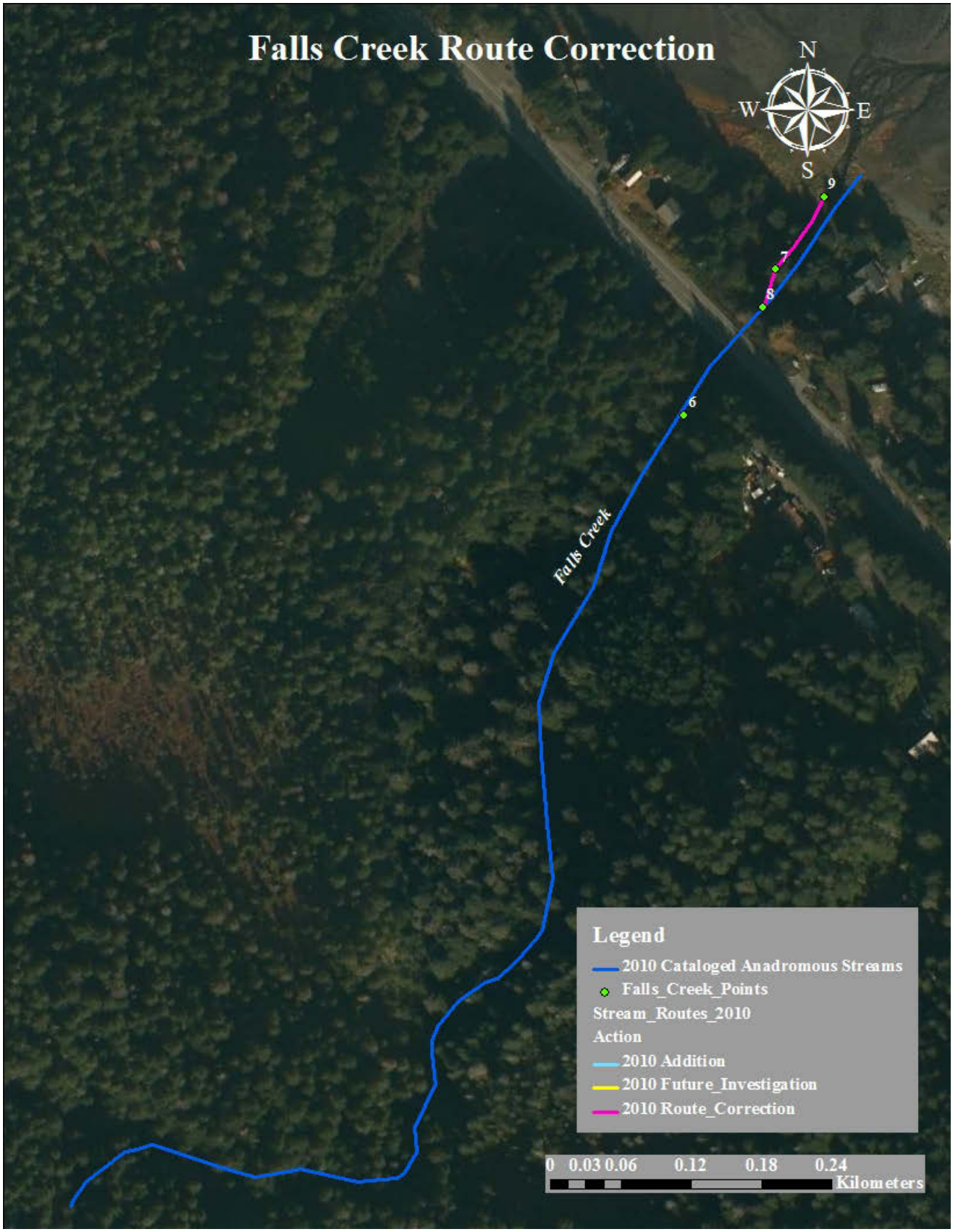

Figure 16.–Falls Creek route correction map.

GRANT CREEK ROUTE CORRECTION

Stream: Grant Creek (111-40-10910 cataloged for COp).
Watershed: Bear Creek.
MTRS: CRM, Township 41S, Range 67E, Section 22, Juneau B-2.
Date Surveyed: June 17, 2010.
Findings: Potential fish habitat terminates at a poorly placed culvert that passes under North Douglas highway. The outlet is perched and the inlet is set two feet below the streambed. The upper portion of the stream maintains a 15% gradient with some areas for rearing, while spawning would most likely take place in the intertidal. Waypoint 1 indicates the mouth of Grant Creek and waypoint 4 indicates the upper limit for species presently listed in the AWC. The following table and map provide sample data and terrain locations and features.
Recommendations: Update the stream route in the AWC. This culvert would be a good one for replacement someday.

Table 7.–Grant Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.3039	-134.4494	Begin trackline at mouth of stream where it empties out into the wetlands.	RS	
2	58.3039	-134.4496	Base of bedrock reach 30-feet long, 15% gradient.	RS	
3	58.3038	-134.4498	End of bedrock stretch, large boulders and cobbles. Good rearing but not spawning habitat.	RS	
4	58.3034	-134.4502	Outlet of culvert that crosses under North Douglas Highway. Stream maintains a 15% gradient from bedrock reach to inlet of culvert.	RS	
5	58.3033	-134.4508	Inlet of culvert. Stream bed is 2 feet higher than culvert inlet. strange placement.	RS	

Figure 17.–Perched culvert outlet.

Figure 18.–Looking upstream toward road crossing on Grant Creek.

Figure 19.–Grant Creek route correction map.

HENDRICKSON CREEK ROUTE CORRECTION

Stream: Hendrickson Creek (111-40-10980 cataloged for COr, Ps, CTr, DVp).
Watershed: Bear Creek.
MTRS: Township 41S, Range 67E, Section 6, Juneau B-2.
Date Surveyed: June 3, 2010.
Findings: The mapped stream route in the AWC is inconsistent with the actual physical stream route. CO and CT are in the creek. The following table and map provide sample data and trap locations and features.
Recommendations: Update the stream route in the AWC. Document the new tributary for anadromous extent.

Table 8.–Hendrickson Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.3403	-134.5235	Begin trackline in tidally influenced flats.		
2	58.3399	-134.5250	Mouth of uncataloged tributary.		
3	58.3370	-134.5248	Set trap in deep pool with gravels and cobbles below. mossy log and large boulder	MT	3 CT, 2 DV
4	58.3351	-134.5241	Electrofished in deep pool below a loggy cascade.	EF	1 CT
5	58.3295	-134.5275	Tributary.		
6	58.3286	-134.5265	Electrofished in pool below bedrock cascade.	EF	1 CT
7	58.3278	-134.5253	Electrofished in shallow riffle above barrier.	EF	1 CT
8	58.3278	-134.5254	Set trap in shallow pool below barrier.	MT	No fish
9	58.3271	-134.5250	Ended survey due to time and stream size decreasing. No fish caught last three attempts.		
10	58.3291	-134.5283	Electrofished small trib; saw unidentified salmonid fry.	EF	salmonid

Figure 20.–CT captured in Hendrickson Creek.

Figure 21.–CT captured in Hendrickson Creek.

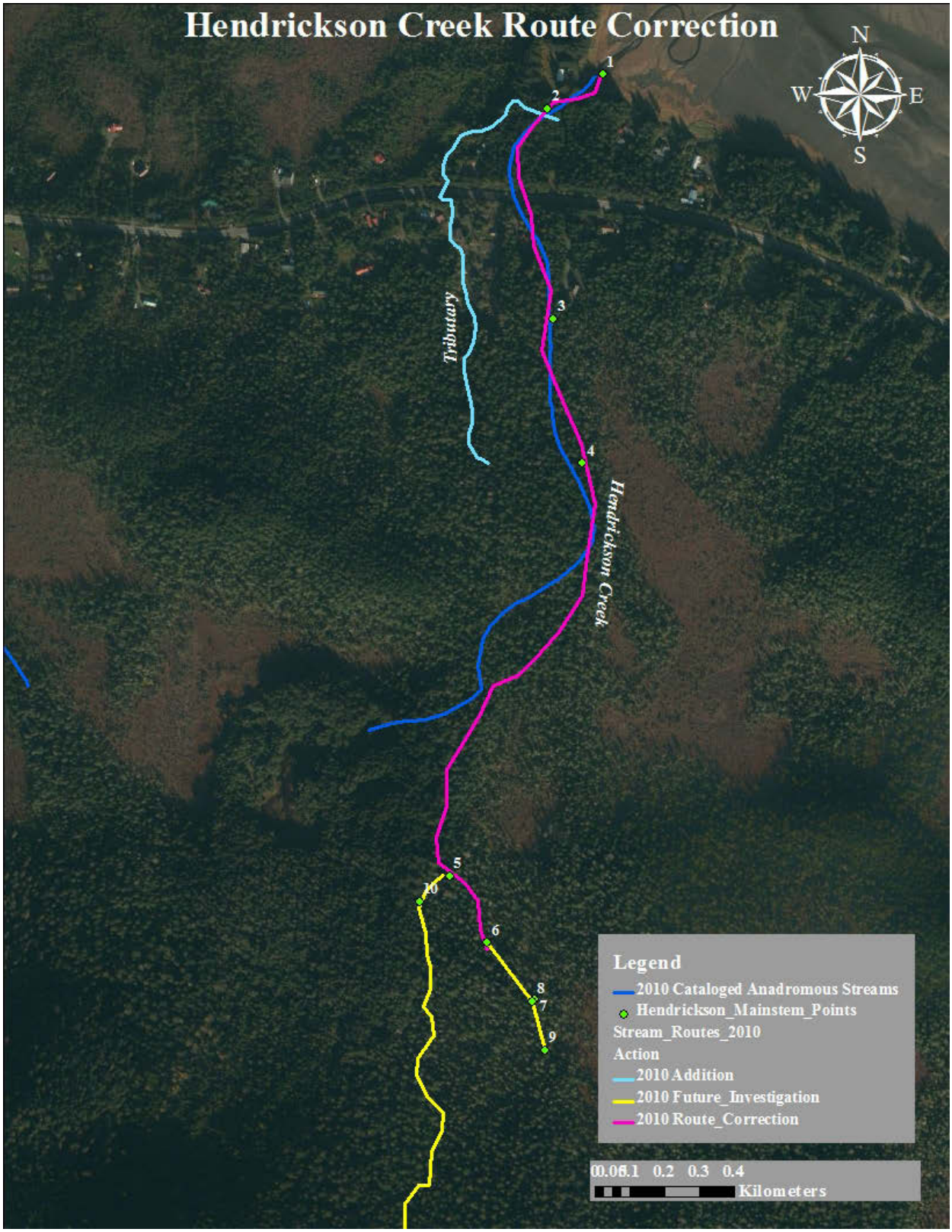

Figure 22.–Hendrickson Creek route correction map.

HENDRICKSON CREEK TRIBUTARY ADDITION

Stream: Hendrickson Creek tributary (111-40-10980-2002 cataloged for COr).
Watershed: Bear Creek.
MTRS: Township 41S, Range 67E, Section 6, Juneau B-2.
Date Surveyed: May 28, 2010.
Findings: Minnow traps were set along the anadromous length of the uncataloged tributary, which yielded 19 coho smolts, 26 DV, and 1 sculpin. The stream was walked to the end of anadromous habitat which terminates at a gradient of 20% and subsurface trickle from a forested wetland. The stream's substrate consists of fines, organics, and gravels, punctuated with small cascades created by woody debris. The upper reach flows through a steep forested muskeg and further exploration was limited due to extremely low water flow. The following table and map provide sample data and trap locations and features.
Recommendations: Add the Hendrickson Creek tributary to the AWC.

Table 9.–Hendrickson Creek tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
4	58.3372	-134.5270	Set trap in deep pool below 1' cascade, below french drain	MT	9 DV
5	58.3370	-134.5269	Took point in middle of road; owner created a rough french drain that water is trickling out of. approximately 14 feet across.		
6	58.3369	-134.5268	Stream seeps into gravels. Very low flows (May 28, 2010).		
7	58.3351	-134.5266	End of potential anadromy. Stream just a seep and flows subsurface and gradient steepens to 20%.		
8	58.3388	-134.5276	Set trap in scour pool below culvert on North Douglas Highway.	MT	6 CO, 3 DV
9	58.3386	-134.5278	Set trap above North Douglas culvert in shallow pool w/ fines, cobbles	MT	4 CO, 3 DV
10	58.3384	-134.5274	Set trap in deep pool below 1' cascade, below french drain.	MT	9 CO, 12 DV, 1 SC
11	58.3370	-134.5269	Set trap above french drain in small pool w/ fines, gravels.	MT	5 DV

Figure 23.–CO captured in Hendrickson Creek tributary.

Figure 24.–CO and DV captured in Hendrickson Creek tributary.

Figure 25.–CO captured in Hendrickson Creek tributary.

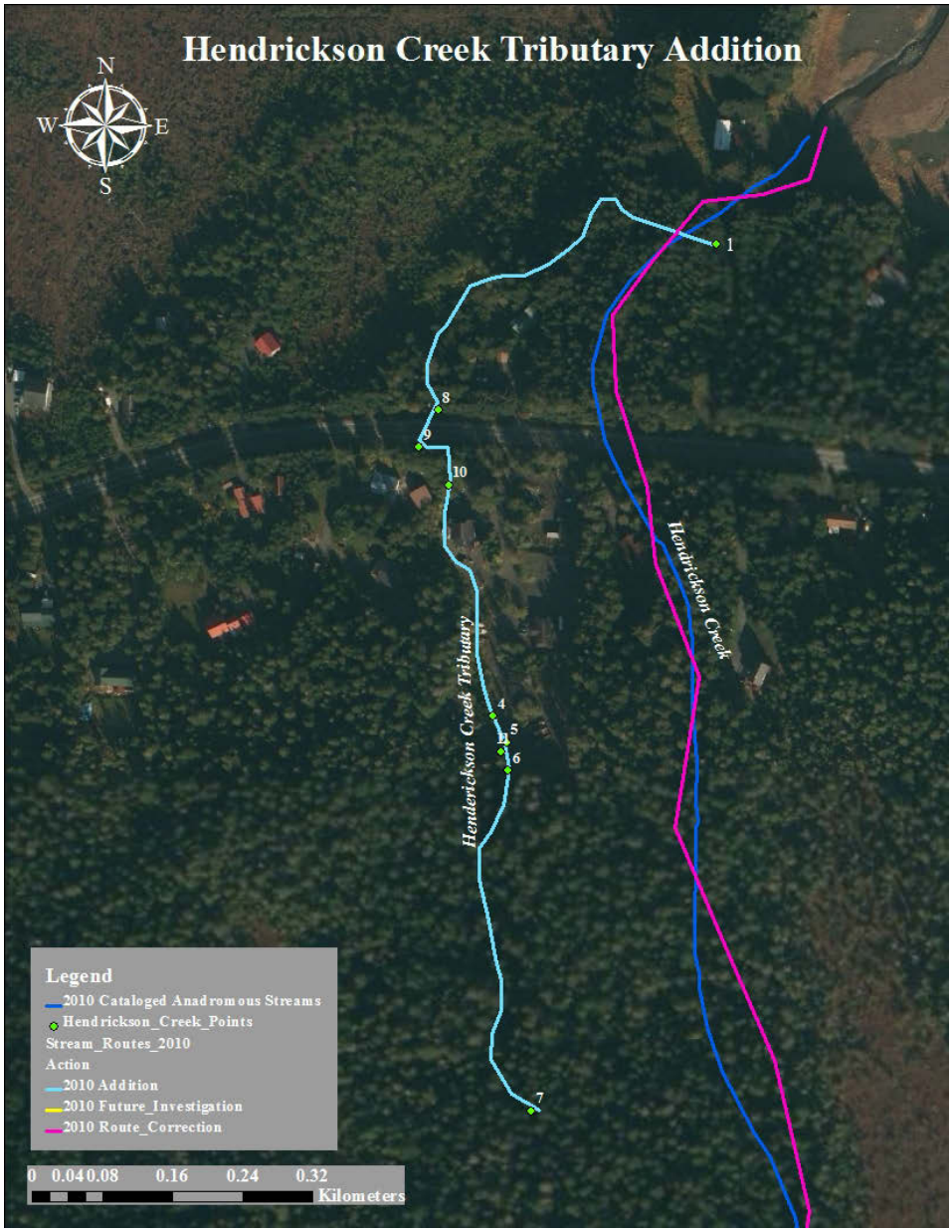

Figure 26.–Hendrickson Creek tributary addition map.

LAKE CREEK ROUTE CORRECTION

Stream: Lake Creek (111-50-10420-2010 cataloged for COpr, Ps).
Watershed: Auke Creek.
MTRS: Township 40S, Range 65E, Section 23, Southeast B-2.
Date Surveyed: July 27, 2010.
Findings: The mapped upper extent of this stream is inaccurate and the stream was extended. We captured juvenile CO and CT. The following table and map provide sample data and other features.

Recommendations: Update the current upper extent of Lake Creek.

Table 10.–Lake Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.3908	-134.6330	Begin track on gravel spit in Auke Lake.		
2	58.4000	-134.6340	Saw CO; will try to trap with minnow traps.		
3	58.4005	-134.6340	Tributary ends in organic seepy mud.		
4	58.4038	-134.6380	Little barrier on river right. Channel steepens; set trap in deep pool below series of cascades.		
5	58.4018	-134.6360	Trapped 2 CO, 2 CT, and a bunch of DV.	MT	2 CO, 2 CT, DV
6	58.4037	-134.6379	Trapped over a dozen CO smolts and juvenile salmon in organic pool w/ good overhanging vegetation.	MT	> 12 CO
7	58.3999	-134.6340	Coho in tributary trapped in large woody debris, overhanging vegetation, organics.	MT	CO
8	58.4000	-134.6340	Trapped 5 CO smolts in tributary.	MT	5 CO
9	58.3956	-134.6330	Trapped 8 CO smolts, 2 CT, and a couple of DV.	MT	8 CO, 2 CT, 2 DV

Figure 27.–CO in Lake Creek.

Figure 28.–CT and CO in Lake Creek.

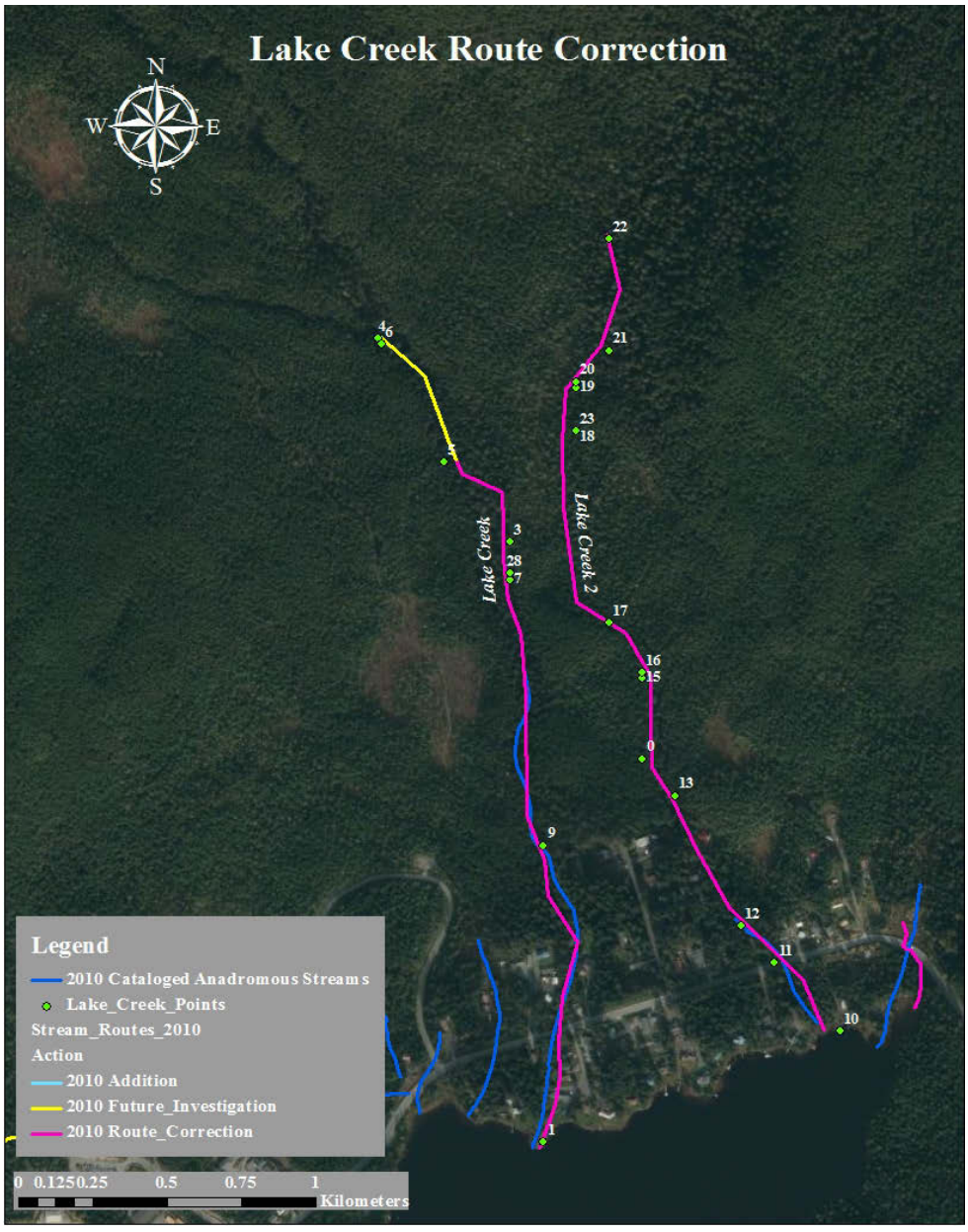

Figure 29.–Lake Creek route correction map.

LAKE CREEK 2 ROUTE CORRECTION

Stream: Lake Creek 2 (111-50-10420-2008 cataloged for CHs,COsr,Ps,Ss,CTs).
Watershed: Auke Creek.
MTRS: Township 40S, Range 65E, Section 23, Juneau B-2.
Date Surveyed: July 28, 2010.
Findings: The mapped upper extent of the stream is inaccurate and was extended. The upper extent of this stream extends beyond what is currently cataloged. The following table and map provide sample data and other features.
Recommendations: Update the stream route and upper extent in the AWC. We captured CT and CO in the creek.

Table 11.–Lake Creek 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
10	58.3926	-134.6240	Mouth of Lake Creek 2.		
11	58.3937	-134.6260	Double culvert with one higher, 6' embedded.		
12	58.3943	-134.6270	River right bank is propped up by boards in an attempt to stabilize and keep land. Pinching stream. Below ordinary high water.		
13	58.3964	-134.6290	MT caught 1 CT, 12 DV, 13 CO (50-110 mm). Huge DV.	MT	1 CT, 12 DV, 13 CO
14	58.3970	-134.6300	MT caught 3 CT, 10 DV, 6 CO.	MT	3 CT, 10 DV, 6 CO
15	58.3983	-134.6300	Lake Creek 2 tributary on river left. Very small and shallow.		
16	58.3984	-134.6300	MT 3		
17	58.3992	-134.6310	Pulled at 1530. 3 CT, 16 DV, 4 CO (70-120 mm).	MT	3 CT, 16 DV, 4 CO
18	58.4023	-134.6320	MT 5		
19	58.4030	-134.6320	Lake Creek 2 tributary on river right. Small and shallow.		
20	58.4031	-134.6320	MT caught 11 CT, 2 DV, 7 CO (80-120 mm).	MT	11 CT, 2 DV, 7 CO
21	58.4036	-134.6310	No end of anadromy yet. 1 CO caught w/net.	HN	1 CO
22	58.4054	-134.6310	Hasn't been a barrier yet but extremely brushy and difficult to walk channel .		
23	58.4023	-134.6320	MT caught 7 CT, 8 DV, 8 CO (60-100 mm).	MT	7 CT, 8 DV, 8 CO

Figure 30.–CO and CT in Lake Creek 2.

Figure 31.–CO caught in Lake Creek 2.

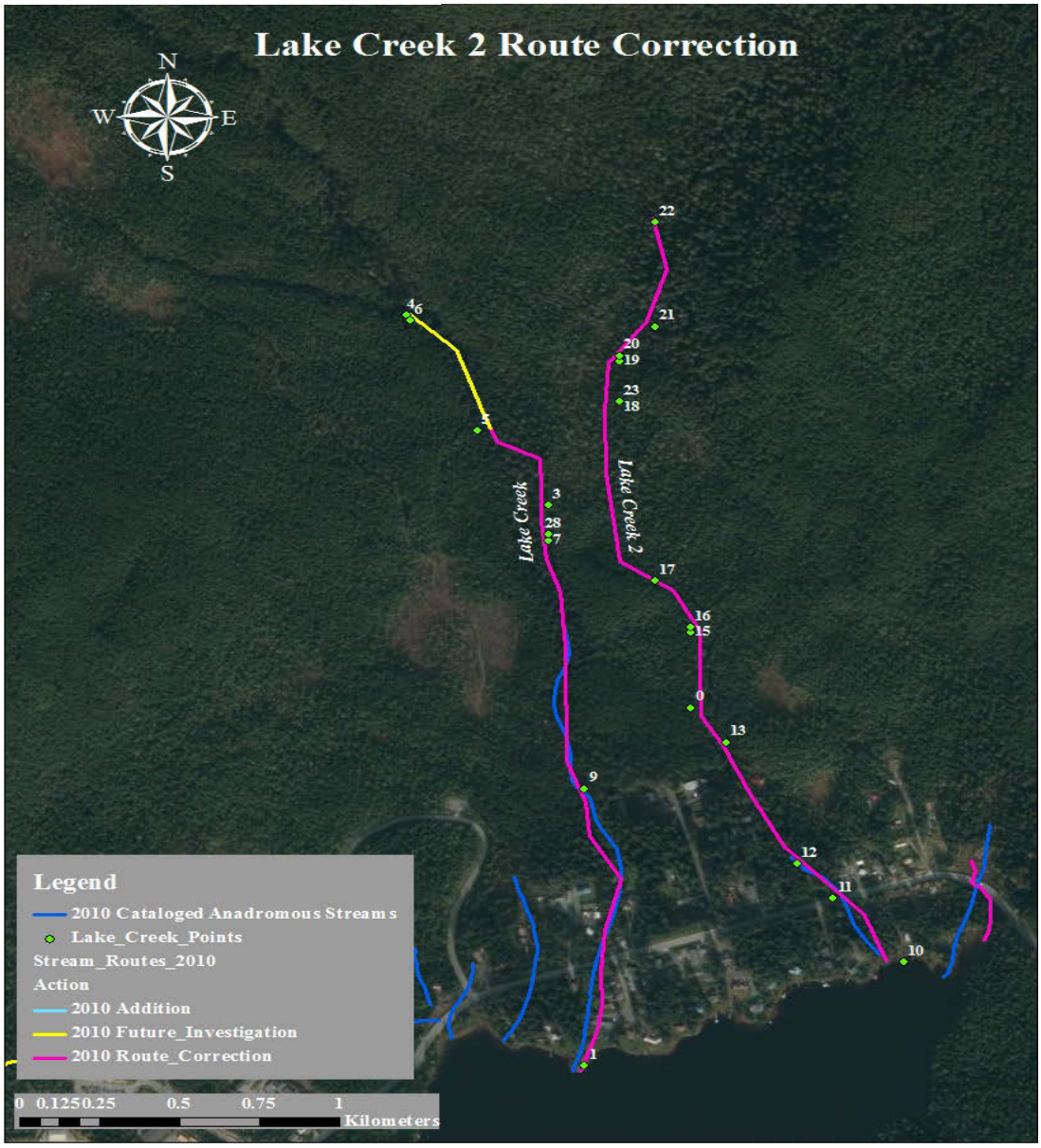

Figure 32.–Lake Creek 2 route correction map.

LENA CREEK ROUTE CORRECTION

Stream: Lena Creek (111-50-10300 cataloged for CHp,COr,Pp,DVp).
Watershed: Admiralty Island-Frontal Lynn Canal.
MTRS: Township 40S, Range 65E, Section 18, Juneau B-3.
Date Surveyed: June 30, 2010.
Findings: A waterfall barrier exists on Lena Creek and terminates anadromous fish habitat at a shorter distance from the mouth than is currently mapped in the AWC. The waterfall barrier measures a gradient of 45 to 50% over approximately 140 feet and is just upstream of Glacier Highway. The following table and map provides route correction data.
Recommendations: Update this stream in the AWC by shortening the cataloged length to stop at the waterfall.

Table 12.–Lena Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
7	58.3955	-134.7485	Begin track log in tidal zone.	RS	
8	58.3959	-134.7458	End of track and anadromy. Huge bedrock waterfall. 45-50 % gradient. Approximately 140' long.	RS	

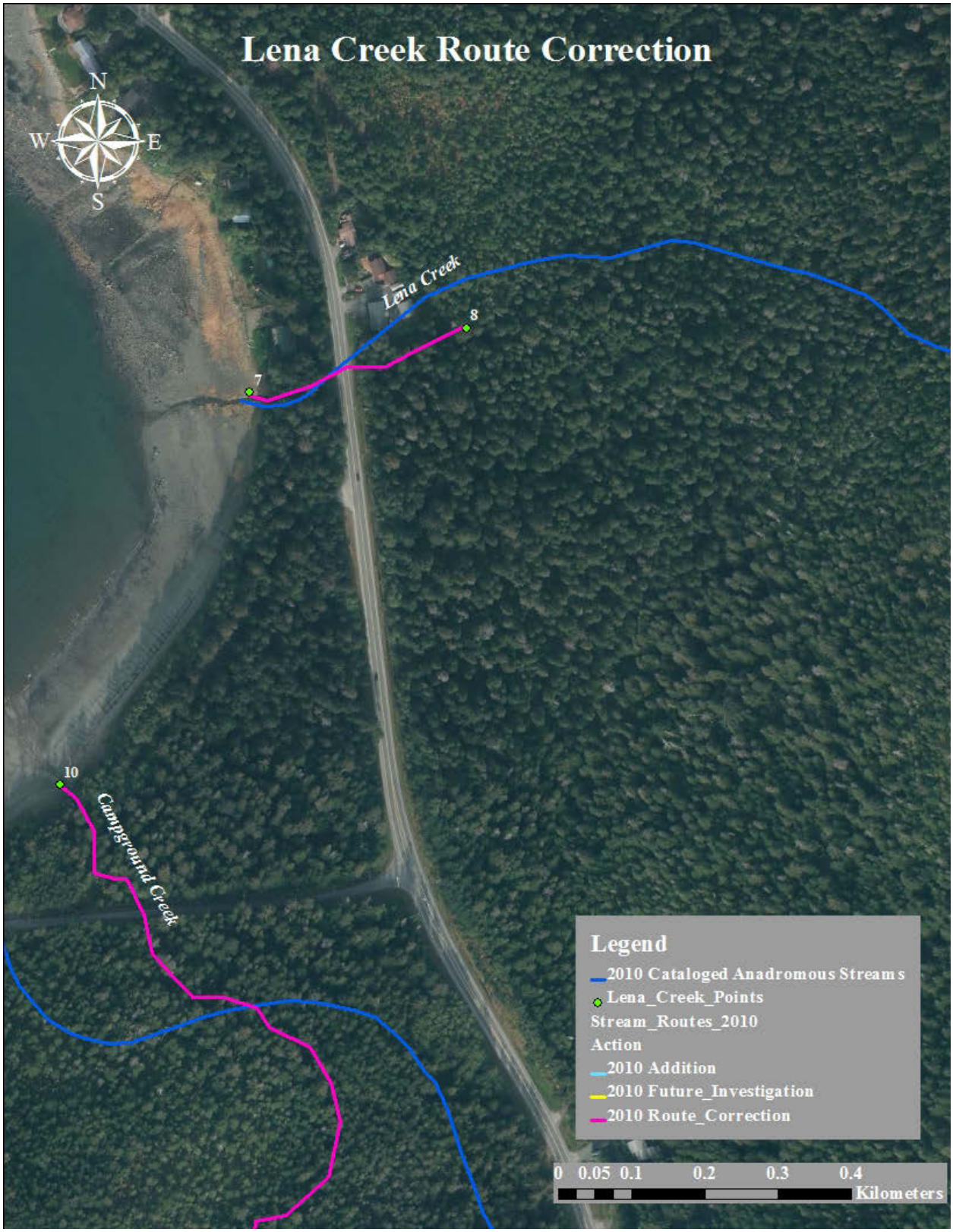

Figure 33.–Lena Creek route correction map.

LITTLE MCGINNIS CREEK ROUTE CORRECTION

Stream: Little McGinnis Creek (111-50-10500-2003-3054 cataloged for CHs,COs).
Watershed: Mendenhall River-Frontal Gastineau Channel.
MTRS: Township 39S, Range 65E, Section 35, Juneau B-2.
Date Surveyed: July 19, 2010.
Findings: This stream is a tributary to McGinnis Creek and is impacted by ATV use. There were several crossings and tracks that had filled with water and in one instance we observed fish in these tracked areas. The following table and map provide additional data and features. This stream extends past the cataloged upper limit.
Recommendations: Update the stream in the AWC.

Table 13.–Little McGinnis Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.4361	-134.6420	Test		
2	58.4427	-134.6370	Tributary on road left.		
3	58.4465	-134.6340	Tributary on road left.		
4	58.4464	-134.6340	CO	HN	CO
5	58.4468	-134.6340	Handnet 2 CO.	HN	CO
6	58.4477	-134.6340	ATV disturbance. Saw fish unidentified.	VI	
7	58.4485	-134.6330	Tributary on road left.		
8	58.4487	-134.6330	End of stream		
9	58.4478	-134.6330	Handnet CO.	HN	CO
10	58.4479	-134.6330	Handnet CO and CT.	HN	CO, CT
11	58.4481	-134.6330	End of tributary.		
12	58.4428	-134.6390	Unidentified fish observed.	VI	
13	58.4414	-134.6400	Dewatered channel.		

Figure 34.–ATV trails through Little McGinnis Creek tributary.

Figure 35.–CO in Little McGinnis Creek tributary.

Figure 36.–Bank and riparian disturbance on Little McGinnis Creek tributary.

Figure 37.–CT in Little McGinnis Creek tributary.

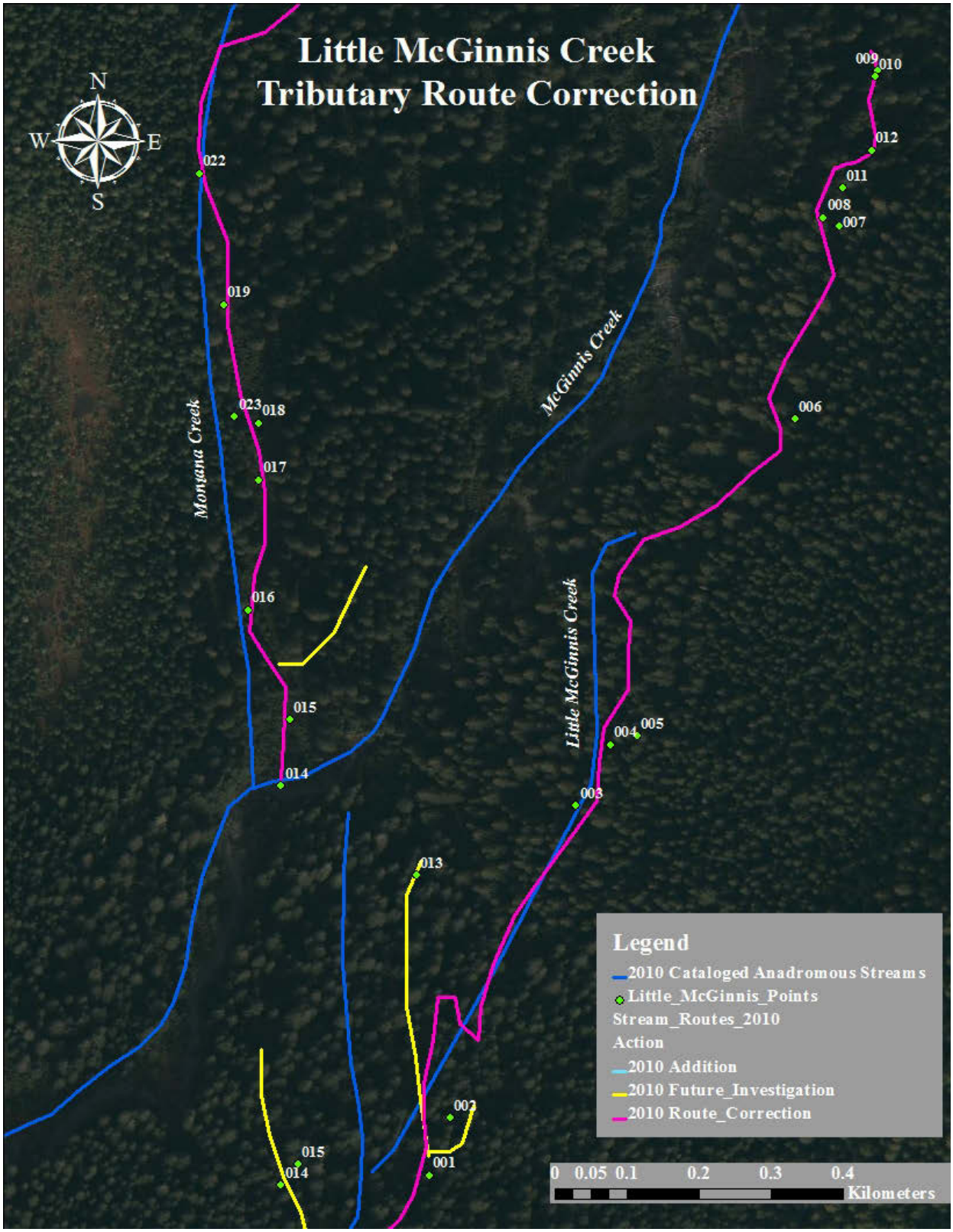

Figure 38.–Little McGinnis Creek tributary route correction map.

SALMON CREEK ROUTE CORRECTION

Stream: Salmon Creek (111-40-10150 cataloged for CHs,COs,Pp,DVr).
Watershed: Salmon Creek.
MTRS: Township 41S, Range 67E, Section 9, Juneau B-2.
Date Surveyed: June 8, 2010.
Findings: The anadromous reach of this stream terminates at a falls measuring 23% gradient over 30 feet. Another falls is upstream and is 15 feet tall with a gradient of 30%. The falls were measured using a clinometers and rangefinder to determine fall height. The following table and map provide additional data.

Recommendations: Update the stream route in the AWC, ending anadromy at the lower falls.

Table 14.–Salmon Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.3305	-134.4736	Lower extent of anadromy.		
2	58.3324	-134.4659	Upper extent of anadromy.		
3	58.3329	-134.4652	Set trap above barrier falls.	MT	No fish
4	58.3327	-134.4643	Set trap above barrier falls.	MT	No fish

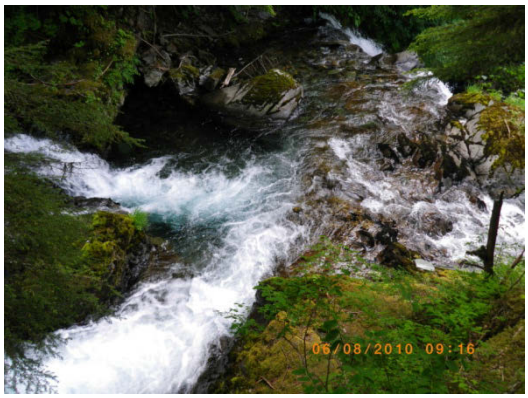

Figure 39.–Looking down from barrier falls on Salmon Creek.

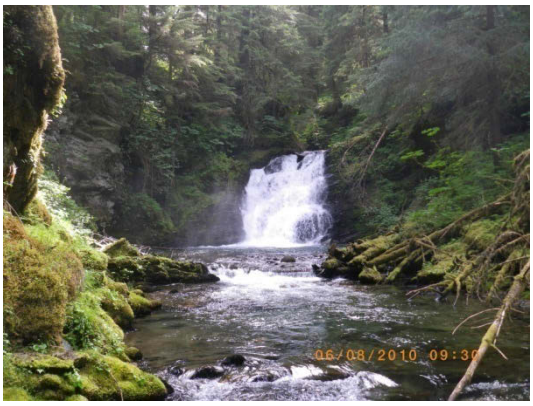

Figure 40.–Second set of falls on Salmon Creek.

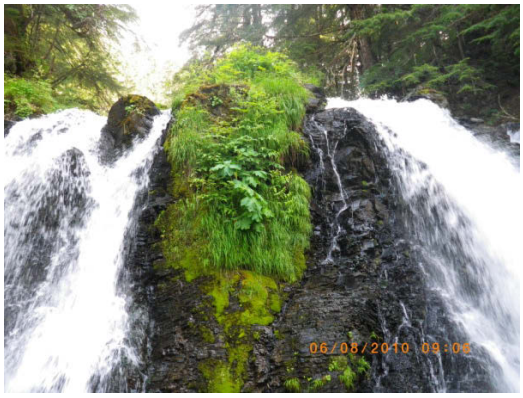

Figure 41.–Looking up at barrier falls on Salmon Creek.

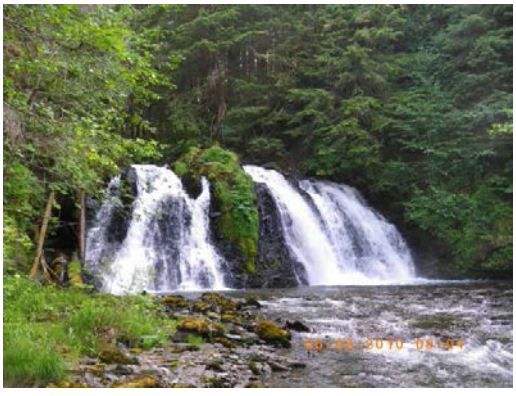
Figure 42.–Barrier falls on Salmon Creek.

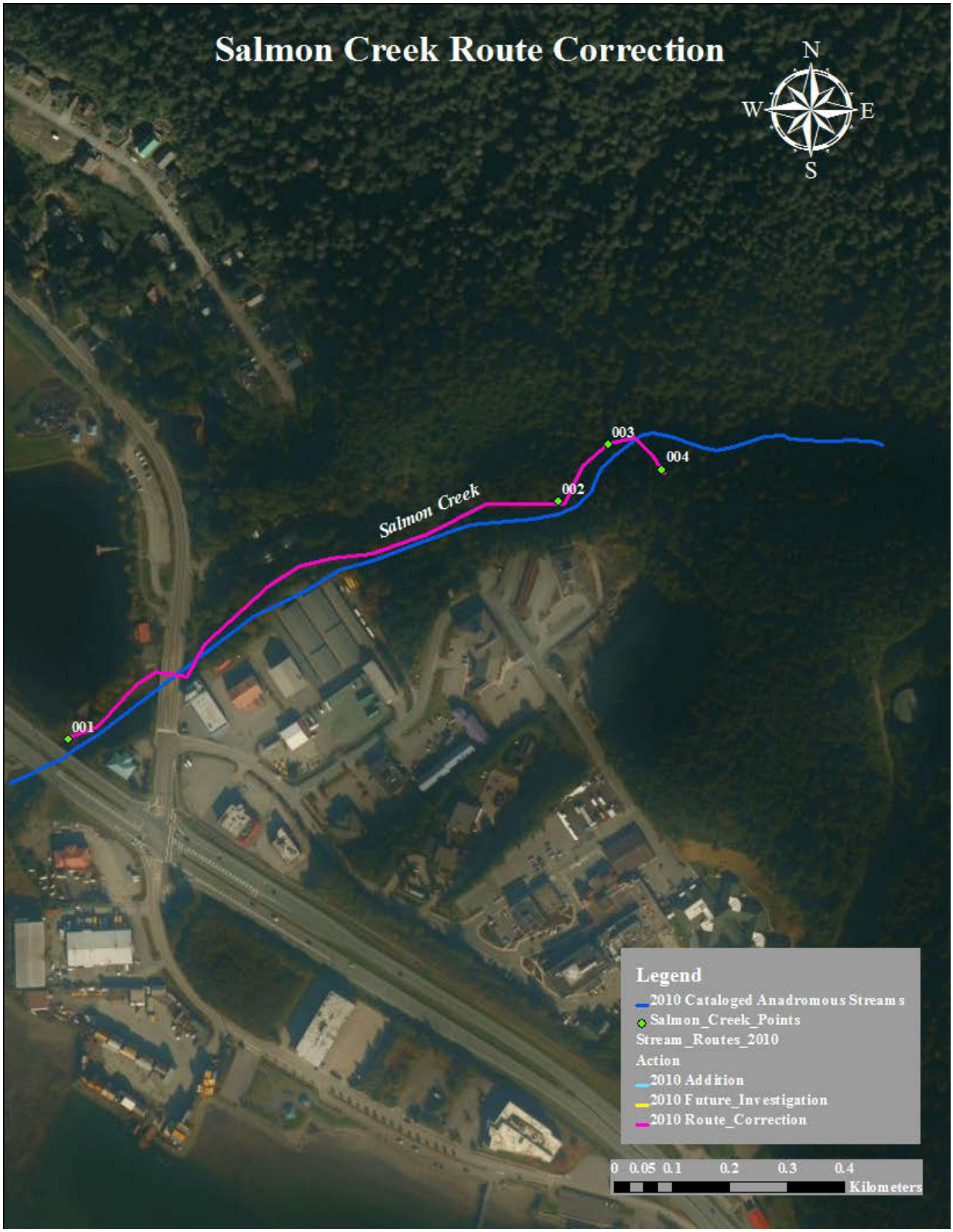

Figure 43.–Salmon Creek route correction map.

SHEEP CREEK ROUTE CORRECTION

Stream: Sheep Creek (111-40-10280 cataloged for CHp, Pp).
Watershed: Sheep Creek.
MTRS: CRM, Township 41S, Range 68E, Section 32, Juneau B-1.
Date Surveyed: June 9, 2010.
Findings: The actual upper extent of the stream terminates at a falls of 124.5' with a gradient of 30%. Minnow traps were set above the falls and allowed to soak for 2 hours. The traps yielded no fish. The following table and map provide additional data.
Recommendations: Update the stream route and upper extent in the AWC.

Table 15.–Sheep Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.2602	-134.3256	Lower extent		
2	58.2610	-134.3247	Lower extent	MT	No fish
3	58.2611	-134.3238	Above long series of falls and a concrete dam associated with the fish hatchery below.	MT	No fish
4	58.2612	-134.3217	Below a falls.	MT	No fish
5	58.2608	-134.3245	Below impassable falls.		

Figure 44.–Looking downstream into the Gastineau Channel from Sheep Creek.

Figure 45.–Looking down at the dam above the Barrier Falls on Sheep Creek.

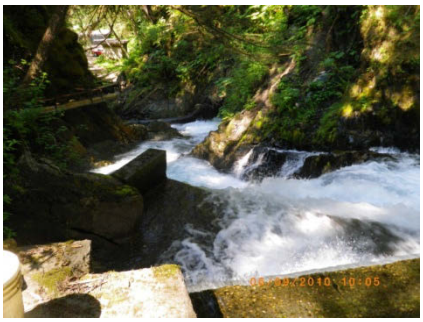

Figure 46.–Looking down at the Barrier Falls on Sheep Creek.

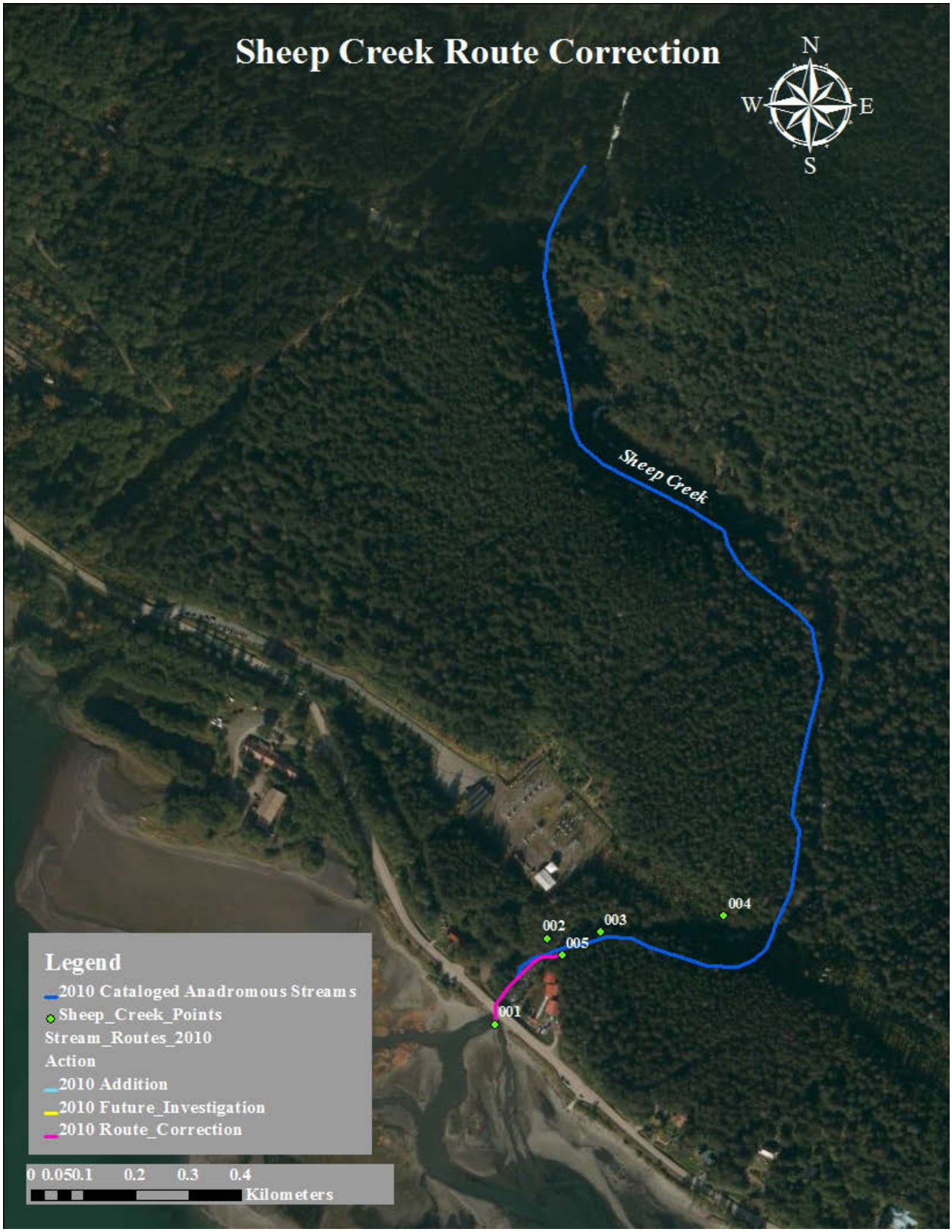

Figure 47.–Sheep Creek route correction map.

SHRINE CREEK ROUTE CORRECTION

Stream: Shrine Creek (111-50-10140 cataloged for COr,Ps,CTp,DVp).
Watershed: Dobson Landing.
MTRS: Township 39S, Range 64E, Section 25, Juneau B-3.
Date Surveyed: April 8, 2010.
Findings: The upper extent of anadromy extends past the cataloged upper limit. We captured juvenile CO and P and found an old car. The stream does not pass under the Glacier Highway at the location in the catalog. It passes through a culvert under the highway farther up the road. The following table and map provide additional data on the route correction.
Recommendations: Update the stream route and upper extent in the AWC.

Table 16.–Shrine Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
13	58.4553	-134.7727		EF	CO
14	58.4556	-134.7723	Parr.	EF	CO
15	58.4525	-134.7709	Smolt.	EF	CO
16	58.4515	-134.7697		EF	CO
17	58.4496	-134.7695		EF	CO

Figure 48.–CO captured in Shrine Creek.

Figure 49.–Old car dumped in Shrine Creek.

Figure 50.–Pink salmon emerging from dewatered gravel in Shrine Creek.

Figure 51.–CO captured in Shrine Creek.

Figure 52.–CO captured in Shrine Creek.

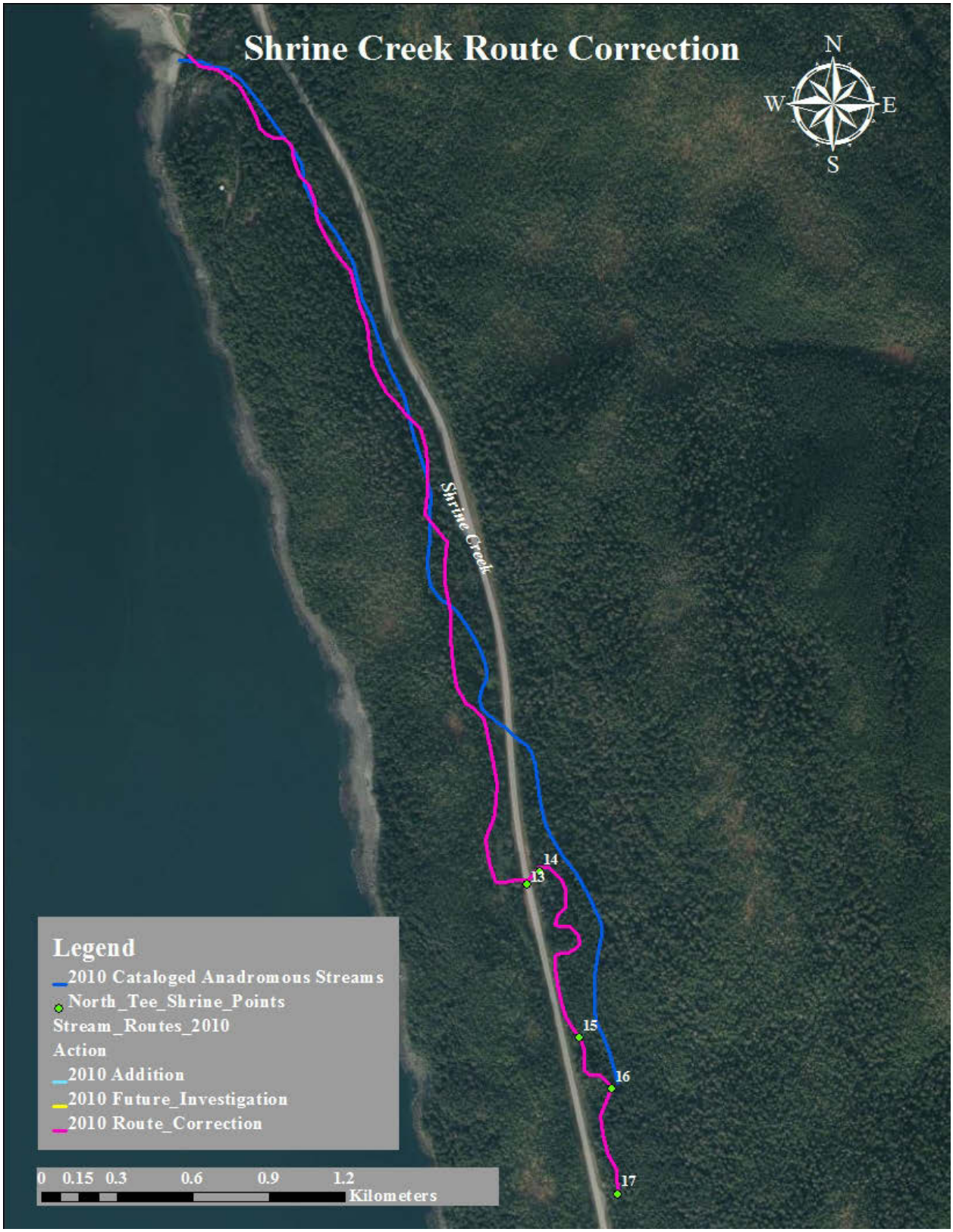

Figure 53.–Shrine Creek route correction map.

SNOWSLIDE CREEK ADDITION

Stream: Snowslide Creek (111-40-10240 cataloged for COr).
Watershed: Sheep Creek.
MTRS: Township 41S, Range 68E, Section 32, Juneau B-1.
Date Surveyed: September 9, 2010.
Findings: This stream was trapped and tracked and is anadromous up to a steepened gradient in an avalanche run-out zone. This stream is interesting in that it is in an avalanche run-out zone yet smolting CO were trapped. This stream is impacted by brushing activities of road maintenance crews. The following table and map provide additional data on the creek addition.
Recommendations: Add this stream to the AWC and monitor for riparian regrowth and bank stabilization. Install a fish pipe.

Table 17.–Snowslide Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.2825	-134.3746	Mouth of Snowslide Creek.		
2	58.2828	-134.3746	Culvert under Thane road, perched 1.5' at low tide, 1' to 10' at high tide. Passable. Set baited minnow trap at outlet.	MT	45-50 smolting CO, 4 CO (85-100mm)
3	58.2830	-134.3746	Inlet of culvert, set baited minnow trap.	MT	3 CO (85-120 mm)
4	58.2832	-134.3744	Sediment catchment pool.		
5	58.2832	-134.3740	End of anadromous reach. Steep rocky cascade. Set baited minnow trap.	MT	1 CO (140 mm)

Figure 54.–Steepened gradient in an avalanche runout zone.

Figure 55.–CO captured below steep rocky cascade at waypoint 5 on Snowslide Creek.

Figure 56.–Sediment from in-stream work on substrate in Snowslide Creek.

Figure 57.–CO captured below culvert on Thane road.

Figure 58.–CO captured at outlet of culvert on Thane road.

Figure 59.–Footprint in sediment covering substrate in Snowslide Creek.

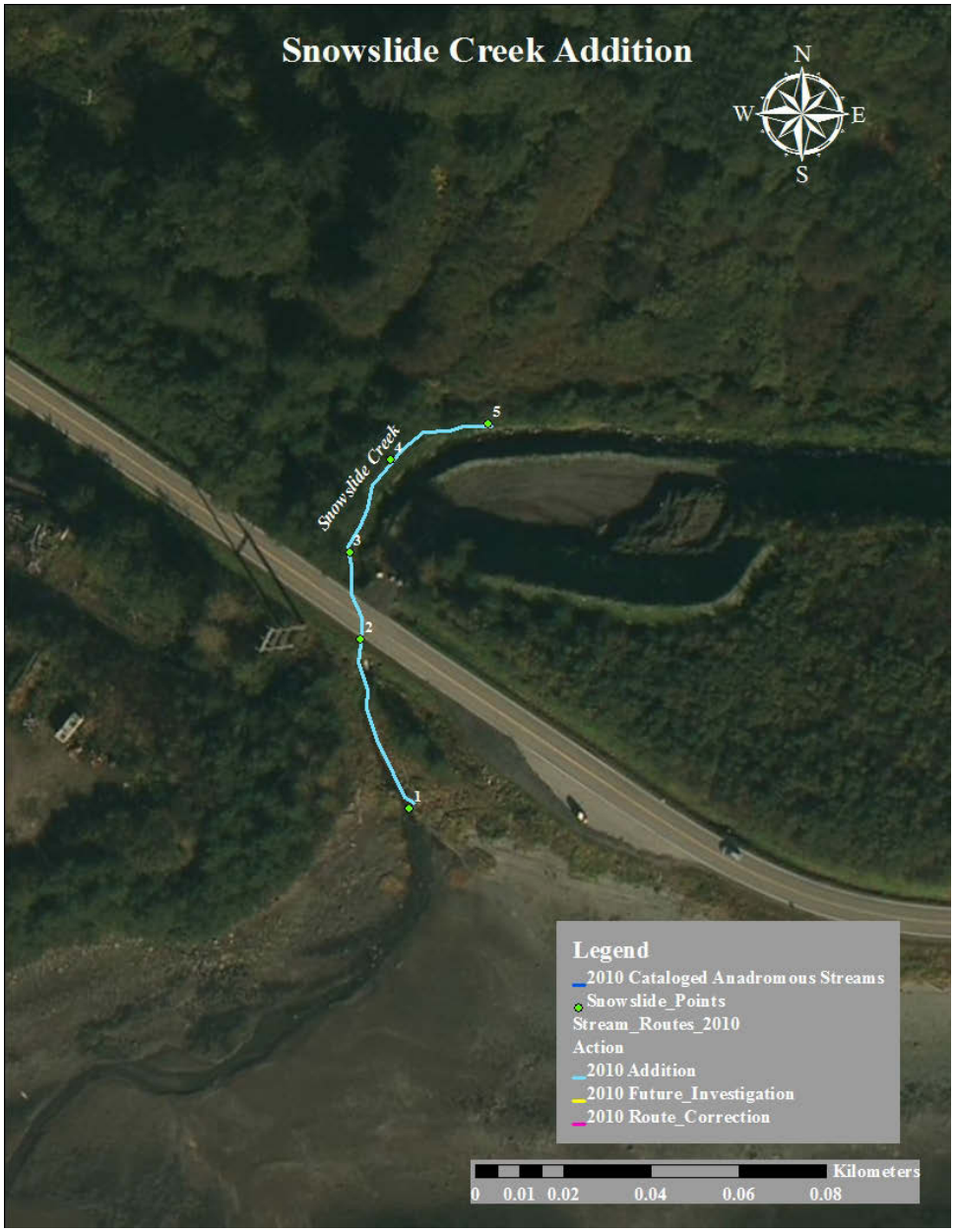

Figure 60.–Snowslide Creek addition map.

VANDERBILT CREEK ROUTE CORRECTION

Stream: Vanderbilt Creek (111-40-10125 cataloged for CHs,COsr,Ps,DVr).
Watershed: Canyon Creek.
MTRS: CRM, Township 41, Range 67E, Section 5, Juneau B-2.
Date Surveyed: June 10, 2010.
Findings: The tracked route follows a much more sinuous path than the AWC illustrates. The coordinates provided in the table indicate the upper and lower extents of Vanderbilt Creek for species listed in the AWC. We found a spawned out CH on the stream bank. This stream has been adversely impacted by human activity. There were tent camps along the bank as well as a tremendous amount of human excrement, trash, and yard debris. This stream would greatly benefit from a clean-up effort and rehabilitation. The following table and map provide additional data on the creek correction.
Recommendations: Update the stream's meandering route in the AWC and continue investigation.

Table 18.–Vanderbilt Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.3512	-134.4915	Begin track log below culvert on road	RS	
12	58.3560	-134.4810	Shallow braided channels. Forested wetlands. Needs more investigation.	RS	

Figure 61.–Spawned out chum salmon on stream bank in Vanderbilt Creek.

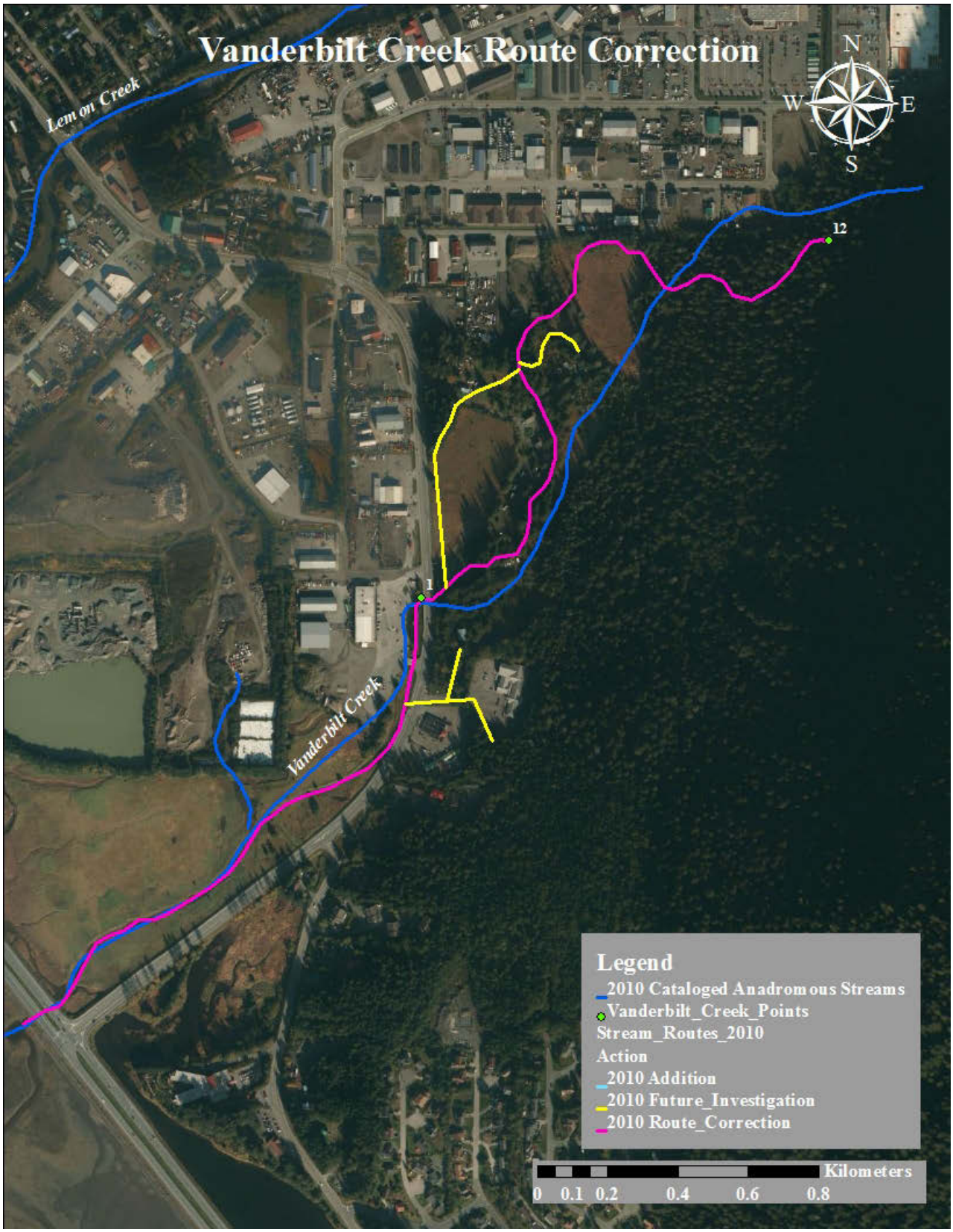

Figure 62.–Vanderbilt Creek route correction map.

WESLEY CREEK ADDITION

Stream: Wesley Creek (111-50-10500-2025 cataloged for COr,Ss).
Watershed: Arastra Creek.
MTRS: CRM, Township 40S, Range 66E, Section 7, Juneau B-2.
Date Surveyed: June, 2010.
Findings: This stream supports rearing CO and spawning sockeye salmon, which were visually identified later in the fall. The stream flows under a bridge on the West Glacier Trail and the mouth enters Mendenhall Lake's western shore. Minnow traps were set and soaked for 1–3 hours. Net sampling with a small aquarium net was very effective and yielded most of the CO caught. This stream is extremely productive and has excellent spawning habitat in the lower reaches and good rearing throughout. The substrate consists of gravels, cobbles, and some larger boulders in the upper reach. Spawning sockeye salmon were observed in the lower reaches in August.
Recommendations: Add this stream to the AWC.

Table 19.–Wesley Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.4190	-134.5890	On bridge along West Glacier Trail.		
2	58.4192	-134.5890	Set trap on left bank under leaning alder.	MT	
3	58.4192	-134.5890	Set trap in small pool below large woody debris cascade.	MT	CO
4	58.4203	-134.5900	Set trap in calm pool next to mossy rock. Gravels, fines.	MT	CO
5	58.4208	-134.5910	Possible tributary or side channel		
6	58.4209	-134.5910	Braided channel.		
7	58.4210	-134.5910	Netted tens of CO fry; saw hundreds .	HN	CO
8	58.4221	-134.5910	Netted 1 CO under bank.	HN	1 CO
9	58.4223	-134.5910	Netted 3 CO under bank.	HN	3 CO
10	58.4235	-134.5910	Observed approximately 9 CO.	VI	9 CO
11	58.4237	-134.5910	Confluence of tributary and mainstem.		
12	58.4239	-134.5910	Netted 2 CO in possible tributary.	HN	2 CO
13	58.4241	-134.5910	Netted CO in tributary.		1 CO
14	58.4242	-134.5910	Tributary parallels mainstem .		
15	58.4245	-134.5920	Netted 12-15 CO fry.	HN	12-15 CO
16	58.4245	-134.5920	Side channel.		
17	58.4248	-134.5940	Stream gradient steepens and begins a continuous climb. Netted 2 CO. Still need future investigation.	HN	2 CO

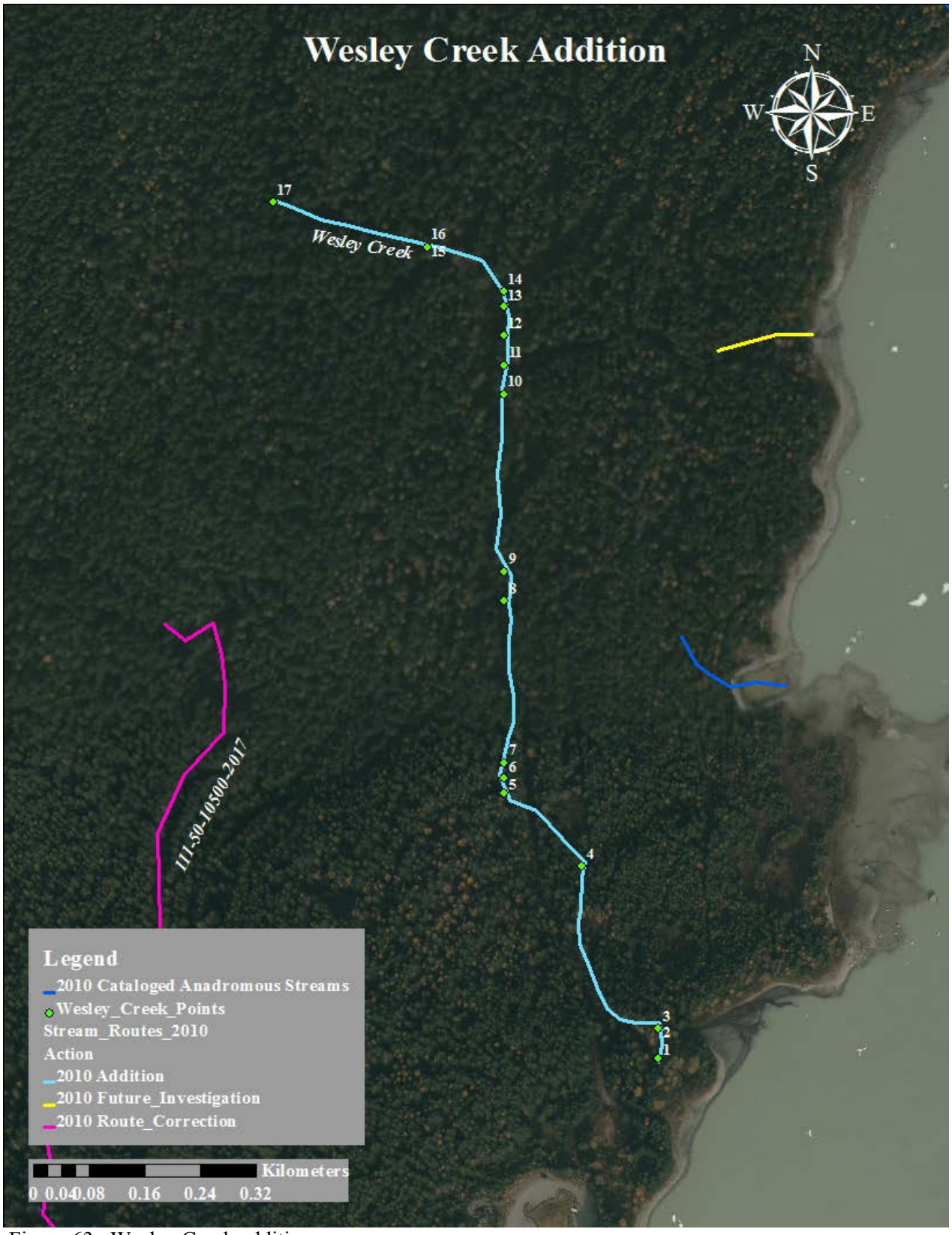

Figure 63.–Wesley Creek addition map.

WEST MENDENHALL CREEK ADDITION

Stream: West Mendenhall Stream (111-50-10500-2017 cataloged for COr).
Watershed: Arastra Creek.
MTRS: Township 40S, Range 66E, Section 7, Juneau B-2
Date Sampled: July, 2010.
Findings: This stream's anadromous reach extends past the existing cataloged extent. Juvenile CO were captured throughout with a hand net. This stream flows through a culvert under the road to the West Glacier trailhead. The mouth of the stream enters Mendenhall Lake. The following table and map provide additional data on the creek addition.
Recommendations: Update the stream's route in the AWC to reflect the true extent.

Table 20.–West Mendenhall Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.4174	-134.5952	Bridge on Tolch Rock Trail.	HN	CO
2	58.4174	-134.5958	Gravel, lots of overhanging alder.		
3	58.4176	-134.5964	Gravel.		
4	58.4179	-134.5970	Thick vegetation, alder, and skunk cabbage.		
5	58.4183	-134.5969	Saw lots of CO.	VI	CO
6	58.4191	-134.5960	Becomes braided.		
7	58.4194	-134.5957	Captured CO.	HN	CO
8	58.4209	-134.5952			
9	58.4212	-134.5946	Gradient steepens slightly.		
10	58.4215	-134.5946			
11	58.4218	-134.5951	Stream creates a vegetated backwater.		
12	58.4219	-134.5954	Upper extent. Gradient steepens and stream reduces to a mossy seep.	HN	CO

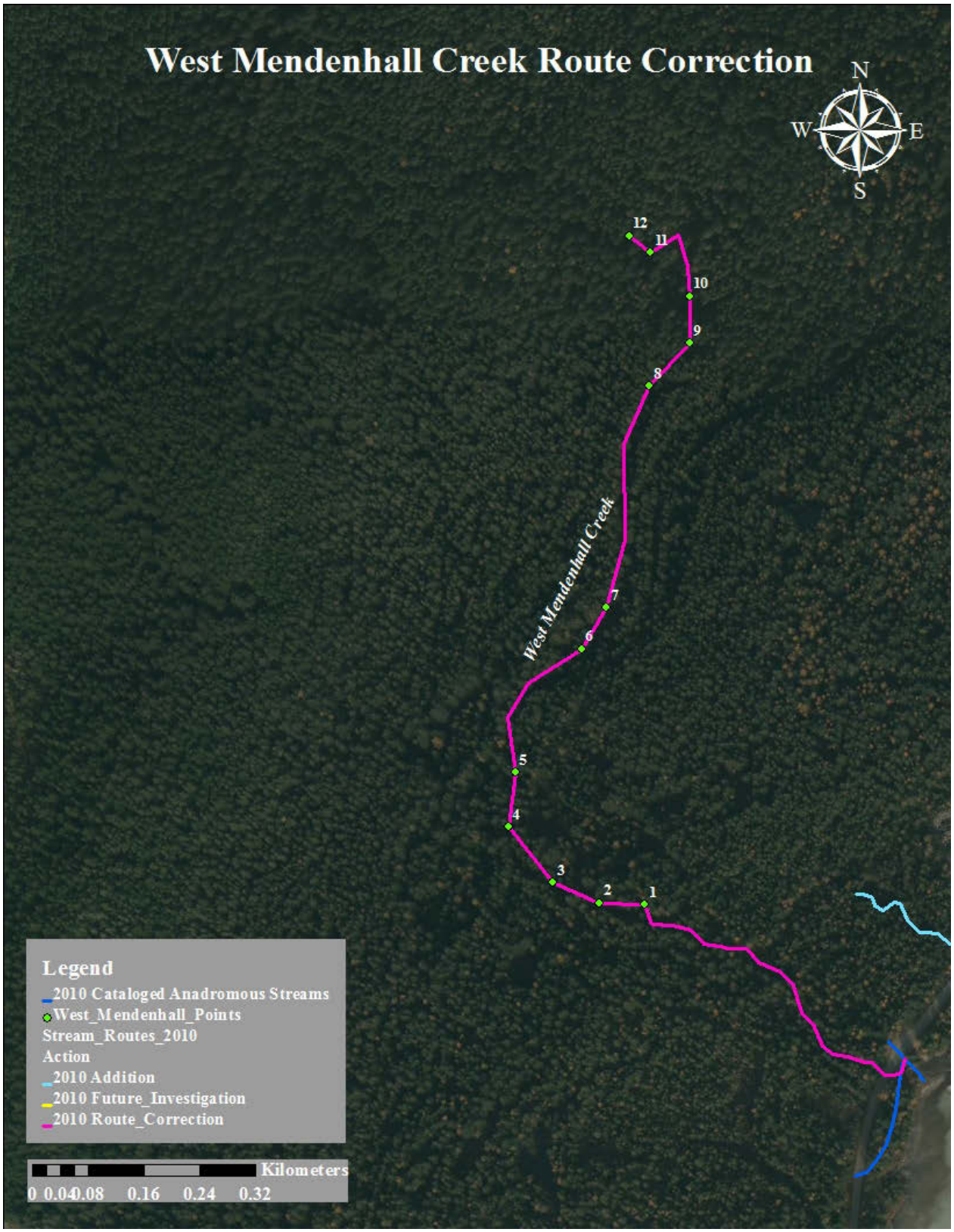

Figure 64.–West Mendenhall Creek route correction map.

WINDFALL CREEK TRIBUTARY 1 ADDITION

Stream: Windfall Creek Tributary 1 (111-50-10070-2004-3006-4001 cataloged for CHp,COp,Pp,Sp,CTp,DVpSHp).
Watershed: Boulder Creek.
MTRS: Township 39S, Range 65E, Section 7, Juneau C-3.
Date Surveyed: August 4, 2010.
Findings: This tributary flows into Windfall Creek and supports anadromous fish. The tributary is anadromous up to waypoint 13, after which no CO were captured. The stream flows through a large marsh and the channel becomes more defined as it approaches the mainstem of Windfall Creek. There is a medium-sized beaver dam at the mouth; however, based on the number of CO captured and observed above the dam that fish have no problem passing the dam.
Recommendations: Add this tributary to the AWC.

Table 21.–Windfall Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	58.5145	-134.7451	Mouth of Windfall Creek where it merges with the side channel of Herbert River.		
2	58.5146	-134.7448	Backed-up side channel. Lots of CO smolt.	VI	CO
3	58.5145	-134.7438	Restart trackline. Many CO.	VI	CO
4	58.5127	-134.7410	Mouth of tributary with beaver dam.		
5	58.5127	-134.7404	Netted 2 CO in Beaver Dam Stream.	HN	2CO
6	58.5126	-134.7396	Netted 1 CO, baited many. Visual ID.	HN, VI	1 CO
7	58.5125	-134.7384	Many CO, visual ID.	VI	CO
8	58.5125	-134.7381	Stream opens into large grassy meadow, many CO, no real defined channel.	VI	CO
9	58.5128	-134.7370	Baited and netted 3 CO. Visual ID many.	HN, VI	3 CO
10	58.5131	-134.7367	End of CO on this side of channel, going back to large marsh area.		
12	58.5128	-134.7359	Large CO! Working our way up the marsh.	VI	CO
13	58.5124	-134.7340	Tributary coming in to marsh on left side. Baited and netted CO.	HN	CO
14	58.5134	-134.7327	At footbridge on Windfall Lake Trail. Continuing to cabin, then downriver. Did not catch CO, caught DV and stickleback.	HN	DV, ST

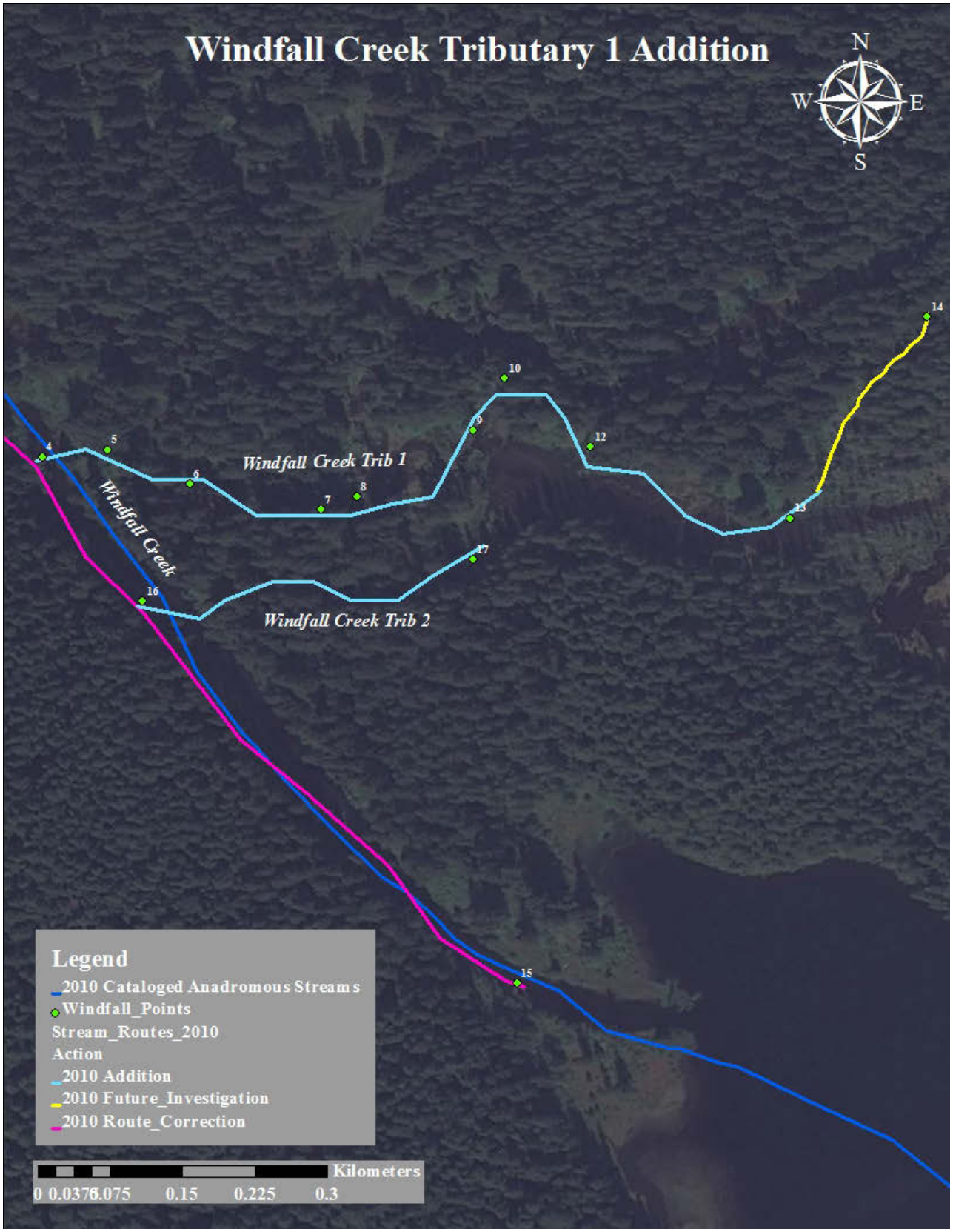

Figure 65.–Windfall Creek tributary 1 addition.

WINDFALL CREEK TRIBUTARY 2 ADDITION

Stream: Windfall Creek Tributary 2 (111-50-10070-2004-3006-4003 cataloged for COp).
Watershed: Boulder Creek.
MTRS: Township 39S, Range 65E, Section 7, Juneau C-3.
Date Surveyed: August 4, 2010.
Findings: This tributary flows into Windfall Creek and supports anadromous fish. It originates in a large grassy marsh and flows to meet Windfall Creek on the right bank. The stream is well-defined after emerging from the marsh. Lots of large woody debris provides good rearing habitat and the substrate is mainly small gravels and sand with intermittent deep organic mud. The tributary was sampled using a hand net and visual identification to determine fish species. Fish were either netted or visually identified up to waypoint 17, where the stream became a seep. The following table and map illustrate sampling data and locations of upper and lower extent.
Recommendations: Add this tributary to the AWC.

Table 22.–Windfall Creek Tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
16	58.5120	-134.7401	Tributary on river right.		
17	58.5122	-134.7370	Tributary originates at the same grassy marsh. Baited and visual ID of CO all the way up.	VI	CO

Figure 66.–CO captured in Windfall Creek tributary 2.

Figure 67.–CO captured in Windfall Creek tributary 2.

Figure 68.–Windfall Creek tributary 2.

Figure 69.–Mouth of Windfall Creek tributary 2.

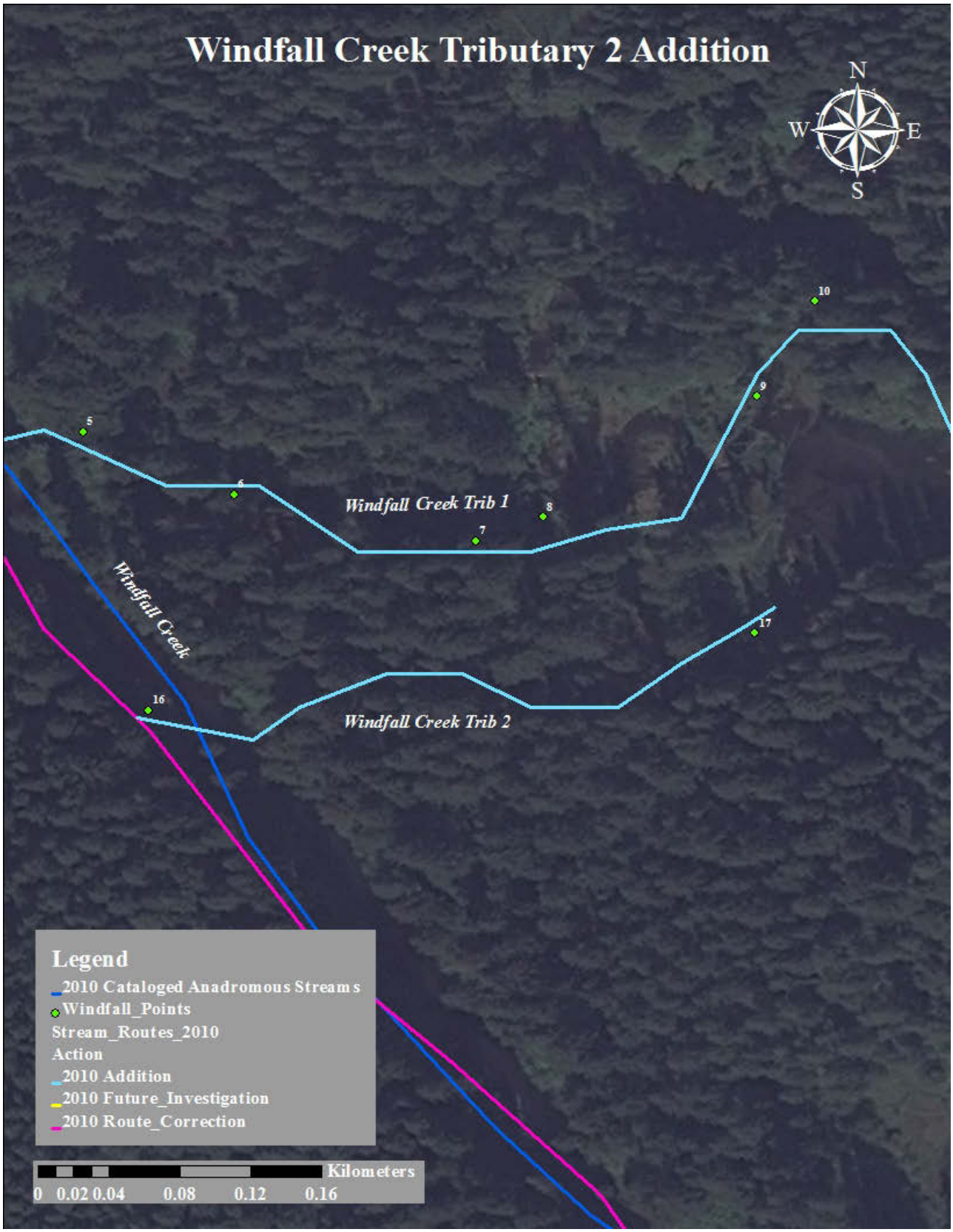

Figure 70.–Windfall Creek tributary 2 addition map.

115-10-10230 TRIBUTARY ADDITION

Stream: 115-10-10230 Tributary (115-10-10230-2004 cataloged for COr).
Watershed: Bessie Creek.
MTRS: CRM, Township 37S, Range 63E, Section 36, Juneau C-3.
Date Surveyed: September, 2010.
Sampling Method: Minnow traps.
Findings: The traps yielded rearing CO. The tributary closely parallels the road and is vegetated with alder, skunk cabbage, and Devil's club. Substrate consisted of organics, fines, and gravels. There were roots and root wads throughout. The following table and map provide additional data on the creek addition
Recommendations: Add the tributary to the AWC.

Table 23.–115-10-10230 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
9	58.6214	-134.9387	Mouth of creek; begin tracklog.	MT	
10	58.6190	-134.9357	Mouth of tributary on river left.	MT	
11	58.6190	-134.9356	Set trap in tannic pool on tributary.	MT	12 CO, 1 CT
12	58.6188	-134.9355	Set trap beside mossy log in tannic pool.	MT	1 DV, 9 CO
13	58.6185	-134.9351	Set trap in tannic pool under overhanging bank.	MT	1 DV, 1 CT, 4 CO
14	58.6183	-134.9346	Set trap in deep tannic pool with large woody debris in bend in stream.	MT	1 DV, 3 CO
15	58.6178	-134.9340	Set trap at 90 degree corner right next to road.	MT	4 CO

Figure 71.–CO captured in tributary to stream 115-10-10230.

Figure 72.–CO captured at waypoint 15.

Figure 73.–CT captured in tributary to stream 115-10-10230.

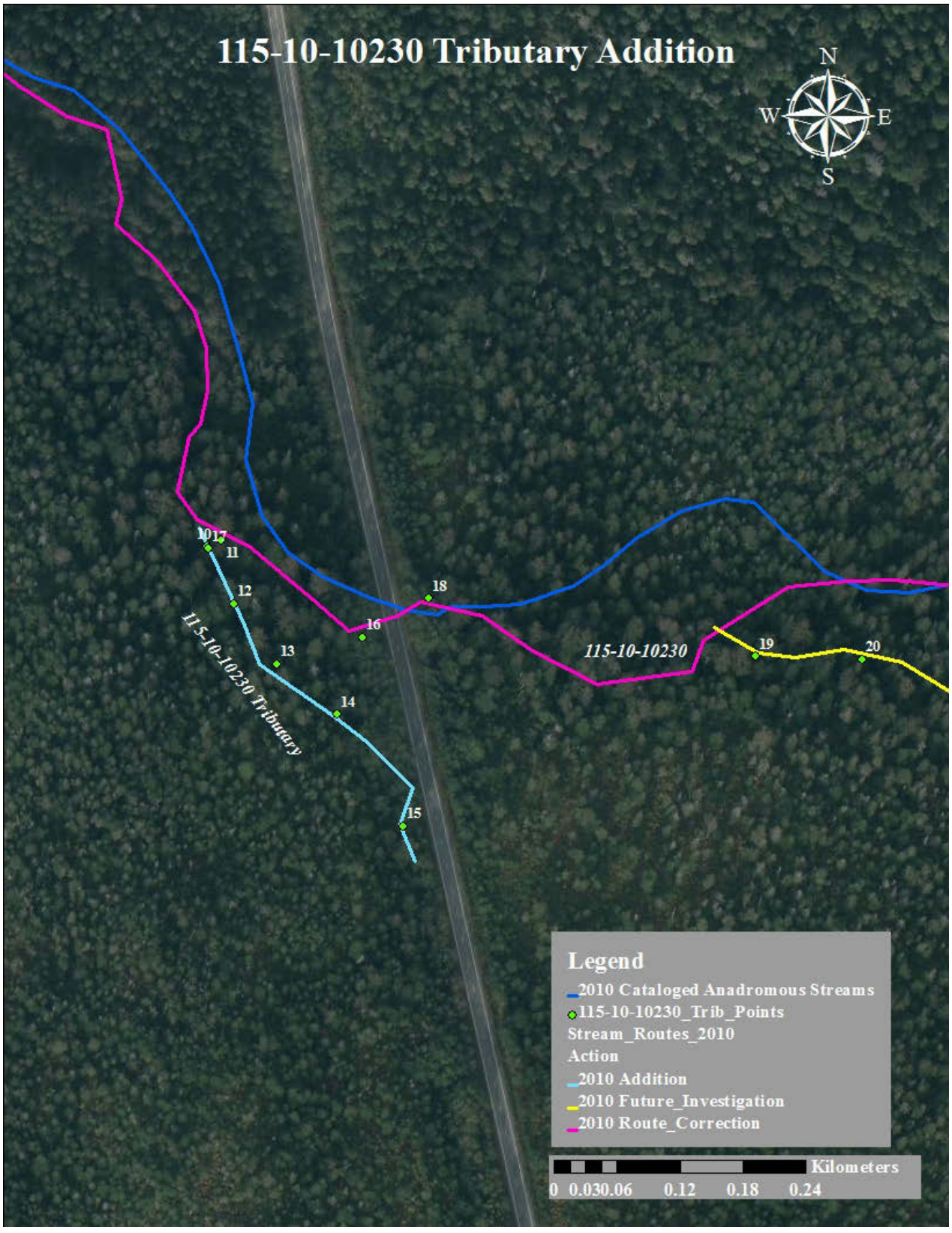

Figure 74.–115-10-10230 Creek tributary addition map.

JUNEAU STREAMS REQUIRING FUTURE INVESTIGATION

Table 24.–Start points of Juneau streams requiring future investigation.

Waypoint	Latitude	Longitude
1	58.3344	-134.5480
2	58.4443	-134.7670
3	58.3295	-134.5280
4	58.3543	-134.4890
5	58.3896	-134.6500
6	58.3321	-134.5650
7	58.3834	-134.6680
8	58.3986	-134.6100
9	58.3988	-134.6090
10	58.4415	-134.6380
11	58.4406	-134.6400
12	58.4416	-134.6380
13	58.4448	-134.6400
14	58.3619	-134.5190
15	58.4619	-134.6770
16	58.4629	-134.6780
17	58.4612	-134.6770
18	58.4598	-134.6750
19	58.4961	-134.7140
20	58.4653	-134.6810
21	58.3567	-134.5490
22	58.4239	-134.5870
23	58.4261	-134.5840
24	58.4275	-134.5860
25	58.4045	-134.5630
26	58.4054	-134.5630
27	58.4053	-134.5610
28	58.4025	-134.5750
29	58.3587	-134.5230
30	58.4018	-134.6360
31	58.3751	-134.6210
32	58.6187	-134.9310
33	58.6190	-134.9270
34	58.4136	-134.6130
35	58.4145	-134.6130
36	58.4160	-134.6120
37	58.4147	-134.6110

Table 24 continued.–Start points of Juneau streams requiring future investigation.

Waypoint	Latitude	Longitude
38	58.3014	-134.6740
39	58.3593	-134.5240
40	58.3286	-134.5270
41	58.2858	-134.3820
42	58.2874	-134.3840
43	58.3498	-134.4910
44	58.3497	-134.4920
45	58.3513	-134.4910
46	58.5125	-134.7340
47	58.3812	-134.6300

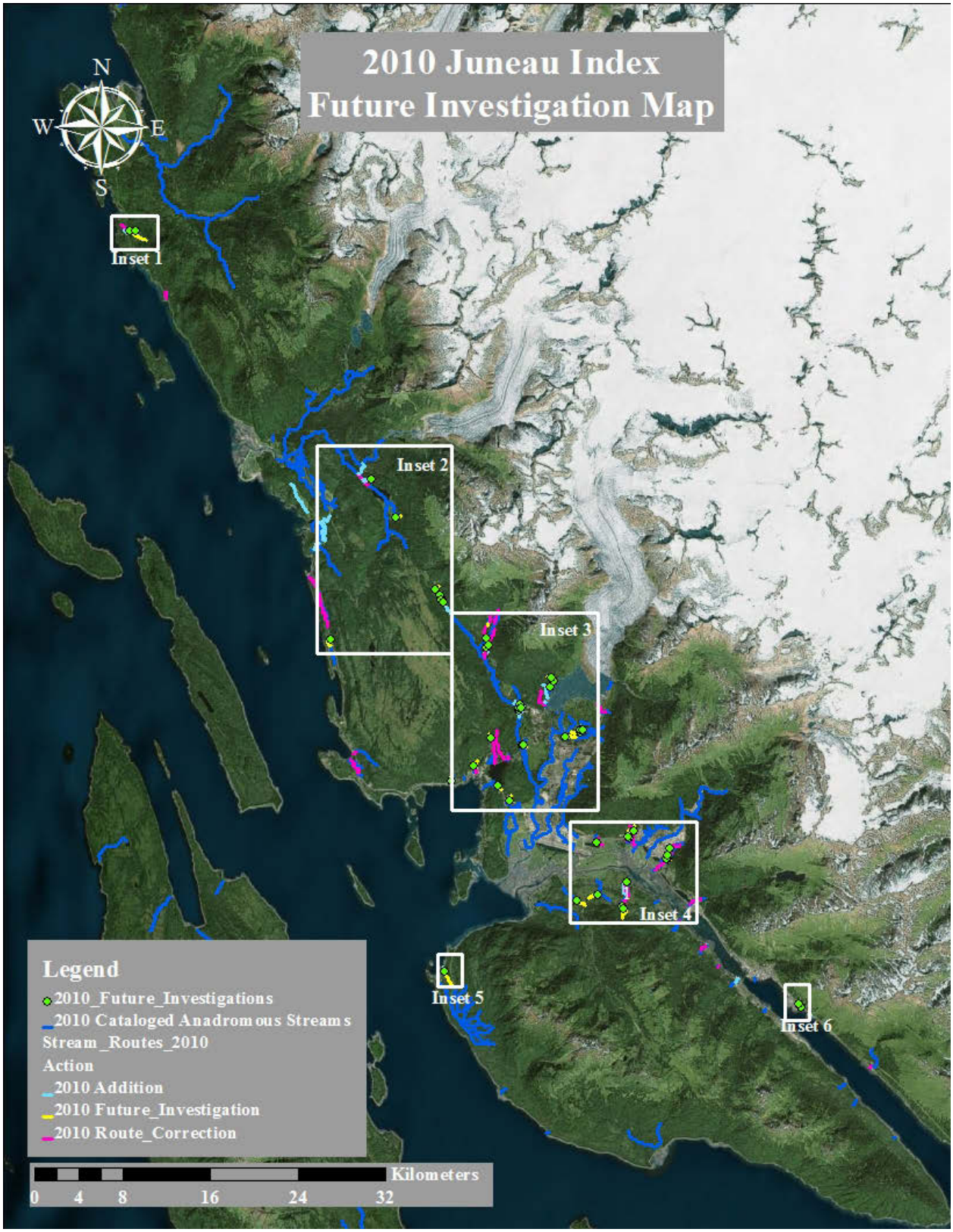

Figure 75.–Juneau index map of 2010 future investigations.

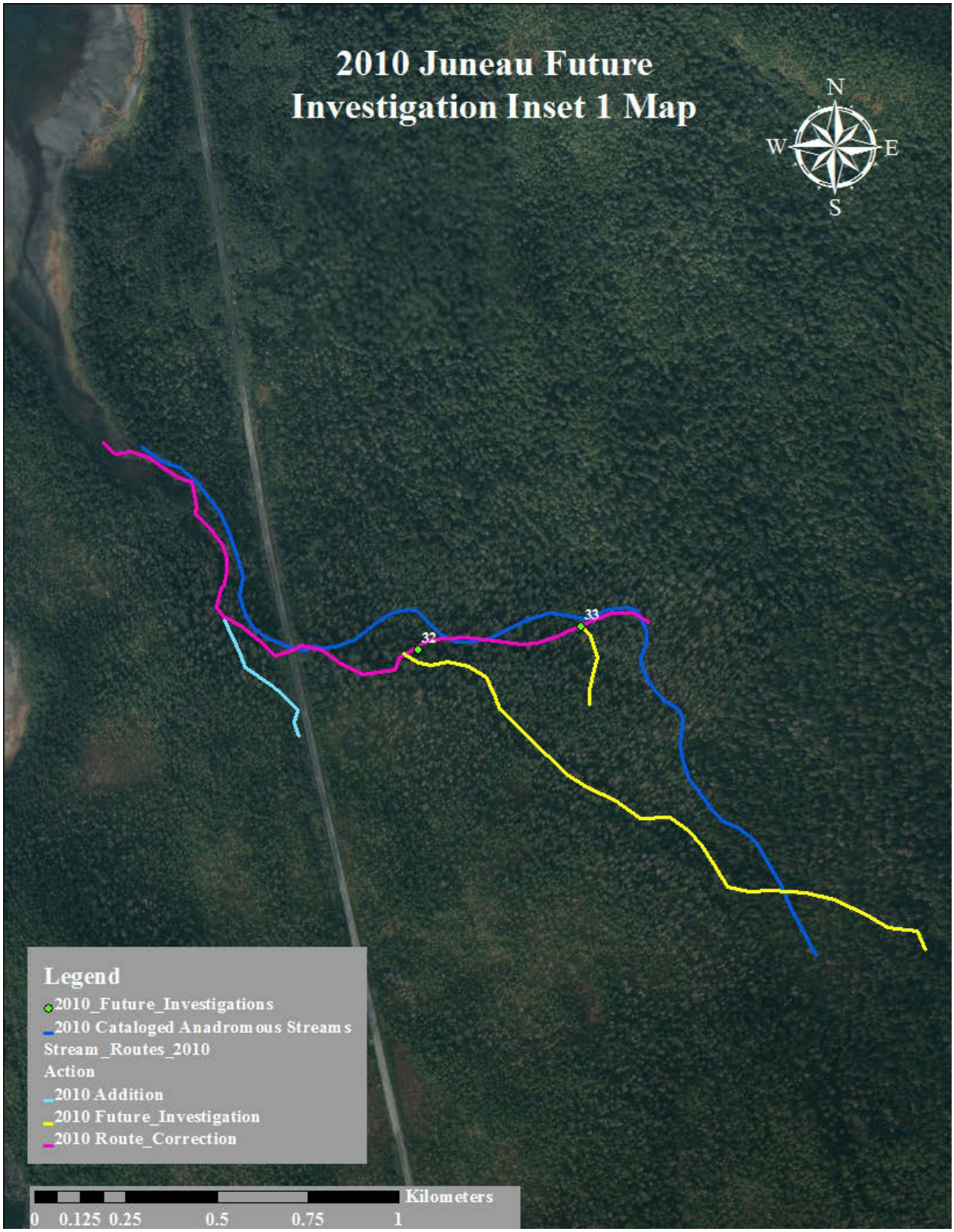

Figure 76.–Inset map 1 of Juneau 2010 future investigations.

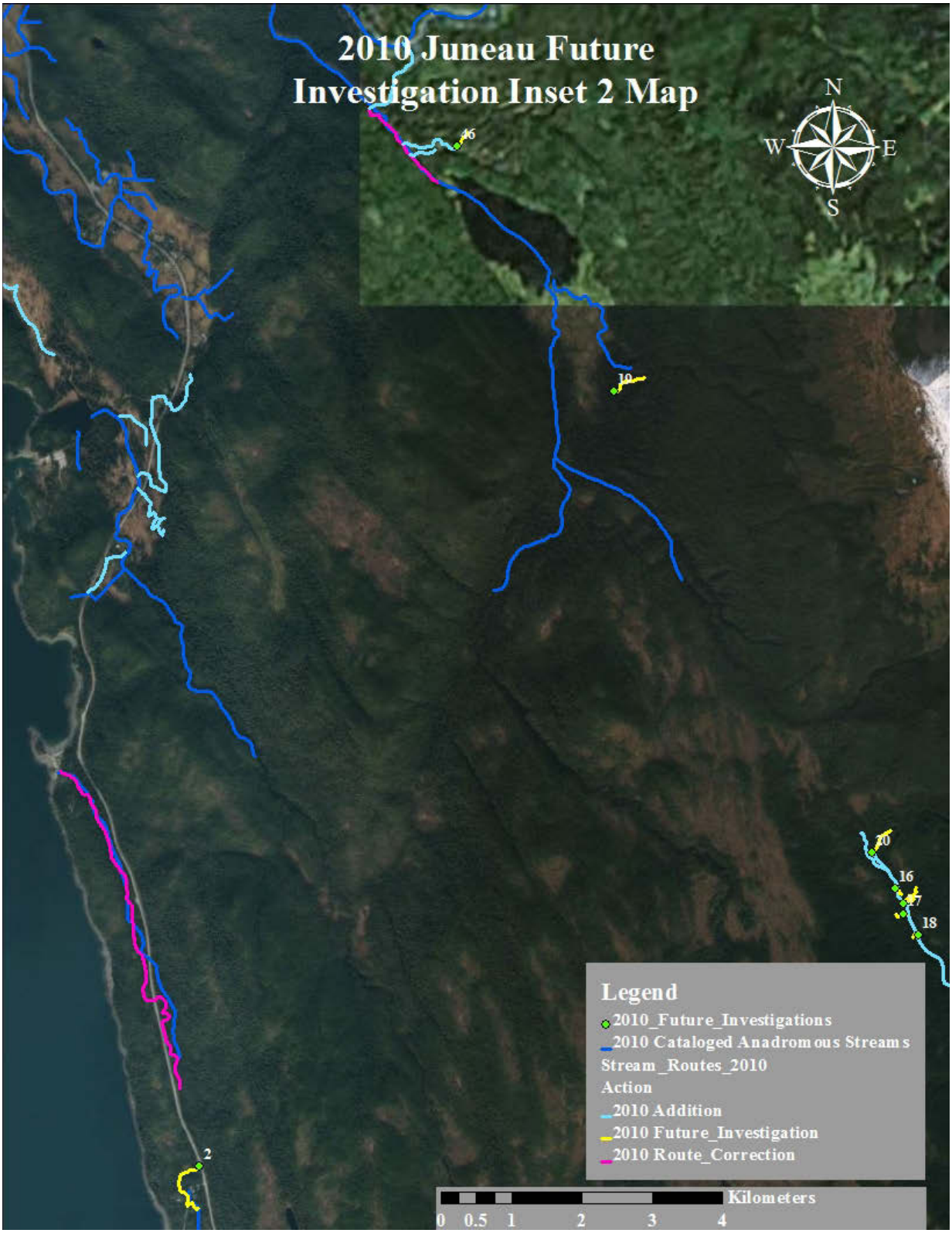

Figure 77.–Inset map 2 of Juneau 2010 future investigations.

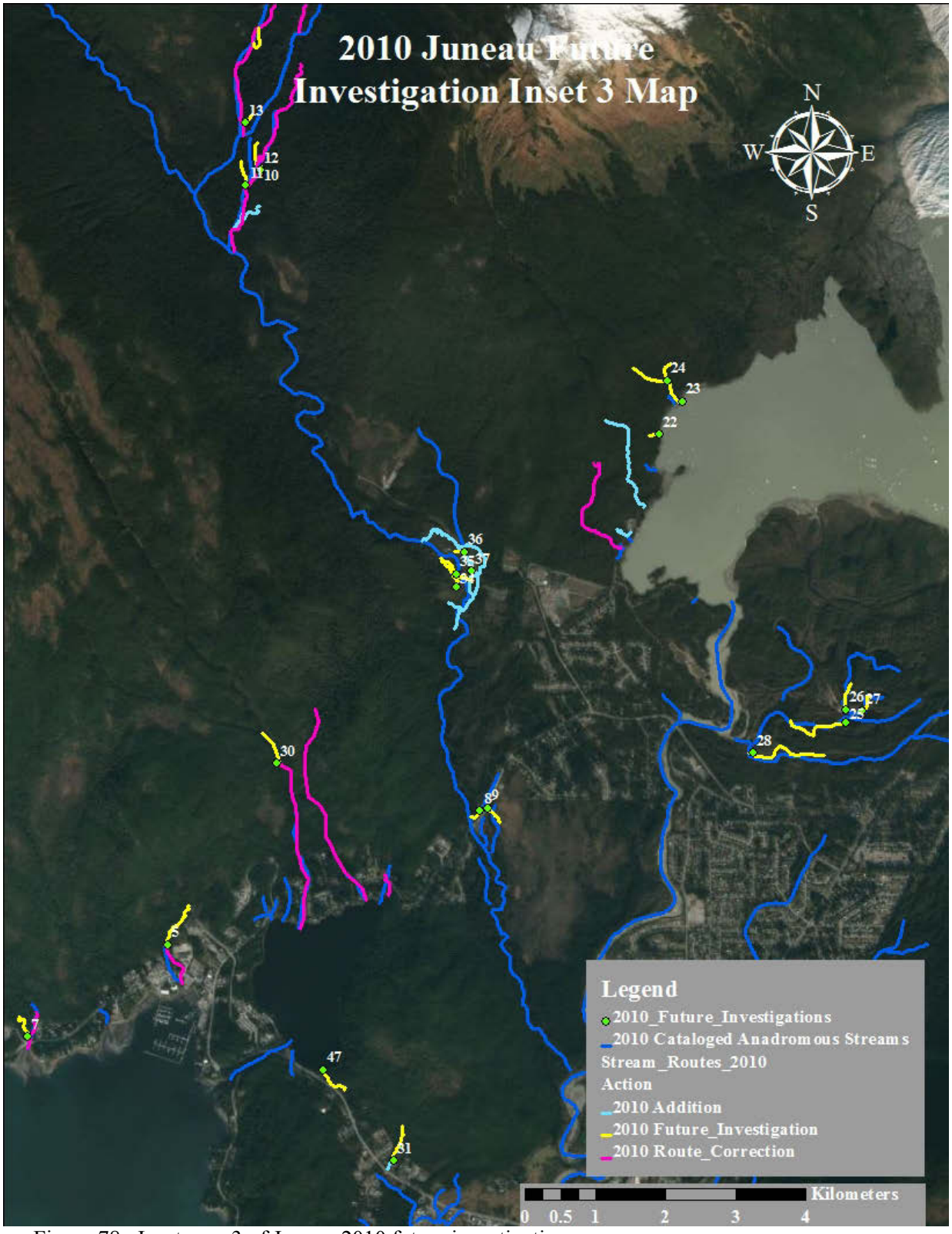

Figure 78.–Inset map 3 of Juneau 2010 future investigations.

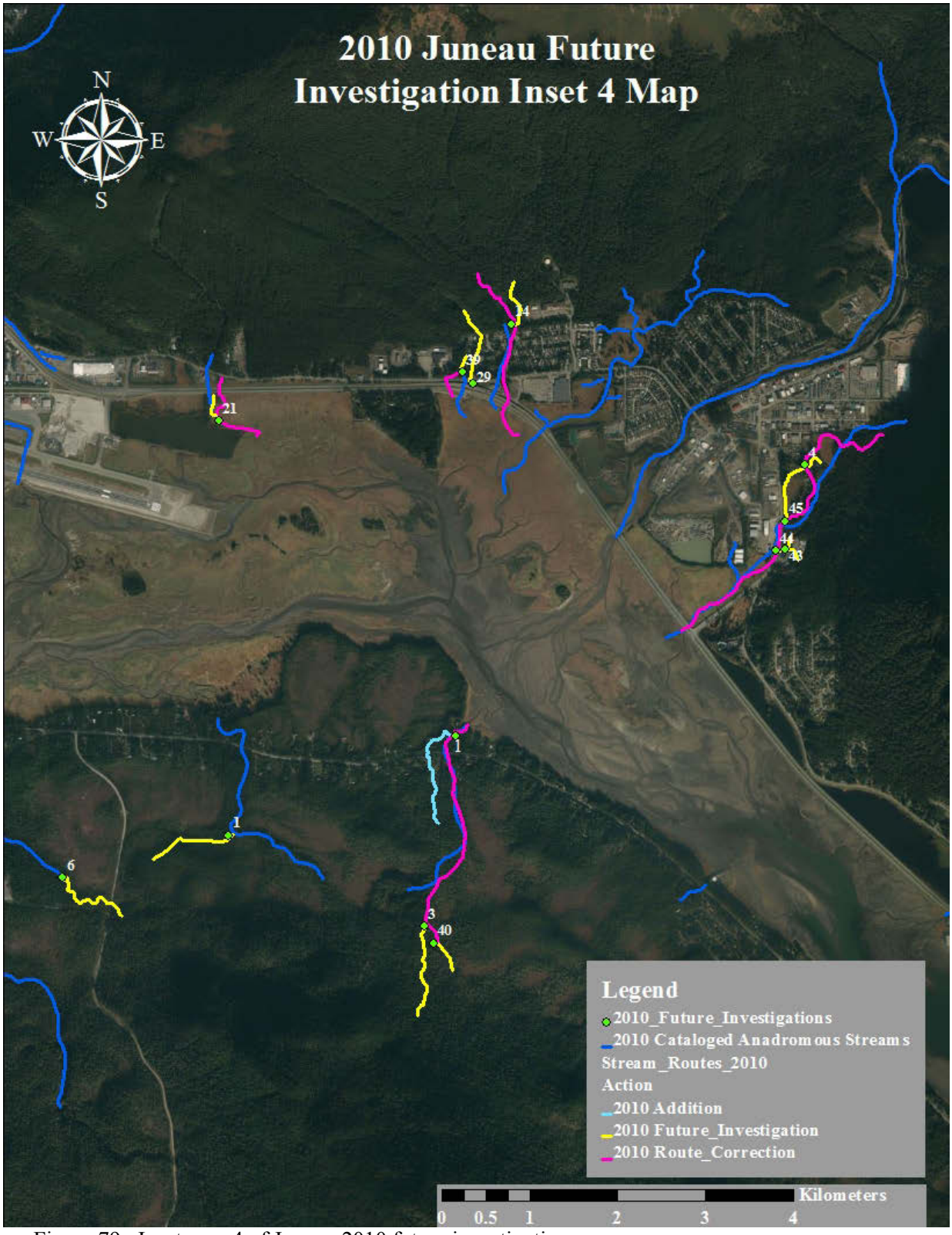

Figure 79.–Inset map 4 of Juneau 2010 future investigations.

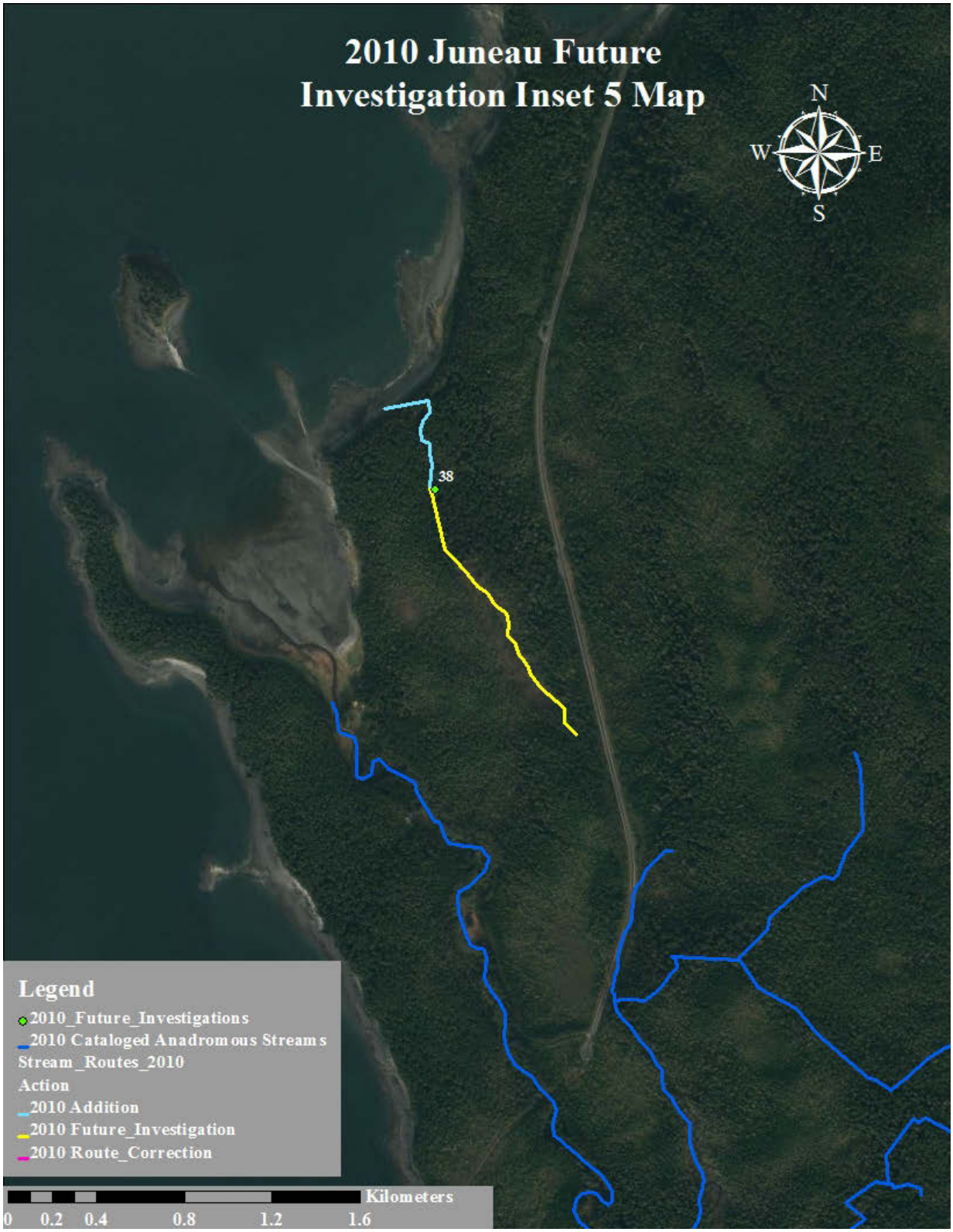

Figure 80.–Inset map 5 of Juneau 2010 future investigations.

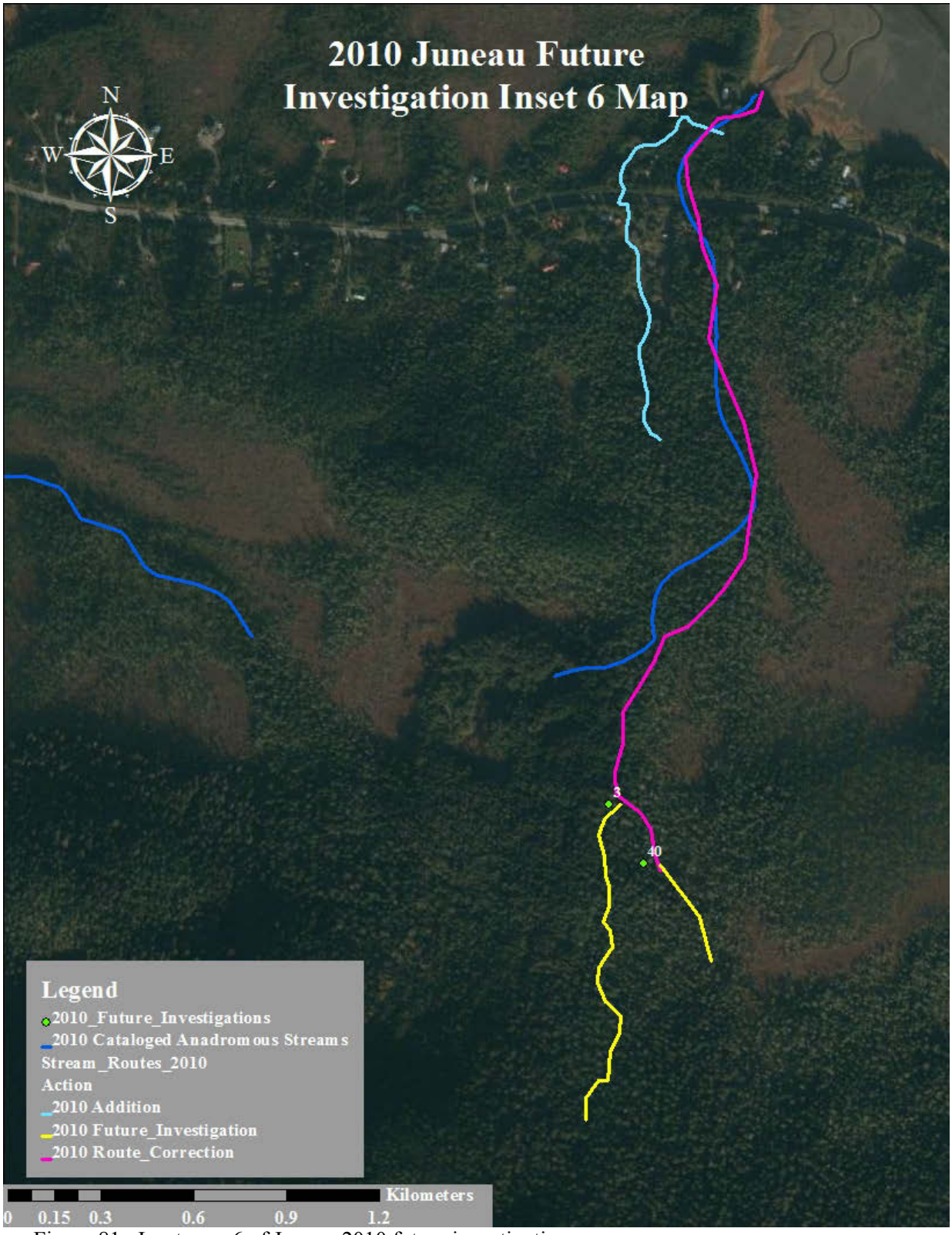

Figure 81.–Inset map 6 of Juneau 2010 future investigations.

HAINES STREAM SURVEYS

The Haines Borough is about 2,318.6 square miles with the community of Haines located on the Chilkat Peninsula between the Chilkoot and Chilkat River drainages which flow into Northern Lynn Canal.[13] The 2010 census documents 2,508 people living in City and Borough of Haines.[14] The Haines Highway begins at Main and Lutak streets and extends 39.72 miles to the border. The Porcupine Creek Road is accessed by the 26 Mile Steel Bridge and provides access to the Porcupine and Tsirku River locations. The Kelsall drainage and Mosquito Lake are accessed from Mile 24 of the Haines Highway on Mosquito Lake Road.

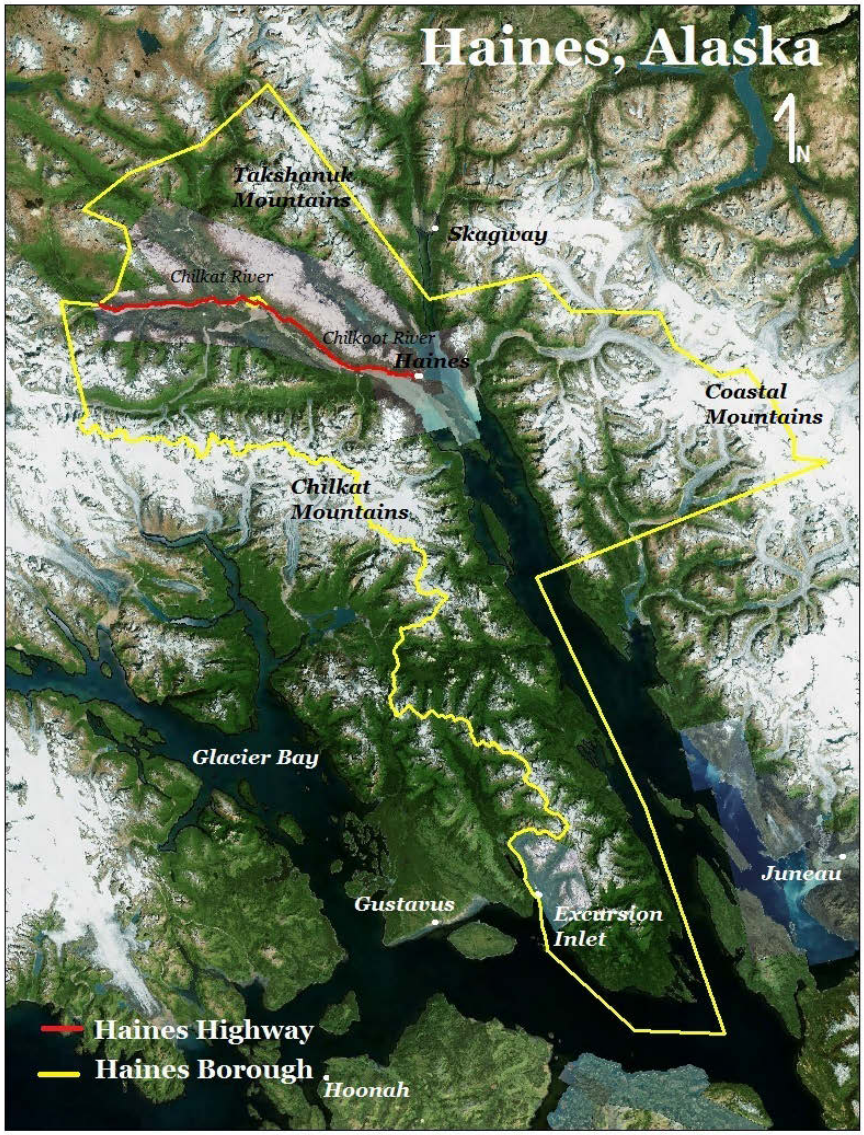

Figure 82.–Haines Borough overview map.

[13] U.S. Census Bureau. 2010. Borough/Census area maps for Haines City and Borough. 2010 Census: Alaska demographic profiles. Retrieved from: http://labor.alaska.gov/research/census/borcamaps/5_9_0map.pdf (Accessed August 26, 2013).
[14] U.S. Census Bureau. 2010. Demographic profile for Haines City and Borough. 2010 Census: Alaska demographic profiles. Retrieved from: http://live.laborstats.alaska.gov/cen/dparea.cfm (Accessed August 15, 2013).

SAWMILL CREEK TRIBUTARY ADDITION

Stream: Sawmill Creek tributary (115-32-10300-2002, cataloged for COsrp, CTr, DVrp).
Watershed: Battery Point.
MTRS: Township 30S, Range 59E, Section 28, Skagway A-2.
Date Surveyed: June 7 and 8, 2011.
Findings: This stream is a tributary to Sawmill Creek. After meandering through a forested area, the stream crosses the highway and runs along the side of a gravel lot. The area associated with the gravel lot is highly altered by recent development. Numerous coho salmon were found in the area; we also found one large (300 + mm) dead cutthroat trout.
Recommendations: Add this stream to the AWC. It would be beneficial to attempt future collaboration with property owners on adjacent gravel lot to ensure future protection of this stream.

Table 25.–Sawmill Creek Tributary survey data: June 7, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
31	59.2361	-135.4750	Confluence with tributary on river right. Tracking upstream.		
32	59.2361	-135.4748	Handnet 1 CO~ 35 mm, another visually identified in same location.	HN/VI	2 CO - 35 mm
33	59.2362	-135.4751	Handnet 1 CO ~ 30 mm.	HN	1 CO - 30 mm
34	59.2364	-135.4746	Handnet 1 CO ~ 30 mm and many more present.	HN	1 CO - 30 mm
35	59.2367	-135.4748	Handnet 4 CO, 30-35 mm.	HN	4 CO - 30-35
36	59.2369	-135.4761	Square lot stream.		
37	59.2378	-135.4757	Dead adult CT - 300 mm.	HN	CT - 300 mm
38	59.2380	-135.4754	Handnet 1 juvenile CO - 30 mm.	HN	1 CO - 30 mm
39	59.2381	-135.4752	Handnet 3 CO - 35 mm.	HN	3 CO - 35 mm
40	59.2384	-135.4744	Tiny tributary enters on river right, future investigation possibly if conditions were a bit wetter.		
41	59.2385	-135.4741	Small tributary enters on river right.		
42	59.2386	-135.4740	Tributary enters on river right. CO present.		
43	59.2386	-135.4738	Becomes dry channel at road. Might be good habitat above culvert during higher flows.		

Table 26.–Sawmill Creek Tributary survey data: June 8, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.2385	-135.4739	Tributary runs river-right off mainstem tributary off upper Sawmill Creek. Lots of CO visible in confluence and downstream. Begin tracking.	VI	CO
2	59.2387	-135.4740	Handnet 1 CO - 30 mm.	HN	CO
3	59.2390	-135.4740	Handnet 1 CO - 55 mm, right outside culvert on highway. Small pool looks like good habitat.	HN	CO
4	59.2392	-135.4736	Across highway now in spruce forest. Numerous CT seen.	VI	CT
5	59.2396	-135.4733	Handnet 1 CT.	HN	2 CT
6	59.2397	-135.4733	Handnet 2 CT. Habitat looks undisturbed and great CT habitat.	HN	1 CT
7	59.2403	-135.4722	Tributary on river-left.		
8	59.2405	-135.4723	Tributary turns into meadow with lots of downed trees and limbs. Looks like the work of a human. Turning back to tributary.		
9	59.2416	-135.4726	Large culvert lies 2 ft above creek creating small waterfall. Rocks under culvert look iron rich. Probable barrier at low-water. Visual ID of 2 CT.	VI	2 CT

Figure 83.–Coho salmon captured in Sawmill Creek.

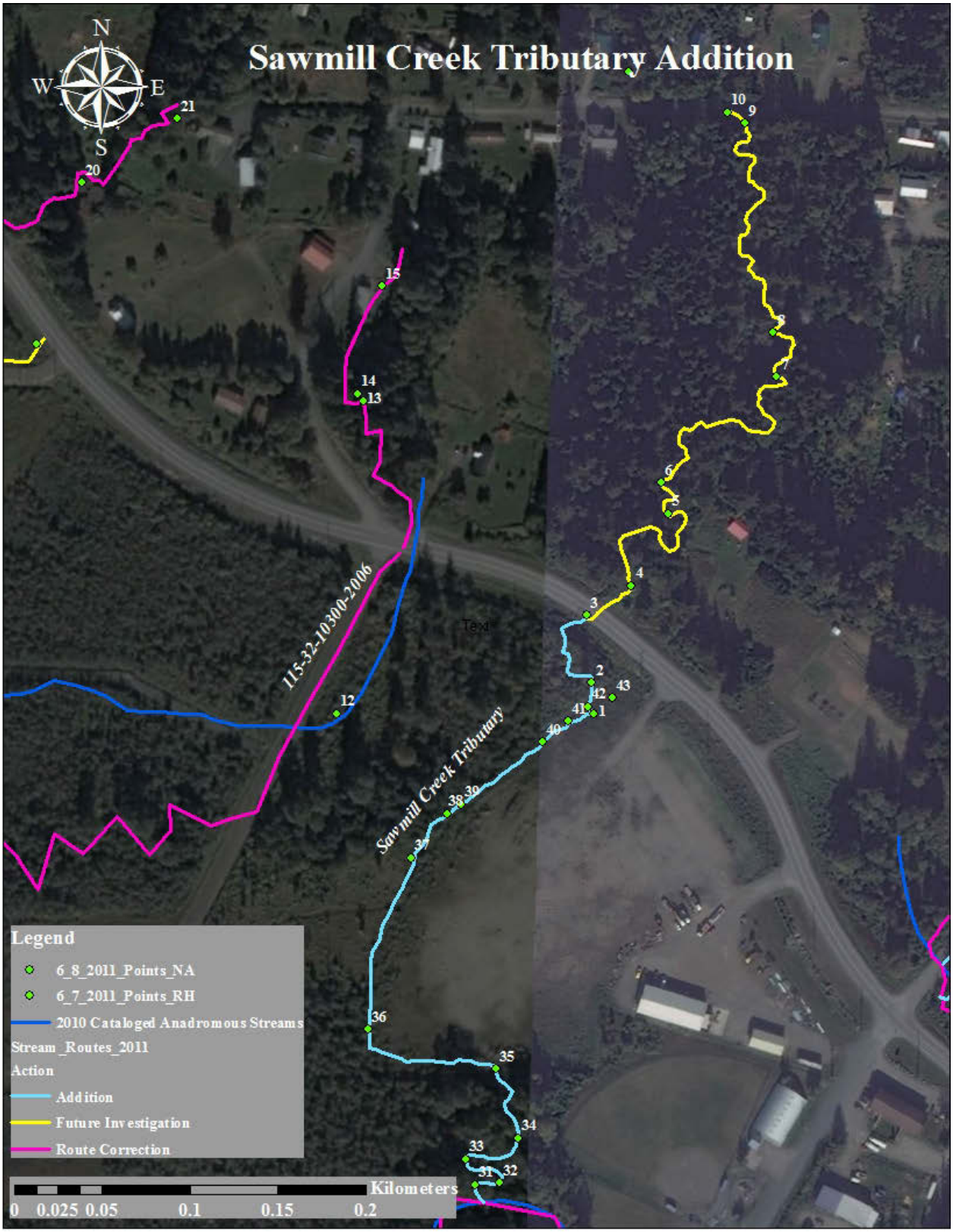

Figure 84.–Sawmill Creek Tributary addition map.

LITTLE COHO CREEK TRIBUTARY ADDITION

Stream: Little Coho Creek tributary (115-32-10300-2014-3006 cataloged for COrp).
Watershed: Battery Point.
MTRS: Township 30S, Range 59E, Section 28, Skagway A-2.
Date Surveyed: June 17, 2011.
Findings: This stream emerges from a marsh and meanders down to Stream No. 115-32-10300-2014-3006. Coho fry were abundant all the way to the source of the water.

Table 27.–Little Coho Creek tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
3	59.2411	-135.4902	Tributary enters from river left. Tracking up tributary.		
4	59.2413	-135.4896	Handnet 3 CO, 1 was 35 mm, other 2 - 30 mm.	HN	3 CO – 30-35 mm
5	59.2416	-135.4894	Handnet 9 CO: all were ~ 30 mm.	HN	9 CO ~30 mm
6	59.2416	-135.4891	Handnet 1 CO - 35 mm.	HN	1 CO ~35 mm
7	59.2418	-135.4888	Top of creek. It ends in a marsh area and spreads out until flow dissipates.		

Figure 85.–Coho salmon captured in Little Coho Creek tributary.

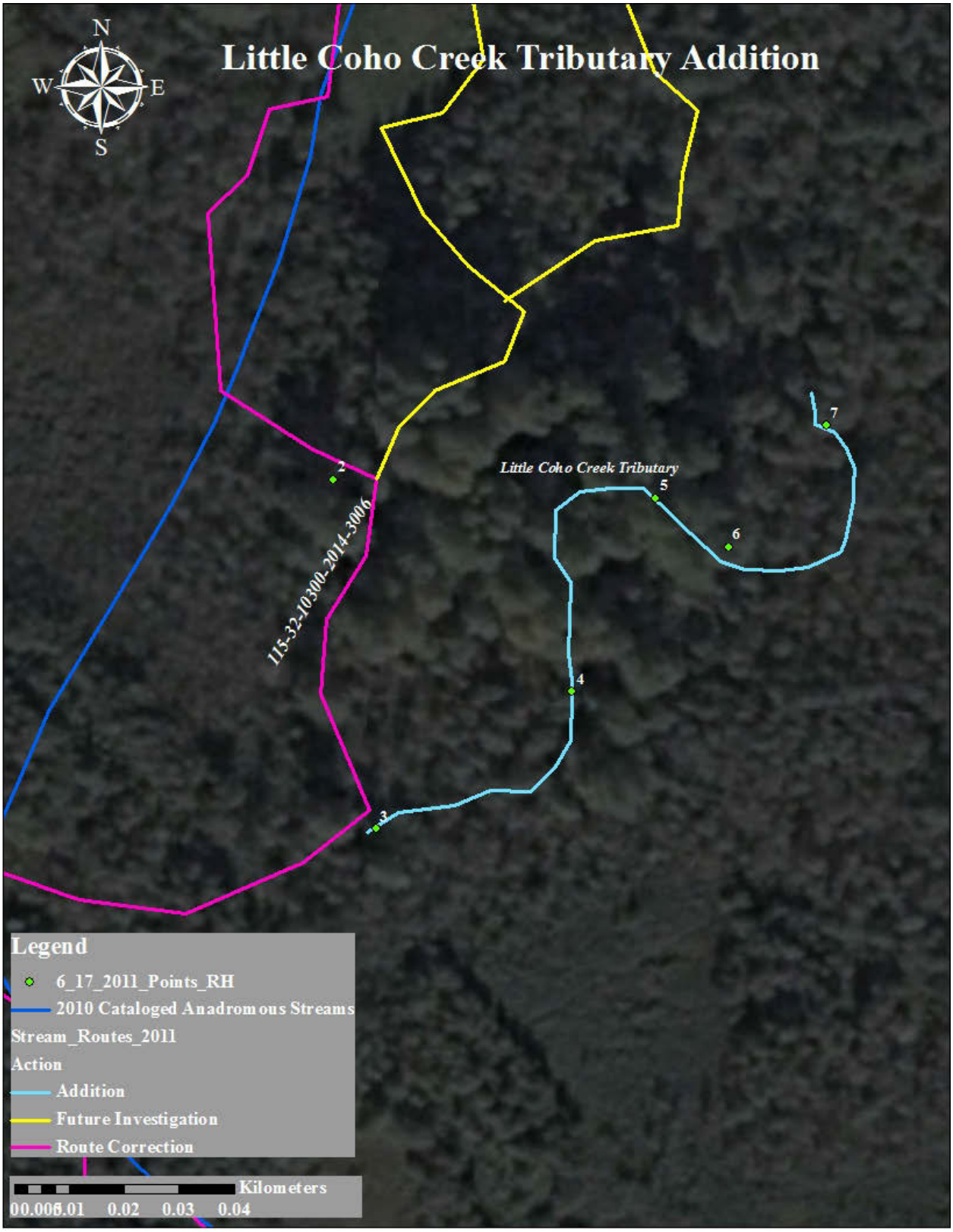

Figure 86.–Little Coho Creek tributary addition map.

5 MILE CREEK ADDITION

Stream: 5 Mile Creek.
Watershed: Battery Point.
MTRS: Township 30S, Range 58E, Section 24, Skagway B-2.
Date Surveyed: July 4, 2011.
Findings: This previously undocumented stream was found to support rearing juvenile coho salmon throughout. This stream originates as a seep next to the Haines Highway and flows parallel to the road before taking a sharp turn and settling into a small beaver pond inundated by the Chilkat River during high flows. Coho salmon were captured and identified throughout.
Recommendations: Include this stream in the AWC.

Table 28.–5 Mile Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
15	59.2598	-135.5628	Handnet 1 CO - 70 mm at upper limit of roadside ditch, across from Southeast Roadbuilders.	HN	1 CO - 70 mm
16	59.2594	-135.5618	Isolated pool next to the Chilkat and roadside stream. Saw a couple CO hanging out. Fresh beaver activity. Water level would have to rise ~ 1 ft for connectivity to either water body.	VI	2 CO
17	59.2594	-135.5617	Beaver dam. Handnet a skinny CO.	HN	1 CO - 65 mm

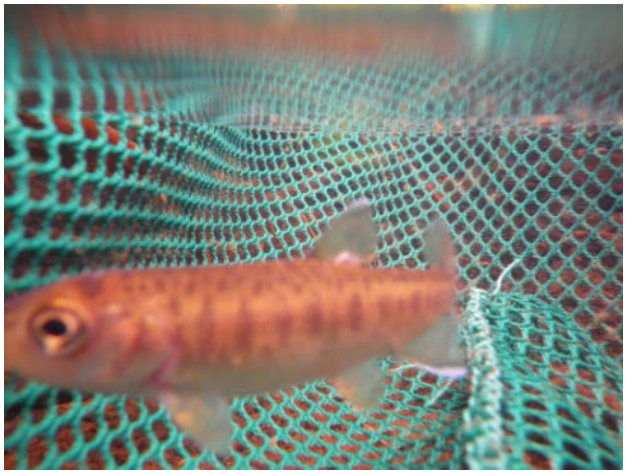

Figure 87.–Coho salmon captured in 5 Mile Creek.

Figure 88.–5 Mile Creek addition map.

WATERFALL CREEK ROUTE CORRECTION

Stream: Waterfall Creek (115-32-10250-2008 cataloged for COsr, DVrp, Krp).
Watershed: Battery Point.
MTRS: Township 30S, Range 58E, Section 24, Skagway B-2.
Date Surveyed: July 2 and 3, 2011.
Findings: The upper and lower limits of this stream were found to differ from the AWC. The stream takes a more sinuous path than is documented before emptying into the Chilkat River. This stream originates at a waterfall next to the Haines Highway and flows through a marshland then onto a small road that accesses a gravel pit. It then enters another marshland, flows beneath the Haines Highway, and parallels the road for a while before merging with the Chilkat.
Recommendations: Update this streams route, upper, and lower limits in the AWC.

Table 29.–Waterfall Creek survey data: July 2, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
22	59.2598	-135.5606	Second drainage from the marsh complex into the road.		
23	59.2597	-135.5606	Handnet 1 CO in stream exiting the roadbed.	HN	1 CO - 90mm
24	59.2589	-135.5567	Water flowing from 2 directions here into a low spot. Many CO present.	VI	~20 CO
25	59.2587	-135.5572	Found culvert on "Waterfall Creek" crossing the highway.		
26	59.2580	-135.5556	Stream crosses under gravel pull out with foot bridge.		
27	59.2571	-135.5537	Mouth of stream entering the Chilkat.		

Table 30.–Waterfall Creek survey data: July 3, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
3	59.2615	-135.5721	Start of creek. The falls come right to road at drinking water spigot. Track down stream.		
4	59.2613	-135.5697	Small tributary on river left enters the marsh with creek from very steep mountainside.		
5	59.2614	-135.5689	Another creek flowing parallel to creek, but opposite direction.		
6	59.2614	-135.5687	Base of waterfall coming off the mountainside. Continuing up first creek/marsh.		

7	59.2598	-135.5605	The end of the creek/marsh. Creek too deep and hard to walk through. Everything connected by marsh.		
8	59.2588	-135.5567	Handnet 1 CO ~ 50 mm.	HN	1CO ~ 50 mm

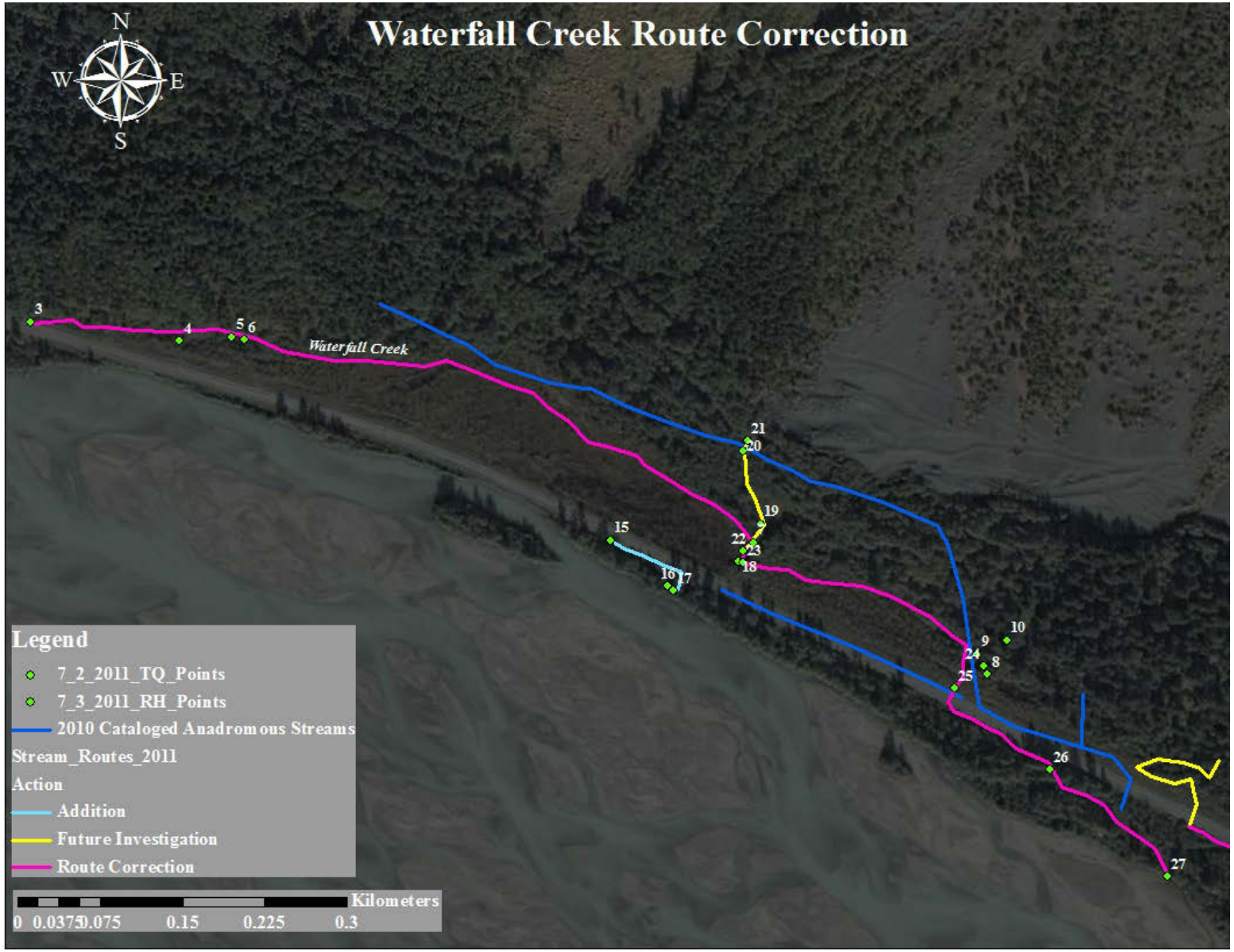

Figure 89.–Waterfall Creek route correction map.

9½ MILE CREEK ROUTE CORRECTION

Stream: 9½ Mile Creek (115-32-1025-2028 cataloged for COr, DVr).
Watershed: Takhin River.
MTRS: Township 30S, Range 58E, Section 8, Skagway B-2.
Date Surveyed: June 3, 2011.
Findings: This stream's upper limit was found to extend past the cataloged upper limit. We also found the mouth and stream route to be inaccurate. This stream closely follows a rocky cliff on river left, and a marshy clearing on river right. Fish habitat and coho salmon were found upstream of the cataloged upper extent. The substrate is primarily organics and sand with well-vegetated banks. The stream's upper limit ends with a spring-fed mossy seep.
Recommendations: Update the stream's lower limit, upper limit, and route in the AWC.

Table 31.–9½ Mile Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.2797	-135.6708	Outlet of culvert on Haines Highway. Huge school of CO. Handnet 4 CO - 45 mm each. Big beautiful pool that merges with the Chilkat River. Clear water.	HN	4 CO -45 mm
2	59.2800	-135.6708	9 1/2 mile creek trackline begin (across highway from pool).		
3	59.2816	-135.6733	Stream branches into mini-marsh. No pursuit of tracking required.		
4	59.2834	-135.6774	Stream branches into active tributary. Taking tributary river-left.		
5	59.2834	-135.6770	Tributary forks into a network of streams hidden beneath abundant snake grass. Taking new river-left tributary.		
6	59.2835	-135.6767	Handnet 35 mm CO.	HN	1 CO - 35 mm
7	59.2835	-135.6764	Visual ID of 3 CO. Handnet 2 CO, 30-40 mm.	HN	2 CO - 30-40 mm
8	59.2833	-135.6749	Top of barrier.		
9	59.2834	-135.6752	Barrier determined at the bottom of a steepened channel of 31% over 98 ft.	EF	No fish
10	59.2835	-135.6764	Determined upper-extent of anadromy. Electrofished 1 CO ~60 mm.	EF	1 CO ~ 60 mm

11	59.2830	-135.6766	Back down to marshland where tributary forks. Took river-right tributary this time to undefined pool of water. Turning around to 9 1/2 Mile Creek.		
12	59.2845	-135.6789	Creek begins to parallel cliff. Here we find a cascade that enters creek on river-left.		
13	59.2848	-135.6793	Visual ID of multiple CO.	VI	multiple CO
14	59.2849	-135.6800	Another visual ID of good-sized school of CO that is declared as upper-extent of anadromy. Creek does not continue much farther.	VI	CO fry

Figure 90.–Coho salmon captured in 9½Mile Creek.

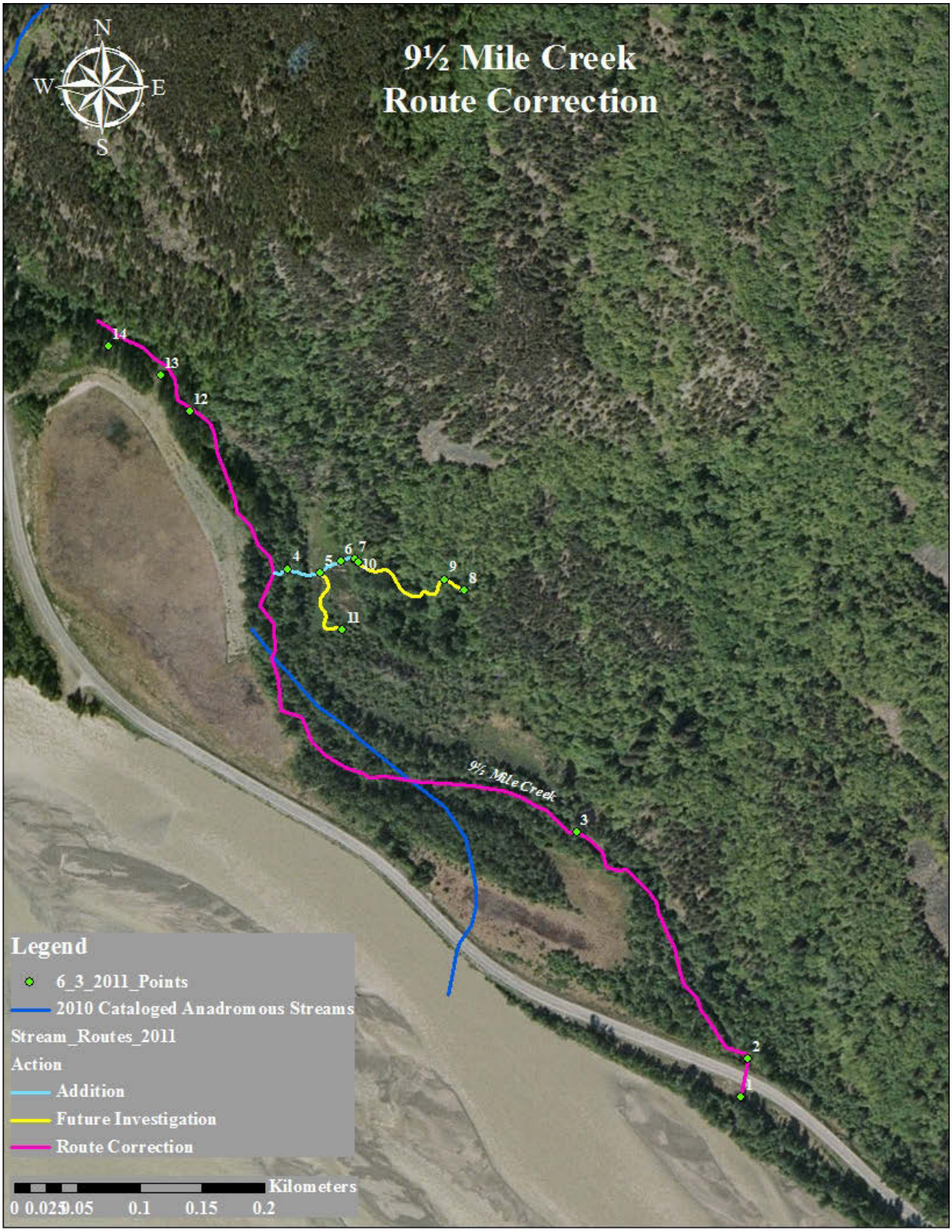

Figure 91.–9½ Mile Creek route correction map.

9½ MILE CREEK TRIBUTARY ADDITION

Stream: 9½ Mile Creek tributary (115-32-10250-2028).
Watershed: Takhin River.
MTRS: Township 30S, Range 58E, Section 8, Skagway B-2.
Date Surveyed: June 3, 2011.
Findings: This stream originated on the mountainside and meandered through a series of meadows before entering 9 ½ Mile Creek. The habitat looked suitable for fish presence leading up to the gradient barrier and we captured several juvenile coho salmon.
Recommendations: Add this stream to the AWC.

Table 32.–9½ Mile Creek tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
4	59.2834	-135.6774	Stream branches into active tributary. Taking tributary river-left.		
5	59.2834	-135.6770	Tributary forks into a network of streams hidden beneath abundant snake grass. Taking new river-left tributary.		
6	59.2835	-135.6767	Handnet 1 CO - 35 mm.	HN	1 CO
7	59.2835	-135.6765	Visual ID of 3 CO. Handnet 2 CO, 30-40 mm.	HN	2 CO-30-40 mm
8	59.2833	-135.6749	Top of barrier.		
9	59.2834	-135.6752	Bottom of barrier. Barrier determined at the bottom of a steepened channel of 31% over 98 ft.	EF	No Fish
10	59.2835	-135.6764	Determined upper-extent of anadromy. Electrofished 1 CO ~60 mm.	EF	1 CO
11	59.2829	-135.6766	Back down to marshland where tributary forks. Took river-right tributary this time to undefined pool of water. Turning around to 9 1/2 Mile Creek.		

Figure 92.–Juvenile coho salmon captured in 9½ Mile Creek tributary.

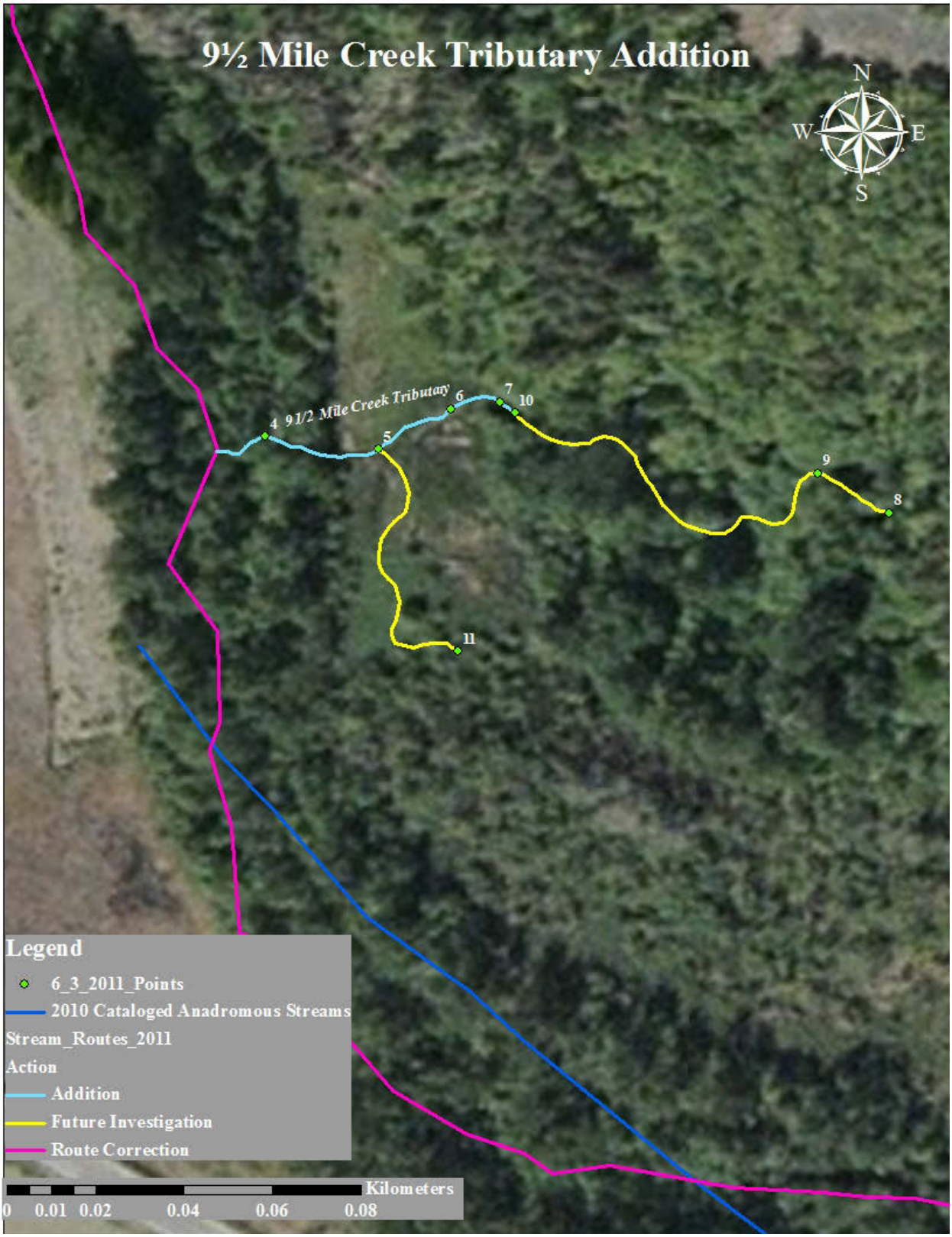

Figure 93.–9½ Mile Creek tributary addition map.

11½ MILE CREEK ROUTE CORRECTION

Stream: 11½ Mile Creek (115-32-10250-2032 cataloged for COrp).
Watershed: Takhin River.
MTRS: Township 30S, Range 58E, Section 6, Skagway B-2.
Date Surveyed*:* July 1, 2011.
Findings: This stream's mouth and upper extent were found to differ from that illustrated in the AWC. This stream parallels the Haines Highway and meanders through skunk cabbage forests and grassy marsh land. Its upper extent is a spring-fed seep.
Recommendations: Update the stream mouth, and extend the upper limit as indicated on the following table and map.

Table 33.–11½ Mile Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
20	59.3009	-135.7082	Start of 11 ½ Mile Creek. It empties into the Chilkat River. Tracking upstream.		
21	59.3020	-135.7088	Visual ID of 1 CO ~ 65 mm.	VI	1 CO 65 mm
22	59.3043	-135.7105	Handnet 1 CO ~ 65 mm.	HN	1 CO 65 mm
23	59.3044	-135.7107	Creek branches and goes river right. Continuing up mainstem.		
24	59.3047	-135.7105	Top of mainstem, it comes out of the ground at the base of hillside. Handnet 1 CO ~ 50 mm.	HN	1 CO 50 mm

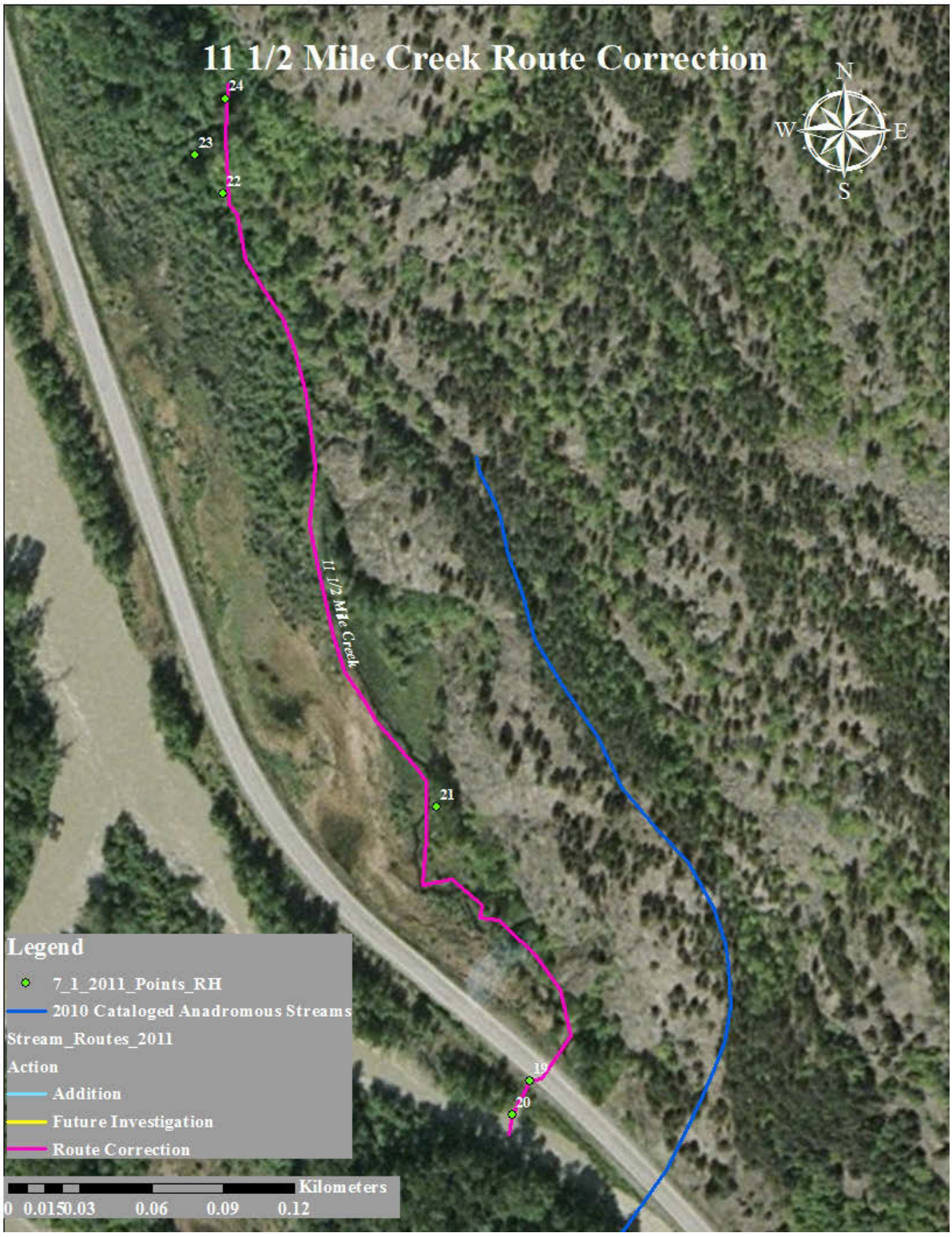

Figure 94.–11½ Mile Creek route correction map.

13 MILE CREEK ROUTE CORRECTION

Stream: 13 Mile Creek (115-32-10250-2040 cataloged for CTrs, COrp, Kr, Ps).
Watershed: Takhin River.
MTRS: Township 29S, Range 57E, Section 36, Skagway B-2.
Date Surveyed: June 30, 2011.
Findings: The upper and lower limits of this stream were found to differ from that in the AWC. The stream takes a more sinuous path before emptying into the Chilkat River. This stream's upper anadromous extent ends at a waterfall flowing from the mountainside. The stream flows to the highway where it splits, creating two separate streams; one side flowing along the highway before passing through a culvert and into a side channel of the Chilkat River; the second branch flows through a culvert and widens into a marsh before channelizing again and entering the Chilkat side channel.
Recommendations: Update this stream's route, upper, and lower limits in the AWC.

Table 34.–13 Mile Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.3130	-135.7219	Left branch of mainstem goes into the Chilkat River. Bit of a water back-up because the river is moving swiftly which is not allowing river to empty. Making a nice pond/marsh area.		
2	59.3132	-135.7221	Culvert comes in from river left and is completely under water.		
3	59.3137	-135.7244	Culvert that crosses the highway. This one is half way under water.		
4	59.3137	-135.7245	Another culvert that crosses the highway. Completely under water and has major flow.		
5	59.3138	-135.7246	Tributary on river left that has fish, will track.		
6	59.3142	-135.7250	End of the tributary. Just comes out of the ground. End of tracking.		
7	59.3140	-135.7246	Handnet a 1 CO ~ 30 mm. Visual ID of another CO ~ 30 mm. Start of an iron tributary on river right. Tracking.	HN and VI	2 CO ~ 30 mm
8	59.3141	-135.7248	Handnet 5 CO ~ 30 mm.	HN	5 CO ~ 30 mm
9	59.3141	-135.7252	End of the tributary. End of tracking.		
10	59.3140	-135.7249	Top of CO use. Visual identification of 9 CO ~ 30 mm.	VI	9 CO ~ 30 mm

11	59.3139	-135.7246	Tributary entering from river right. Tracking.		
13	59.3139	-135.7258	Tributary entering from river left. Tracking and some possible redds.		
14	59.3139	-135.7258	Tributary entering from river right into the first tributary.		
15	59.3140	-135.7257	Top of tributary. It becomes moss with pools then moss again and tapers out. End track.		
16	59.3139	-135.7261	Top of tributary. Tracking.		
17	59.3139	-135.7260	Tributary empties into tributary, tracking up main tributary.		
18	59.3140	-135.7260	Top of main tributary. Tracking downstream.		
19	59.3139	-135.7259	Handnet 2 CO - 30 mm.	HN	2 CO ~ 30 mm
20	59.3138	-135.7275	Main creek meets the highway and branches. Tracking up the mainstem.		
21	59.3150	-135.7272	Found a barrier. Distance: 17 m and Gradient: 36%.		
22	59.3141	-135.7276	Handnet 3 CT 25-30 mm.	HN	3 CT 25-30 mm
23	59.3141	-135.7275	Handnet 3 CO ~ 30 mm.	HN	3 CO ~ 30 mm
24	59.3139	-135.7278	Handnet 1 CO ~ 30 mm and 1 CT ~ 20-25 mm.	HN	1 CO ~ 30 mm and 1 CT ~ 20-25 mm
25	59.3141	-135.7287	Handnet 2 CO ~ 45 mm at inlet of culvert that goes under the highway. Continuing downstream.	HN	2 CO ~ 45 mm
26	59.3123	-135.7245	The end of the creek branch, because it dumps into the Chilkat River. On the way creek became a marsh, but were able to follow to where it emptied out of marsh.		
27	59.3131	-135.7226	Handnet 1 CO ~ 30 mm in the marsh made by left branch of creek. Look at WPT #1 for description.	HN	1 CO ~ 30 mm

Figure 95.–13 Mile Creek route correction map.

13 MILE CREEK TRIBUTARY ADDITION

Stream: 13 Mile Creek tributary (115-32-10250-2040 cataloged for CTrs, COrp, Kr, Ps).
Watershed: Takhin River.
MTRS: Township 29S, Range 57E, Section 36, Skagway B-2.
Date Surveyed: June 30, 2011.
Findings: This is a tributary of 13 Mile Creek. We caught juvenile coho salmon throughout this tributary. This stream's upper anadromous extent ends at a waterfall flowing from the mountainside. The stream flows through a culvert and widens into a marsh before channelizing again and entering the Chilkat River side channel.
Recommendations: Add this stream to the AWC.

Table 35.–13 Mile Creek tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
20	59.3138	-135.7275	Main creek meets the highway and branches. Tracking up the mainstem.		
25	59.3141	-135.7287	Handnet 2 CO ~ 45 mm at inlet of culvert that goes under the highway. Continuing downstream.	HN	2 CO ~ 45 mm
26	59.3123	-135.7245	The end of the creek branch, because it dumps into the Chilkat River. On the way creek became a marsh, but were able to follow to where it emptied out of marsh.		
27	59.3131	-135.7226	Handnet 1 CO ~ 30 mm in the marsh made by left branch of creek.	HN	1 CO ~ 30 mm

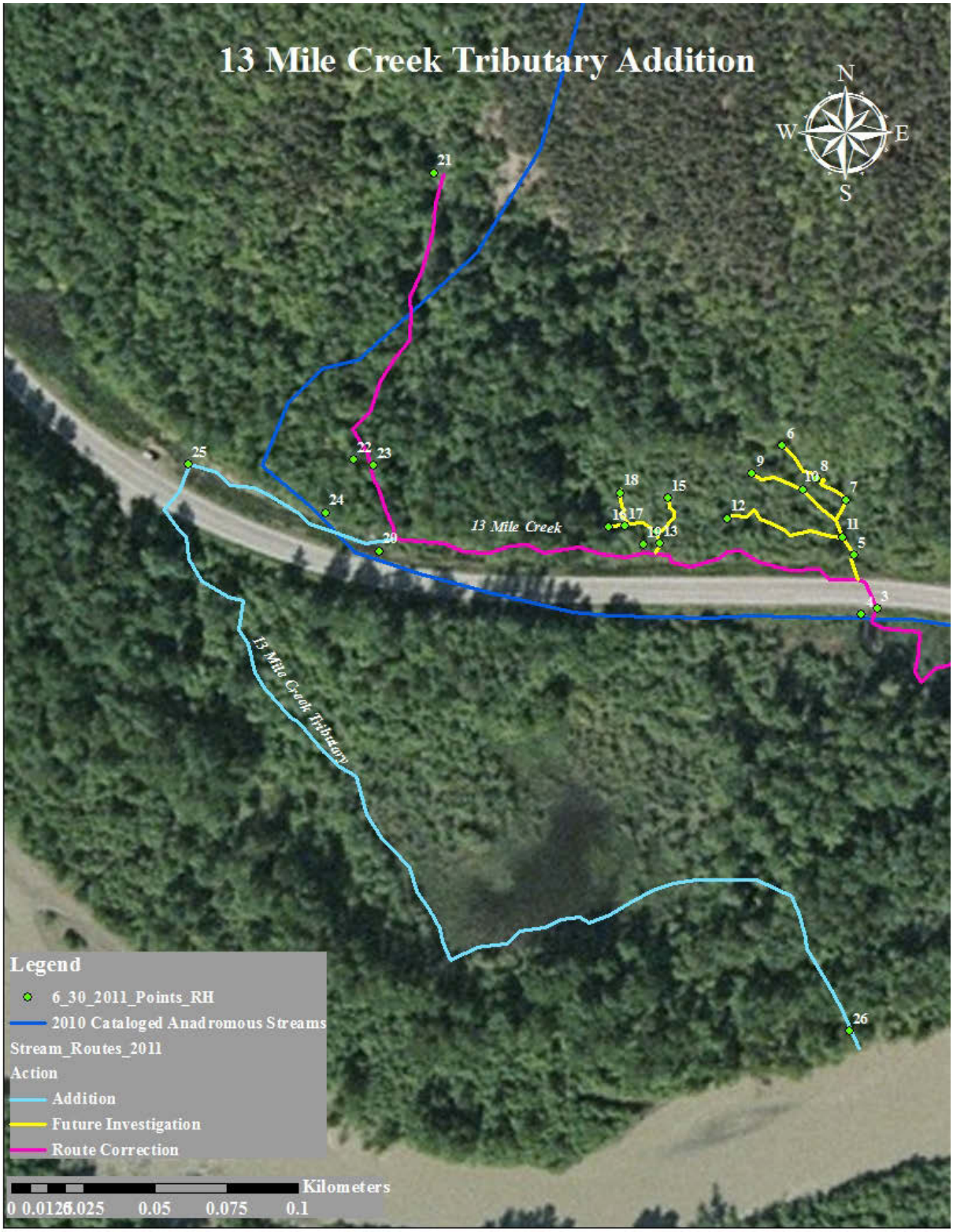

Figure 96.–13 Mile Creek tributary addition map.

18 MILE SLOUGH TRIBUTARY ADDITION

Stream: 18 Mile Slough tributary (115-32-10250-2060, cataloged for CHsr, COsrp, DVr, Kpr).
Watershed: Takhin River.
MTRS: Township 29S, Range 57E, Section 16, Skagway B-3.
Date Surveyed: June 4, 2011.
Findings: This spring-fed stream is a tributary to 18 Mile Slough. The tributary emerges from upwellings in the forest and contained juvenile coho salmon all the way to the headwaters.
Recommendations: Add this stream to the AWC.

Table 36.–18 Mile Slough tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
50	59.3619	-135.8105	Tributary enters river right.		
51	59.3618	-135.8105	Start of tributary, start tracking.		
52	59.3615	-135.8108	Handnet 3 CO - 40mm.	HN	3 CO - 40 mm
53	59.3603	-135.8151	Starts to become ponds that have little connection. Visual ID of CO up to this WPT.	HN	1 CO - 40 mm

Figure 97.–Tess Quinn and Rick Hoffman surveying 18 Mile Slough tributary.

Figure 98.–18 Mile Slough tributary addition map.

HORSE FARM CREEK ROUTE CORRECTION

Stream: Horse Farm Creek (115-32-10250-2060-3001, cataloged for COrp).
Watershed: Takhin River.
MTRS: Township 29S, Range 57E, Section 15, Skagway B-3.
Date Surveyed: June 4, 2011.
Findings: This stream's anadromous extent terminates at a steep channelized waterfall lower than is illustrated in the AWC. It follows the highway more closely than is currently documented, and enters 18 Mile Slough at a different location.
Recommendations: Update this stream's route, upper, and lower limit in the AWC.

Table 37.–Horse Farm Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
18	59.3697	-135.8337	Confluence of side channel. Possible source of 18 Mile Slough.		
19	59.3659	-135.8003	Start of track line of Horse Farm Creek. Double culvert on the left side of road facing the border.		
20	59.3660	-135.8004	Fork in the stream. Took the river right branch.		
21	59.3663	-135.8006	Little creek entering from river left.		
22	59.3664	-135.8007	Small tributary entering from river left. Connects to WPT 20 branch.		
23	59.3677	-135.8023	End of tracking. Measurement above WPT was 25 meters and a 12% grade. Below the WPT 15 meter and 15% grade. Electrofished and caught no fish..	EF	No Fish
24	59.3671	-135.8012	Start track of river left branch or mainstem.		
25	59.3668	-135.8008	Electrofished 1 DV – 140 mm.	EF	1 DV - 140 mm
26	59.3665	-135.8004	Electrofished 2 DV -45 mm.	EF	2 DV -45 mm
27	59.3663	-135.8003	Electrofished, no fish.	EF	No Fish
28	59.3662	-135.8002	Electrofished 3 CT and 5 DV, all were < 40 mm. Second round of electrofishing got 1 CT -55mm and 10 DV < 30mm.	EF	3 CT < 40 mm, 5 DV < 40 mm, 1 CT - 55 mm, 10 DV < 30 mm
29	59.3662	-135.8003	Electrofishing on river right. Captured 2 CT -135mm.	EF	2 CT-135 mm

30	59.3662	-135.8005	Electrofishing on river right, no fish.	EF	No Fish
31	59.3663	-135.8006	Electrofishing on river right, where branch braids a bit. 1 DV captured.	EF	1 DV
34	59.3657	-135.7998	Handnet 1 CO – 45 mm.	HN	1 CO – 45 mm
35	59.3647	-135.7987	Handnet 5 CO – 40 mm.	HN	5 CO -40 mm
36	59.3646	-135.7986	Culvert enters from river left. Little tributary.		
37	59.3633	-135.7991	Horse Farm Creek empties into clear 18 Mile Slough. 2 CO 50mm and 1 Lamprey at 140mm captured. Track continues up from WPT #37 on possible 18 Mile Slough.	HN	2 CO – 50 mm, 1 lamprey – 140 mm

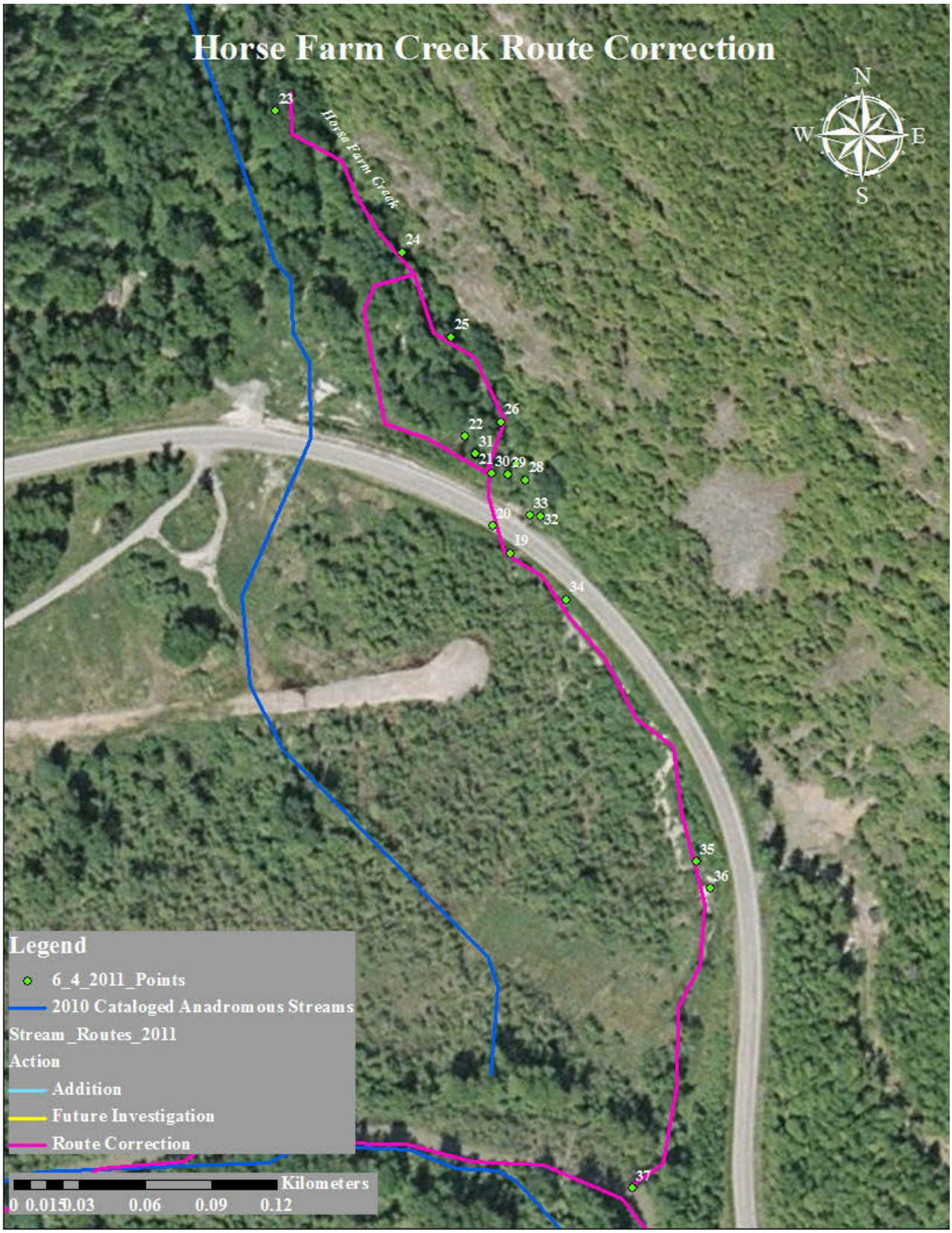

Figure 99.–Horse Farm Creek correction map.

33 MILE CREEK ROUTE CORRECTION

Stream: 33 Mile Creek (115-32-10250-2077-3082, cataloged for COsr).
Watershed: Takhin River.
MTRS: Township 28S, Range 54E, Section 24, Skagway B-4.
Date Surveyed: August 14 and 15, 2011.
Findings: This stream is highly influenced by beaver activity, with many fresh dams present throughout the stream. We found abundant juvenile Dolly Varden char and coho salmon in this stream. The route of 33 Mile Creek mainstem differs from that illustrated in the AWC. The headwaters are in a different location than is currently cataloged, and the mouth enters the Chilkat River in a different area.
Recommendations: Update the route, upper, and lower limit of this stream in the AWC.

Table 38.–33 Mile Creek survey data: August 14, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.4300	-136.1614	Place where tributary we tracked earlier enters. Tracking up the mainstem.		
2	59.4299	-136.1617	Tributary entering from river right. Tracking up.		
3	59.4294	-136.1638	Electrofished 1 DV ~ 55mm.	EF	1 DV ~ 55mm
4	59.4293	-136.1641	Electrofished 1 DV ~ 50mm.	EF	1 DV ~50mm
5	59.4292	-136.1644	Electrofished 2 DV - 50-55mm.	EF	2 DV ~ 50-55mm
6	59.4292	-136.1650	Electrofished 1DV – 85 mm.	EF	1 DV - 85mm
7	59.4293	-136.1671	Visual ID on one DV- 50 mm. Creek goes under ground. Looks like it has a gap big enough for adult fish to be able to pass. Continuing up.	VI	1 DV- 50mm
8	59.4293	-136.1673	Electrofished above the covered part of the stream- 1 DV – 100 mm.	EF	1 DV- 100mm
9	59.4293	-136.1684	Top of the tributary. Pools at the top with not much flow out. The pools have iron deposits on the bottom.		
10	59.4300	-136.1646	Tributary entering from river left. Tracking.		
11	59.4300	-136.1650	Electrofished 1 DV - 55 mm.	EF	1 DV- 55 mm
12	59.4300	-136.1658	Top of the tributary. Its pooling out of the ground. Able to make a visual VI on 3 DV ~ 80 mm.	VI	3 DV-80 mm
13	59.4297	-136.1654	Handnet 1 CO - 55 mm.	HN	1 CO- 55 mm
14	59.4296	-136.1659	Tributary entering river right. Tracking up.		

15	59.4295	-136.1662	Top of the tributary. Just pools up and comes to an end. Water coming up out of the ground.		
16	59.4298	-136.1676	Handnet 1 CO - 50 mm.	HN	1 CO- 50 mm
17	59.4298	-136.1681	Side channel entering from river left. Half of the flow that is in creek is coming from the channel. Tracking up. The water channel appears to be new, no defined channel, just flowing over the forest floor.		
18	59.4298	-136.1703	Beaver dam. The water that comes out at WPT 17 is water from 33 Mile Creek that is over flowing the banks where the dam is and flowing through woods to reconnect with 33 Mile mainstem. Tracking up mainstem.		
19	59.4298	-136.1724	Another beaver dam, has pretty good flow over the banks that make up side. Continuing up.		
20	59.4297	-136.1727	Possible tributary entering from river left. Not going to track going to continue up mainstem.		
21	59.4297	-136.1733	Beaver dam with pretty good flow through it. Continuing up mainstem.		
22	59.4292	-136.1760	Have come to point where there is flow coming in from all directions. Basically a beaver complex that is spread out over a large area. With very thick willows making tracking hard. Going to call this top for now.		

Table 39.–33 Mile Creek survey data: August 15, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.4301	-136.1508	Begin tracking downstream just off roadway.		

2	59.4293	-136.1464	Tributary enters on river left, visual ID 1 CO at mouth. Continue up 33 Mile Creek.	VI	1 CO
3	59.4286	-136.1424	Possible tributary or backwater behind beaver dam.		
4	59.4283	-136.1425	Another possible tributary or backwater on each side of the creek.		
5	59.4281	-136.1417	Channels enter on each side of the creek - possible tributaries or backwaters.		
6	59.4282	-136.1409	Possible tributary or backwater enters on river left - has many small visible mud dams.		
7	59.4280	-136.1402	Big beaver dam - apparently not a barrier - side flow provides fish pass.		
8	59.4268	-136.1387	Very small tributary enters on river right.		
9	59.4262	-136.1379	Tributary enters on river right - track upstream.		
10	59.4259	-136.1371	Mouth of 33 Mile Creek confluence with Klehini River.		
11	59.4263	-136.1382	Handnet 3 CO- 35-45 mm - continue upstream.	HN	3 CO - 35-45 mm
12	59.4265	-136.1389	Handnet 1 CO - 45 mm.	HN	1 CO - 45 mm
13	59.4264	-136.1418	Handnet 1 CO - 40 mm.	HN	1 CO - 40 mm
14	59.4266	-136.1426	Handnet 3 CO in small spring pool-side pool - Resume upstream.	HN	3 CO - 35-45 mm
15	59.4267	-136.1427	Tributary enters on river right.		
16	59.4268	-136.1430	Handnet 1 CO - 38 mm.	HN	1 CO - 38 mm
17	59.4271	-136.1436	Tributary ends in small pool - semi disconnected from the rest of the stream. Dry channel extends beyond.		
18	59.4272	-136.1429	Handnet 2 CO - 40-45 mm.	HN	2 CO - 40-45 mm
19	59.4271	-136.1437	Handnet 1 CO- 45 mm - continue upstream.	HN	1 CO - 45 mm
20	59.4274	-136.1443	Upper extent of connected-watered-habitat. 7 Dead CO - 30-60 mm in tiny pool - must have been trapped and dried out.	HN	7 CO - 30-60
21	59.4273	-136.1496	Becomes forested with no scoured channel.		

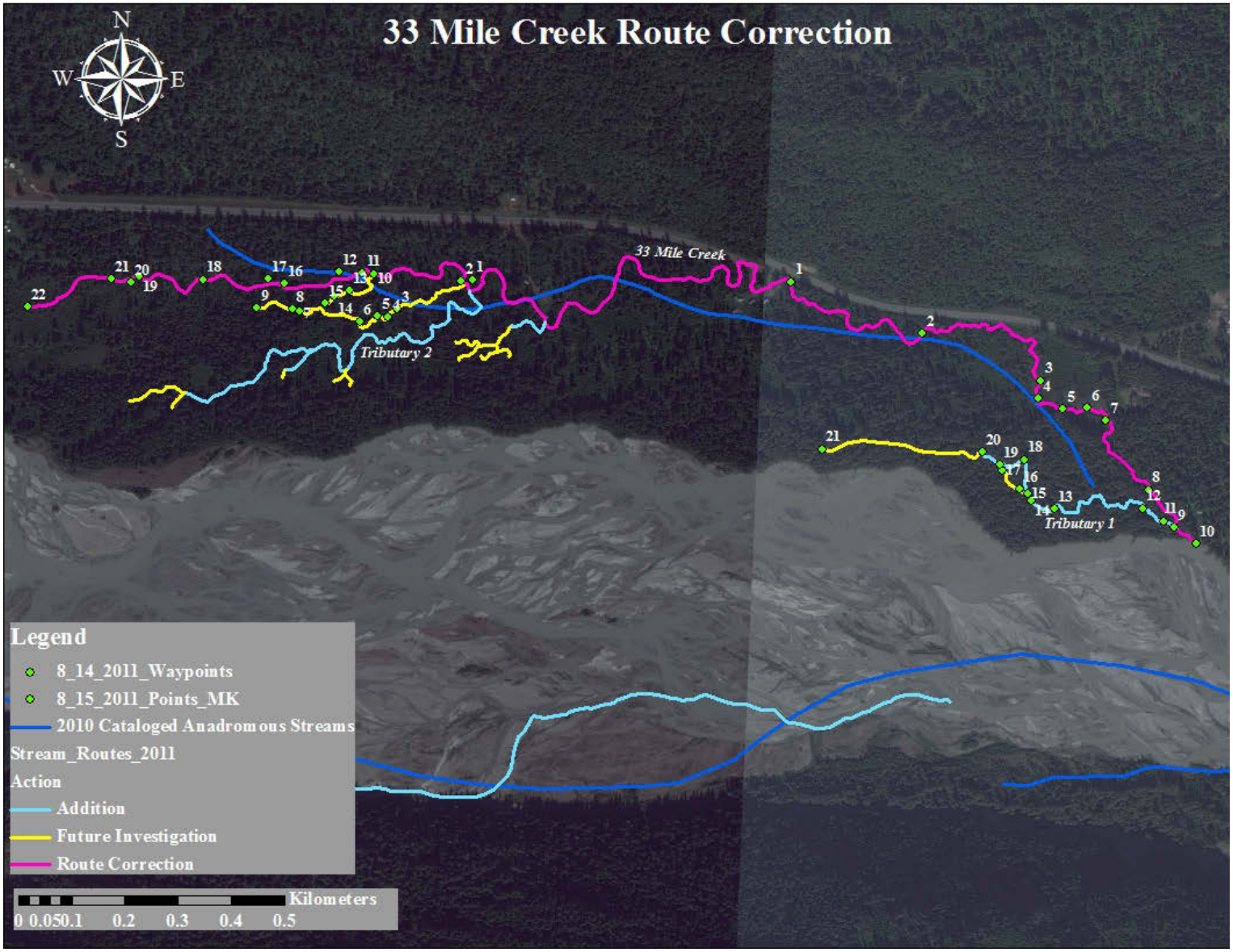

Figure 100.–33 Mile Creek route correction map.

33 MILE CREEK TRIBUTARY 1 ADDITION

Stream: 33 Mile Creek tributary 1 (115-32-10250-2077-3082 cataloged for COpr).
Watershed: Takhin River.
MTRS: Township 28S, Range 54E, Section 24, Skagway B-4.
Date Surveyed: August 15, 2011.
Findings: This stream is a tributary to 33 Mile Creek. This stream contained adequate flows for rearing fish and is spring fed. It is fed through ground seeps originating in the Klehini River flood plain. We found seven dead juvenile coho salmon in a dried pool near the stream's source.
Recommendations: Add this stream to the AWC.

Table 40.–33 Mile Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
9	59.4262	-136.1379	Tributary enters on river right - track upstream.		
10	59.4259	-136.1371	Mouth of 33 Mile Creek confluence with Klehini River.		
11	59.4263	-136.1382	Handnet 3 CO- 35-45 mm - continue upstream.	HN	3 CO - 35-45 mm
12	59.4265	-136.1389	Handnet 1 CO - 45 mm.	HN	1 CO - 45 mm
13	59.4264	-136.1418	Handnet 1 CO - 40 mm.	HN	1 CO - 40 mm
14	59.4266	-136.1426	Handnet 3 CO in small spring pool-side pool - Resume upstream.	HN	3 CO - 35-45 mm
15	59.4267	-136.1427	Tributary enters on river right.		
16	59.4268	-136.1430	Handnet 1 CO - 38 mm.	HN	1 CO - 38 mm
17	59.4271	-136.1436	Tributary ends in small pool - semi disconnected from the rest of the stream. Dry channel extends beyond.		
18	59.4272	-136.1429	Handnet 2 CO - 40-45 mm.	HN	2 CO - 40-45 mm
19	59.4271	-136.1437	Handnet 1 CO- 45 mm - continue upstream.	HN	1 CO - 45 mm
20	59.4274	-136.1443	Upper extent of connected-watered-habitat. 7 Dead CO - 30-60 mm in tiny pool - must have been trapped and dried out.	HN	7 CO - 30-60

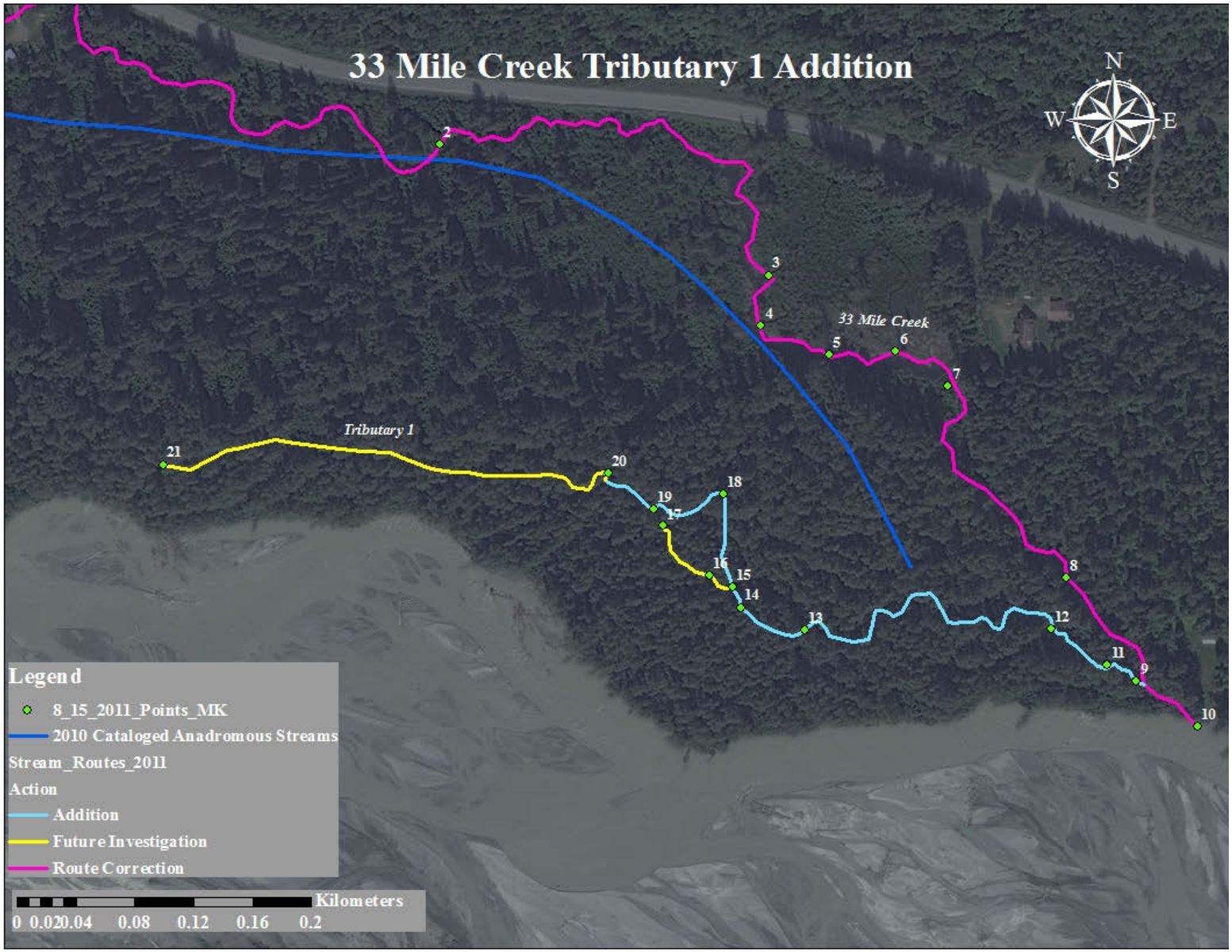

Figure 101.–33 Mile Creek tributary 1 addition map.

33 MILE CREEK TRIBUTARY 2 ADDITION

Stream: 33 Mile Creek tributary 2 (115-32-10250-2077-3082 cataloged for COpr).
Watershed: Takhin River.
MTRS: Township 30S, Range 58E, Section 8, Skagway B-4.
Date Surveyed: August 2, 2011.
Findings: This spring fed tributary to 33 Mile Creek contained good consistent flow and abundant juvenile coho salmon.
Recommendations: Add this stream to the AWC.

Table 41.–33 Mile Creek tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.4300	-136.1614	Begin tracking upstream river right fork.		
2	59.4293	-136.1621	Visual ID of 3 salmonids - Probably CO - 35 mm.	VI	3 CO - 35 mm
3	59.4284	-136.1654	Tributary enters on river right - Begin tracking upstream.		
4	59.4283	-136.1654	Tributary branches into 3 forks - one is a small upwelling on tributary left that is only 10 ft long. Begin tracking up middle fork.		
5	59.4282	-136.1656	Tributary forks into 2 - tracking up river left fork - looks to have the most flow.		
6	59.4282	-136.1658	Upper extent of tributary – attempted electrofishing..	EF	no fish
7	59.4281	-136.1653	Upper extent of small tributary - no indication of anadromous fish presence.		
8	59.4288	-136.1660	Electrofished 1 DV.	EF	1 DV- 25 mm
9	59.4287	-136.1663	Electrofished 1 CO - 30 mm. Just below beaver dam. CO also visible in shallow pond above the dam.	EF	1 CO - 30 mm
10	59.4287	-136.1665	Tributary or backwater enters river right. Begin Tracking upstream.		
11	59.4283	-136.1672	Attempted electrofishing large pool with many CO visible. Caught 2 CO - 40 mm. Continue upstream.	EF	2 CO - 40 mm
12	59.4283	-136.1674	Handnet 1 CO. Top of watered habitat.	HN	1 CO - 35 mm
13	59.4282	-136.1674	Stream dries completely.		

14	59.4282	-136.1684	Handnet 1 CO- 43 mm - Continue upstream	HN	1 CO - 43 mm
15	59.4280	-136.1693	Tiny tributary enters river right, continue up mainstem.		
16	59.4279	-136.1708	Tributary enters on river right. Fish seem to be present.		
17	59.4278	-136.1709	Attempting electrofishing in pool before small waterfall - no fish seen or captured.	EF	No fish
18	59.4280	-136.1712	Upper extent of watered habitat. No fish seen or captured - stream emerges from dry forest. Back to mainstem.	EF	No fish
19	59.4279	-136.1709	Electrofished and caught 1 DV - 30 mm. Handnet 1 CO - 35 mm.	HN & EF	1 DV - 30 mm, 1 CO - 35 mm
20	59.4279	-136.1719	Small tributary flows in on river left. No current investigation necessary.		
21	59.4277	-136.1722	River forks - follow river left side up.		
22	59.4277	-136.1726	Upper extent of watered habitat - attempting electrofishing and no fish seen or caught.	EF	No fish
23	59.4276	-136.1723	Upper extent of river right fork. Creek emerges from dry but deep trench. Track back down to confluence.		

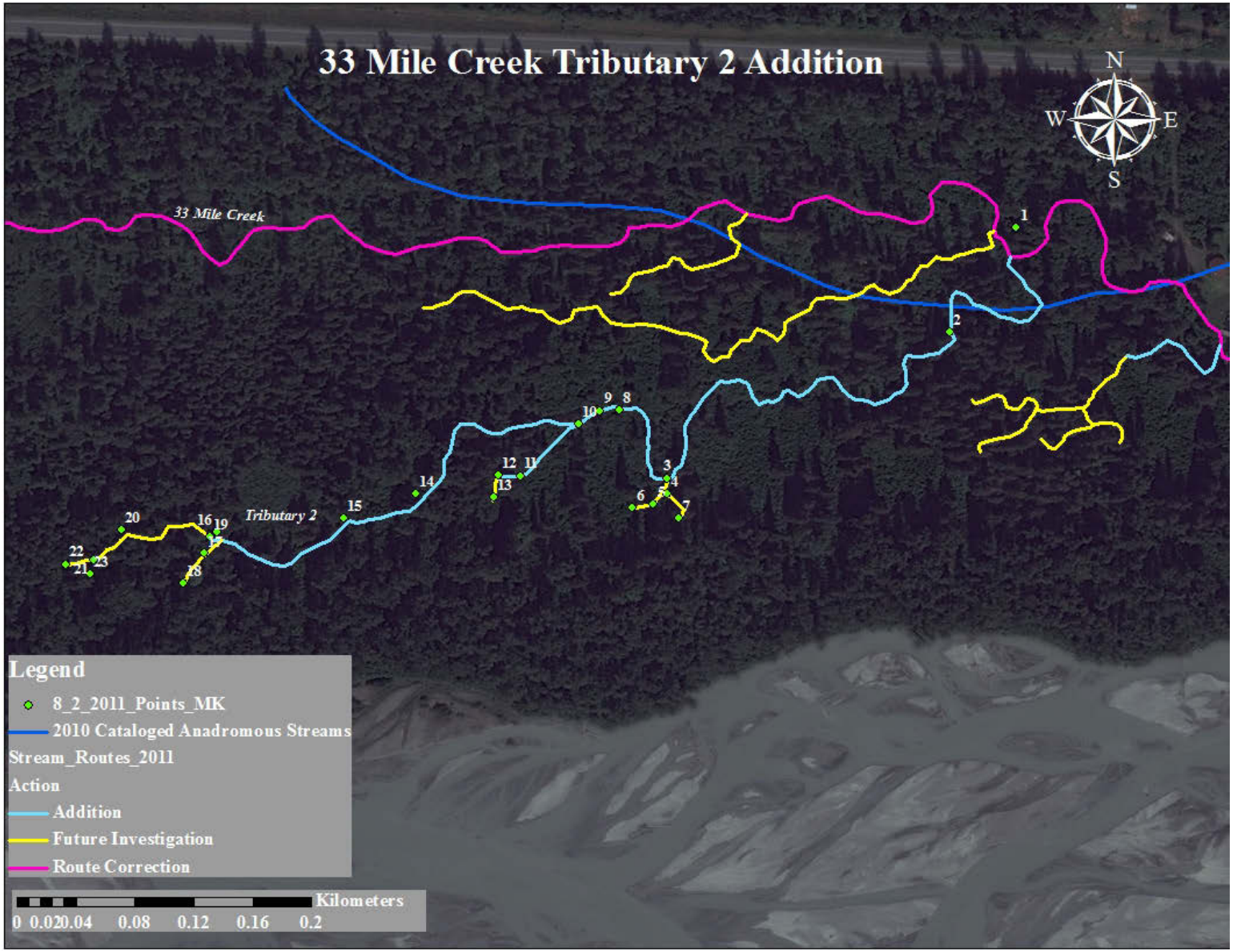

Figure 102.–33 Mile Creek tributary 2 addition map.

37 MILE CREEK TRIBUTARY ADDITION

Stream: 37 Mile Creek tributary (115-32-10250-2077-3136 cataloged for CHs, COsr, Ks, Ss).
Watershed: Takhin River.
MTRS: Township 28S, Range 54E, Section 21, Skagway B-4.
Date Surveyed: June 19, 2011.
Findings: This stream is a tributary to 37 Mile Creek. We caught coho salmon throughout this tributary.
Recommendations: Add this stream to the AWC.

Table 42.–37 Mile Creek tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
19	59.4390	-136.2840	Tributary entering from river right. Heading up the tributary.		
20	59.4389	-136.2841	Handnet 1 CO - 35mm.	HN	1 CO- 35mm.
21	59.4386	-136.2852	End of the tributary. Electrofished and caught no fish.	EF	No fish
22	59.4387	-136.2850	Electrofished 1 CO -35-40mm.	EF	1 CO - 35-40mm.

Figure 103.–School of juvenile coho salmon in 37 Mile Creek tributary.

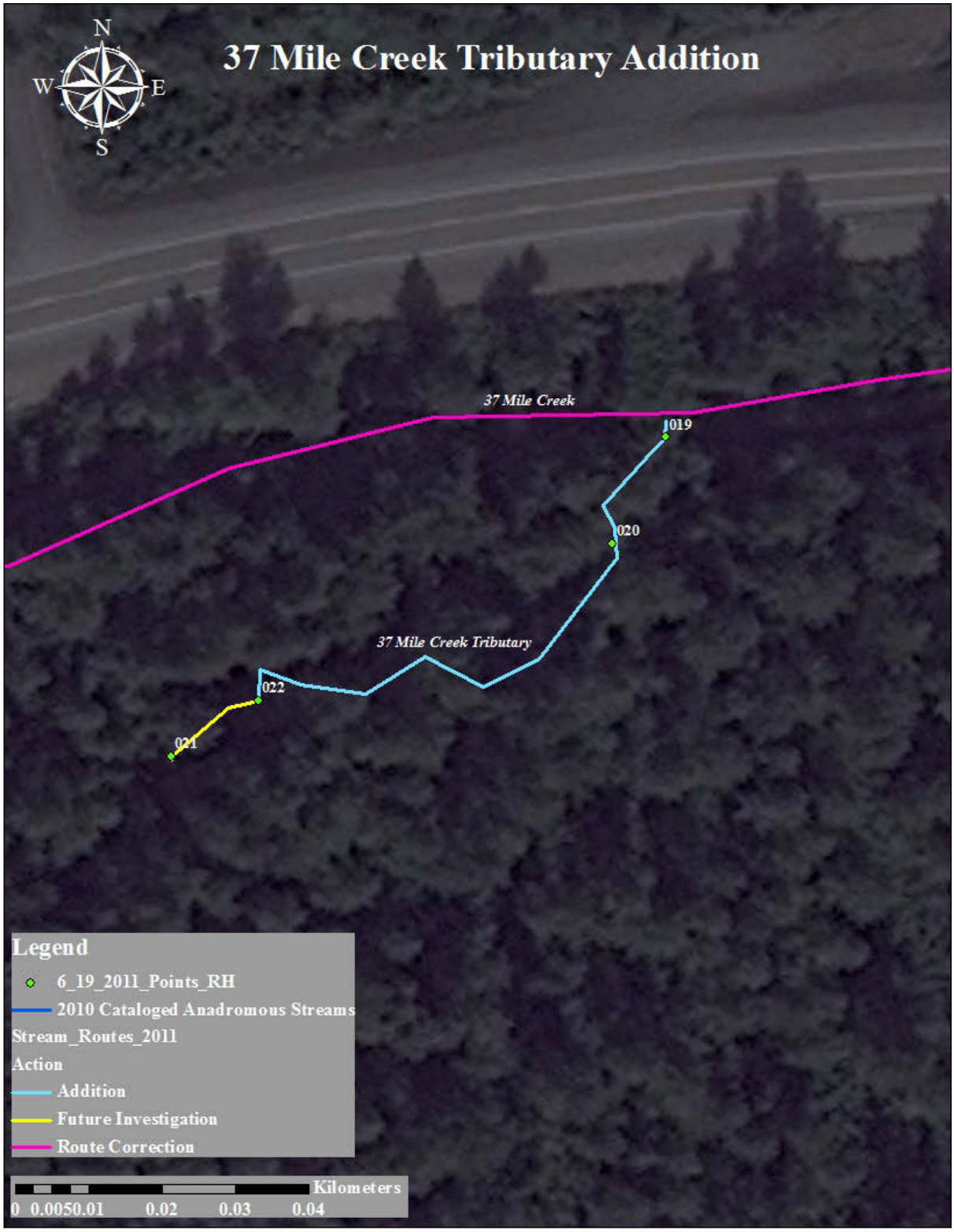

Figure 104.–37 Mile Creek tributary addition map.

CLEAR CREEK TRIBUTARY 1 ADDITION

Stream: Clear Creek tributary 1 (115-32-10250-2067-3002-4007, cataloged for COpr).
Watershed: Takhin River.
MTRS: Township 29S, Range 55E, Section 1, Skagway B-3.
Date Surveyed: July 19, 2011.
Findings: This stream is a tributary to Clear Creek emerging from spring fed seeps.
Recommendations: Add this stream to the AWC.

Table 43.–Clear Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
9	59.3814	-136.0710	Tributary entering from river left.		
10	59.3818	-136.0720	Top of the tributary. The water is just coming out of the ground. Was able to Handnet 11 CO that were ~ 35-45 mm.	HN	11 CO- 35-45 mm

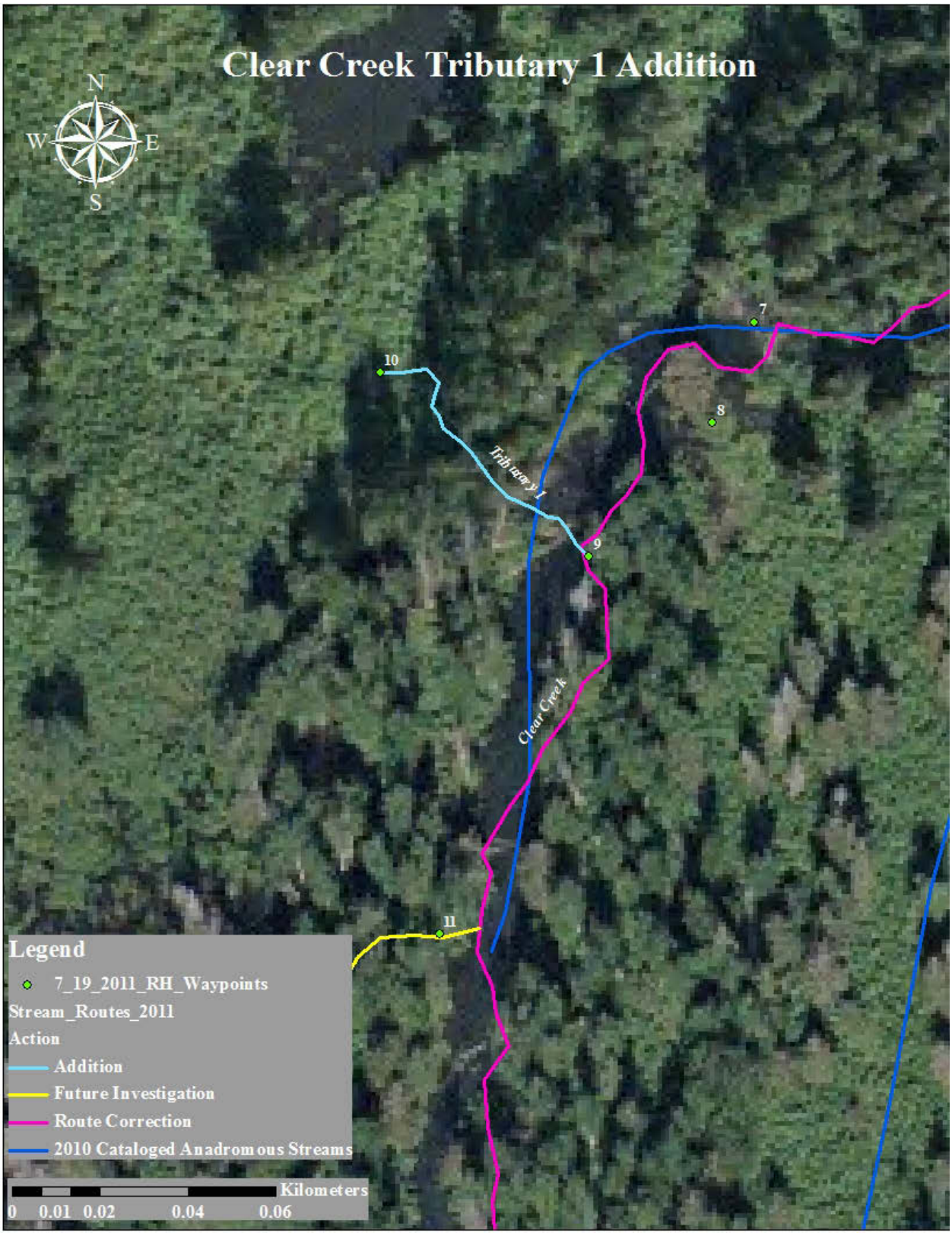

Figure 105.–Clear Creek tributary 1 addition map.

CLEAR CREEK TRIBUTARY 2 ADDITION

Stream: Clear Creek tributary 2 (115-32-10250-2067-3002-4007, cataloged for COpr).
Watershed: Takhin River.
MTRS: Township 29S, Range 55E, Section 21, Skagway B-3.
Date Surveyed: July 20, 2011.
Findings: This stream is a tributary to Clear Creek emerging from spring fed seeps.
Recommendations: Add this stream to the AWC.

Table 44.–Clear Creek tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.3794	-136.0734	Triple confluence we stopped at yesterday (7/19/2011) - walking and tracking up river right (mainstem).		
2	59.3786	-136.0732	Tributary enters on river right. Begin tracking upstream		
3	59.3783	-136.0723	Tributary enters on river right. Electrofished 3 CO - 35-40 mm	EF	3 CO - 35-40 mm
4	59.3781	-136.0724	Small tributary enters on river left. Only ~ 20 ft long, continue up mainstem.		
5	59.3779	-136.0720	Electrofished 1 CO - 35 mm	EF	1 CO - 35 mm
6	59.3778	-136.0720	Handnet 2 CO - 35 mm, continue upstream.	HN	2 CO - 35 mm
7	59.3775	-136.0710	Attempted electrofishing in large deep pool: no fish.	EF	No fish
8	59.3773	-136.0709	End of connected, watered, habitat. Continues in series of pools but no fish currently present, back to mainstem.		

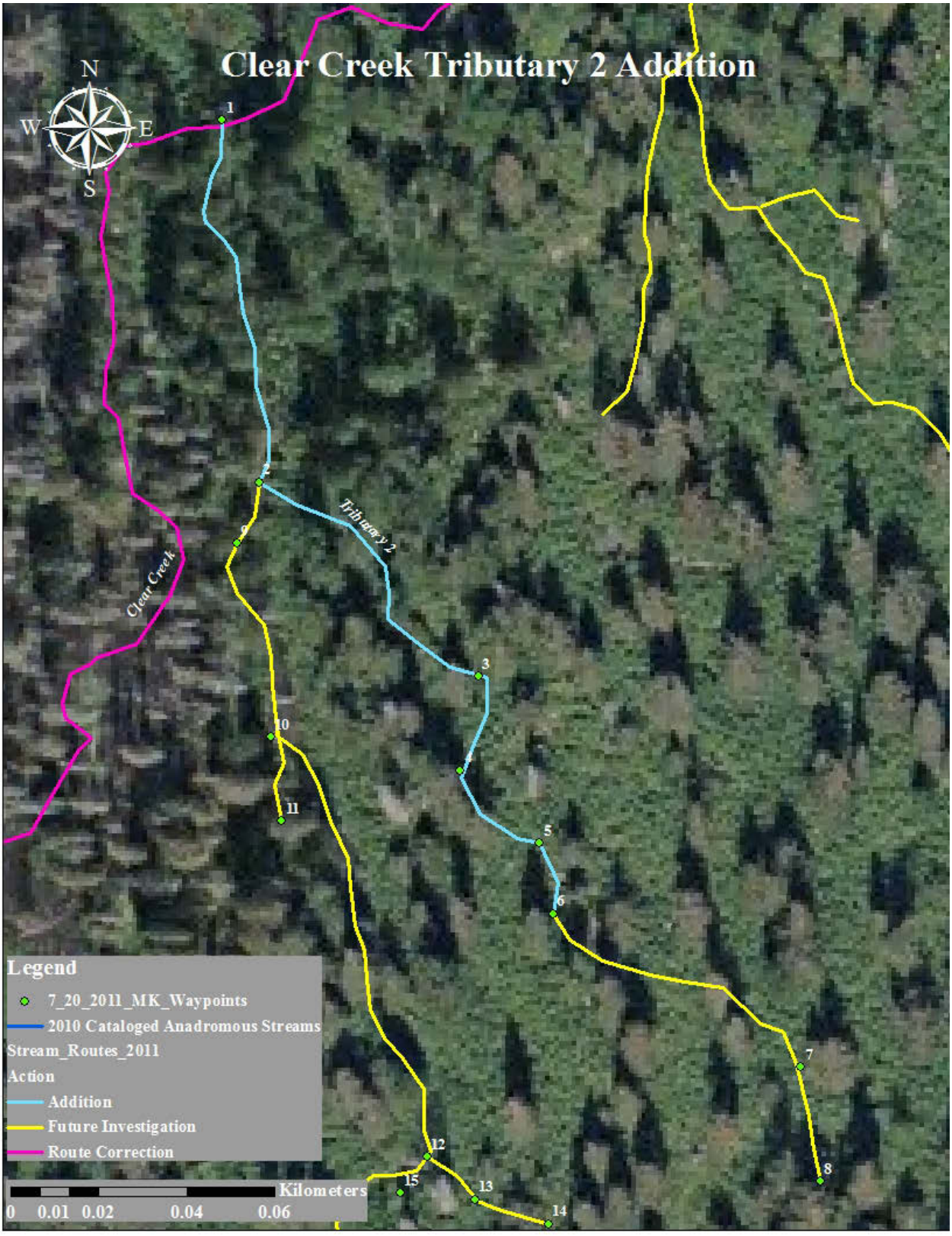

Figure 106.–Clear Creek tributary 2 addition map.

CLEAR CREEK ROUTE CORRECTION

Stream: Clear Creek (115-32-10250-2067-3002-4007 cataloged for COpr).
Watershed: Takhin River.
MTRS: Township 29S, Range 55E, Section 1, Skagway B-3.
Date Surveyed: July 19-20, & August 26, 2011.
Findings: We surveyed this network of streams over the course of several days and found many of the tributaries to be sourced from small upwellings in the forest. The stream track begins on cataloged stream: 115-32-10250-2067-3002-4007-5002 (Spring Creek) but then crosses over back onto stream 115-32-10250-2067-3002-4007, which has a local name of Clear Creek. Although we were unable to capture coho salmon in many of the associated tributaries, no obvious barriers were encountered and the habitat seemed good. Through future investigation it is possible that these tributaries could be nominated with additional field work.

Recommendations: Update the mainstem arc of stream 115-32-10250-2067-3002-4007 (Clear Creek). We found the existing arc to extend well beyond the end of any apparent channel so it current cataloged stream length should be shortened to be consistent with our findings.

Table 45.–Clear Creek survey data: July 19 and 20, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.3830	-136.0680	Logging bridge across Clear Creek. Adult S salmon are present . Tracking upstream.		
2	59.3818	-136.0693	Tributary enters from river right.		
3	59.3808	-136.0697	Tributary entering from river left. Tracking up.		
4	59.3802	-136.0695	Top of the tributary. The water just comes out of the ground. Electrofished and caught no fish.	EF	No Fish
5	59.3806	-136.0690	Electrofished and caught no fish.	EF	No Fish
6	59.3804	-136.0691	Top of tributary. It just comes out of the ground. No fish were seen.		
7	59.3819	-136.0707	Beaver Dam. Has a good size hole in it on river right of the dam. Fish are able to pass because there were five S present above the dam.		
8	59.3817	-136.0708	Handnet 2 CO ~ 30-35mm.	HN	2 CO ~ 30-35 mm
9	59.3814	-136.0713	Tributary entering from river left.		
10	59.3818	-136.0722	Top of the tributary. The water is just coming out of the ground. Handnet 11 CO ~ 30mm.	HN	11 CO ~ 30 mm

11	59.3806	-136.0719	Tributary entering from river left. Tracking up.		
12	59.3805	-136.0726	Top of the tributary. Beaver dam at the top. Dam makes a marsh above it.		
13	59.3798	-136.0716	Tributary entering from river right. Tracking up.		
14	59.3795	-136.0715	Tributary entering from river left. Tracking up.		
15	59.3788	-136.0719	Top of the tributary comes out of the ground.		
16	59.3792	-136.0714	Tributary entering from river right. Tracking up.		
17	59.3792	-136.0709	Top of the tributary. Just comes bubbling up out of the ground.		
18	59.3786	-136.0702	Top of tributary. Just comes bubbling up out of the ground.		
19	59.3791	-136.0712	Visual identification on 1 CO ~ 60mm.	VI	1 CO ~ 60 mm
20	59.3793	-136.0734	Tributary entering from river left. Backwater area right next to the tributary mouth. Tracking up the tributary.		
21	59.3792	-136.0741	Crossed the creek and went up a slight embankment and there was a large beaver pond.		
22	59.3780	-136.0745	Stopped tracking tributary. The tributary ran along the beaver pond and then connected with pond in a couple of places. The area is very flooded out and dead trees make it hard to travel. The tributary appears to be somewhat new.		

Table 46.–Clear Creek survey data: August 26, 2011.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.3794	-136.0735	Confluence before beaver pond. Tracking up mainstem.		
2	59.3761	-136.0732	Tracking downstream.		
4	59.3732	-136.0713	Handnet 1 CO 35 mm, 1 DV - 30 mm.	HN	1 CO- 35 mm, 1 DV - 30 mm

5	59.3718	-136.0699	Side channel enters on river right, continue upstream.		
6	59.3704	-136.0711	1 DV - 30 mm.	HN	1 DV - 30 mm
7	59.3701	-136.0710	Tributary enters river left. Handnet 2 DV - 30-35 mm.	HN	2 DV - 30-35 mm
8	59.3691	-136.0711	Handnet 1 CO - 35 mm.	HN	1 CO- 35 mm
9	59.3683	-136.0713	Tributary enters river right. Handnet 1 CO.	HN	1 CO- 35 mm
10	59.3683	-136.0718	Handnet 1 CO - 45 mm	HN	1 CO- 45 mm
11	59.3673	-136.0731	Handnet 1 big CO- 55 mm	HN	1 CO- 55 mm
12	59.3671	-136.0732	Tributary enters river right.		
13	59.3670	-136.0732	Side channel pours off from here, possible tributary comes in on river left.		
14	59.3668	-136.0732	Small tributary enters on river right. Continue up mainstem.		
15	59.3665	-136.0735	Handnet 1 CT - 60 mm.	HN	1 CT - 60 mm
16	59.3664	-136.0737	Handnet 2 CO - 40 mm - stream becomes mossy, steeper, rocky, and piddling out.	HN	2 CO- 40 mm
17	59.3664	-136.0739	End of water and channel - stream comes out of large rocky substrate - would require very high flow to contain fish or water.		
19	59.3668	-136.0732	Handnet 1 DV - 25 mm.		
20	59.3666	-136.0728	Top of watered habitat - channel continues but very vegetated - likely no fish habitat.		
21	59.3681	-136.0710	Top of tree riddled tributary - no fish captured.		
22	59.3696	-136.0713	Small tributary feeds in on river right - 1 DV - 30 mm.	HN	1 DV - 30 mm
23	59.3692	-136.0719	Small tributary enters on river left - continue up main tributary.		
24	59.3687	-136.0720	Visual ID - Unknown salmonid (probably CT) ~ 100 mm	VI	1 Unknown Salmonid ~100 mm
25	59.3684	-136.0722	Top of tributary - no channel - or water above - just a pool with a small seep.		

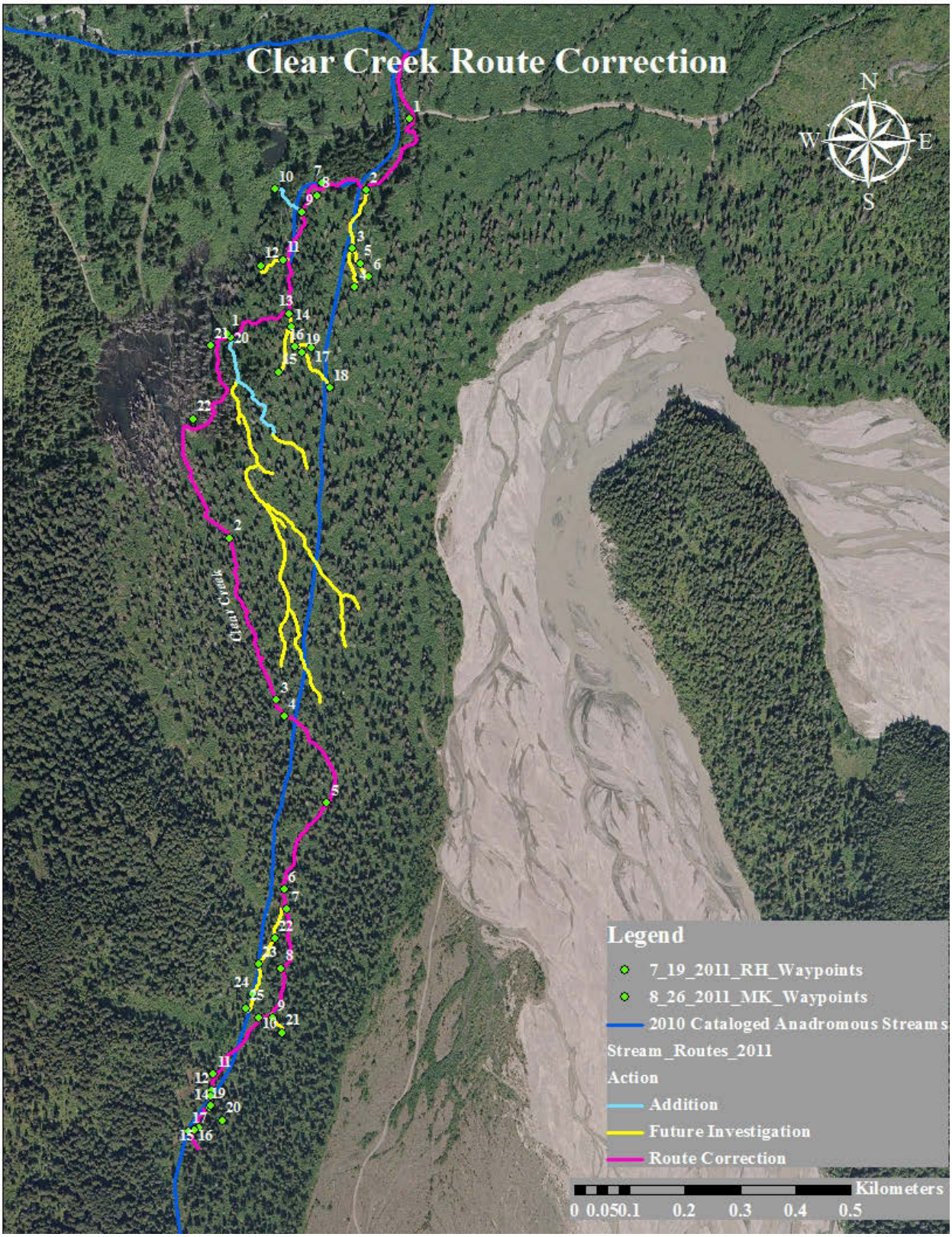

Figure 107.–Clear Creek route correction map.

HERMAN CREEK TRIBUTARY 1 ADDITION

Stream: Herman Creek tributary 1 (115-32-10250-2077-3061, cataloged for CHp, COp, Sp, DVp).
Watershed: Takhin River.
MTRS: Township 28S, Range 55E, Section 28, Skagway B-3.
Date Surveyed: July 16, 2011.
Findings: This stream is a tributary to Herman Creek. Coho salmon were caught in the upper extent of this tributary.
Recommendations: Add this stream to the AWC.

Table 47.–Herman Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
18	59.4136	-136.0683	Handnet 1 DV -35 mm and 1 CO 45 mm.	HN	1 DV - 35 mm, 1 CO -45 mm
22	59.4135	-136.0682	Tributary enters on river left. Begin tracking upstream.		
23	59.4140	-136.0689	Electrofished upper extent of watered habitat: 2 CO- 35-50 mm.	EF	2 CO - 35-50 mm

Figure 108.–Rick Hoffman electrofishing Herman Creek tributary 1.

Figure 109.–Herman Creek tributary 1 addition map.

HERMAN CREEK TRIBUTARY 2 ADDITION

Stream: Herman Creek tributary 2 (115-32-10250-2077-3061, cataloged for CHp, COp, Sp, DVp).
Watershed: Takhin River.
MTRS: Township 28S, Range 55E, Section 28, Skagway B-3.
Date Surveyed: July 16, 2011.
Findings: This stream is a tributary to Herman Creek. Juvenile coho salmon were abundant in this small spring fed stream.
Recommendations: Add this stream to the AWC.

Table 48.–Herman Creek tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
36	59.4128	-136.0741	Tributary enters on river right. Begin tracking upstream.		
37	59.4128	-136.0744	Handnet 1 CO - 40 mm	HN	1 CO - 40 mm
38	59.4124	-136.0749	Handnet 1 CO - 35 mm, 1 DV-30 mm. Continue upstream.	HN	1 CO - 35 mm, 1 DV - 30 mm
39	59.4128	-136.0754	Upper extent of watered habitat - creek disappears into Devil's club.		
40	59.4125	-136.0748	Tributary enters other tributary on river right. Begin tracking upstream.		
41	59.4126	-136.0751	Top of watered habitat: Handnet 2 CO 35-45 mm, 1 DV: 30 mm.	HN	2 CO - 35-45 mm, 1 DV - 30 mm

Figure 110.–Coho salmon netted on Herman Creek tributary 2.

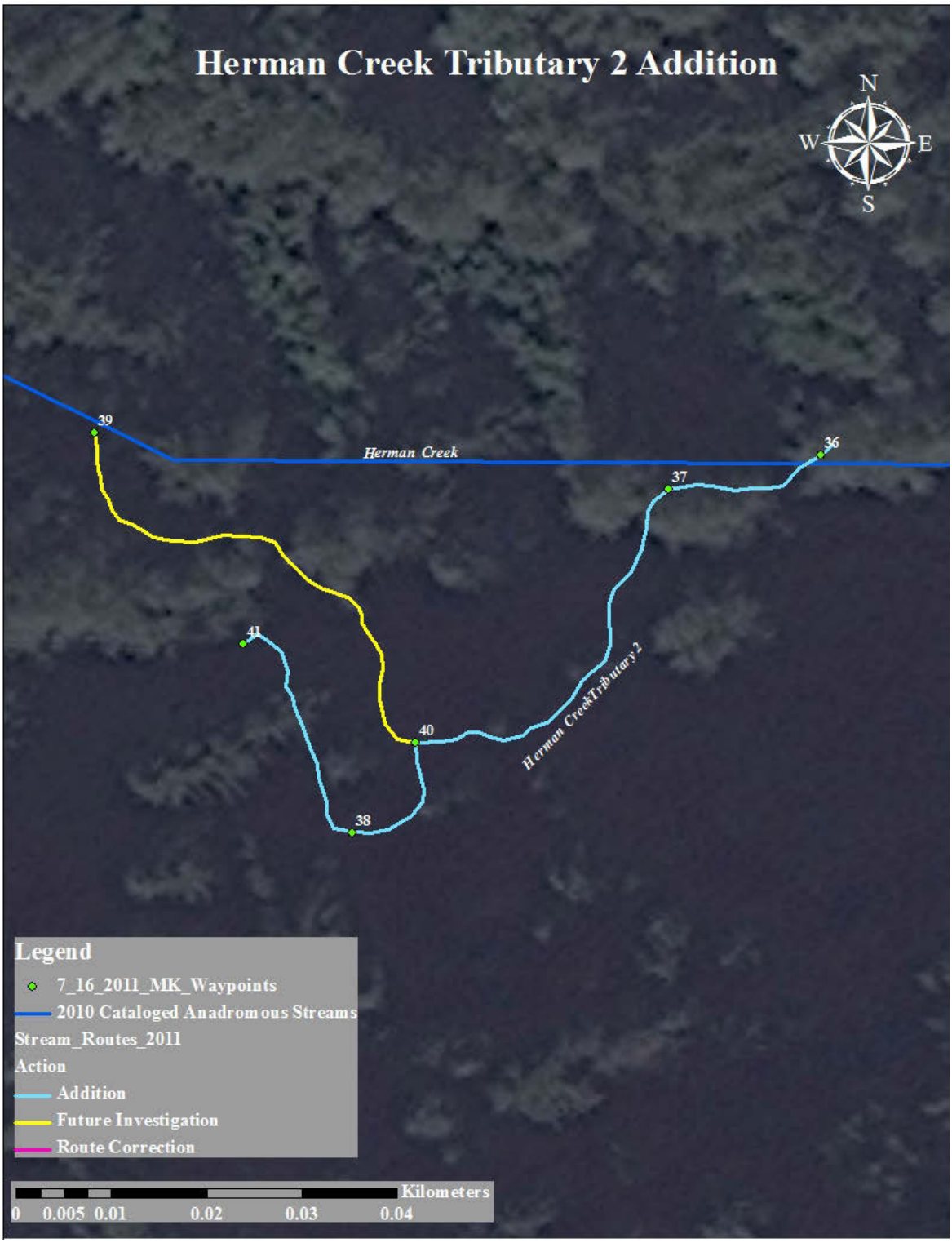

Figure 111.–Herman Creek tributary 2 addition map.

CHILKOOT RIVER TRIBUTARY ADDITION

Stream: Chilkoot River tributary.
Watershed: Chilkoot Lake.
MTRS: Township 29S, Range 58E, Section 4, Skagway C-3.
Date Surveyed: September 23, 2011.
Findings: This glacially sourced stream passes through a waterfall barrier and then meanders along the Chilkoot River flood plain. We were able to trap juvenile coho salmon part way up the stream, however, the stream seems suitable all the way to the barrier to support anadromous fish.
Recommendations: Add the lower section of this stream to the AWC.

Table 49.–Chilkoot River tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
9	59.3932	-135.6549	Back at main channel. The stream we just tracked has bisected a peninsula. Minnow trap set at confluence of undocumented tributary and Chilkoot River. Results: 7 CO - 50-110 mm, 1 DV - 55 mm.	MT	7 CO 50-110 mm, 1 DV- 55 mm
11	59.3935	-135.6549	Minnow trap set in calm undercut bank. Results: 5 DV- 40-70 mm.	MT	5 DV - 40-70 mm
12	59.3936	-135.6549	Minnow trap set just above incoming tributary/sandbar in calm pool/undercut bank. Results: 5 CO - 50-110 mm, 1 DV - 70 mm. 75 mm fish: irregular parrs, tiny clear adipose fin, some parrs not extending below lateral line. Anal fin was sickle shaped with white leading edge followed by black. Very green, mottled back and silvery belly. Possible S or CO.	MT	5 CO - 50-110 mm, 1 DV - 70 mm
13	59.3937	-135.6548	Minnow trap set below large nurse log that crosses river. DV - 70-120 mm	MT	4 DV - 70-120 mm
14	59.3939	-135.6548	Minnow trap set on river right in calm side pool created from a fallen tree. Results: 5 DV: 40-80 mm	MT	5 DV - 40-80 mm
15	59.3940	-135.6551	Minnow trap set in side pool, River right. Results: 25 DV: 60-100 mm.	MT	25 DV - 60-100 mm

16	59.3943	-135.6550	Minnow trap set in undercut bank above a couple large tree jams. Results: 1 CO - 110 mm, 11 DV - 50-90 mm. Upper extent of CO observed.	MT	1 CO - 110 mm, 11 DV - 50-90 mm
18	59.3946	-135.6553	Minnow trap set located in small side pool associated with large woody debris: Results: 24 DV - 45-100 mm.	MT	24 DV - 45-100 mm
33	59.3966	-135.6566	Minnow trap set along stream below cover of overhanging willows. Results: 1 DV - 80 mm.	MT	1 DV - 80 mm
44	59.3976	-135.6544	Approaching large barrier - visual ID of adult, large unknown salmonid.	VI	Unknown Salmonid - 300+ mm
45	59.3976	-135.6545	Minnow trap set. Barrier fall pool. Channel becomes bedrock - multiple tier waterfall with small pinch point where water rockets out - fish passage impossible. Results: 8 DV - 50-90 mm.	MT	8 DV - 50-90 mm

Figure 112.–Coho captured in Chilkoot River tributary.

Figure 113.–Chilkoot River tributary addition map.

115-32-10300 TRIBUTARY ADDITION

Stream: 115-32-10300 tributary.
Watershed: Battery Point.
USGS Quad: MTRS: Township 30S, Range 59E, Section 28, Skagway A-2.
Date Surveyed: June 16, 2011.
Findings: This stream emerges from a marsh complex and meanders its way down to stream 115-32-10300. Coho fry were abundant all the way to the source of the water.
Recommendations: Add this stream to the AWC.

Table 50.–115-32-10300 tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
29	59.2406	-135.4964	Off to start on new tributary. Very good flow.		
30	59.2407	-135.4964	Handnet 1 CO 55-60 mm.	HN	2 CO
31	59.2408	-135.4965	Handnet 1 CO.	HN	CO
32	59.2411	-135.4978	Handnet 2 CO. Nice looking tributary.	HN	2 CO
33	59.2411	-135.4981	Tributary confluences with new tributary river-left. Follow new tributary.		
34	59.2412	-135.4982	Handnet 1 CO.	HN	1 CO
35	59.2413	-135.4985	Large school of TS observed, netted 7. Tributary river-left with maybe some flow. Staying on mainstem.	HN	7 TS
36	59.2414	-135.4986	Handnet 1 CO 68 mm.	HN	1 CO- 68mm
37	59.2416	-135.4981	Waist high grass marsh. Could be difficult to find more defined channels, streams in tall grass.		
38	59.2413	-135.4981	New tributary, same marsh as before.		
39	59.2414	-135.4979	Handnet 2 CO. 50-55 mm	HN	2 CO
40	59.2414	-135.4979	Handnet 6 CO. Size variable.	HN	6 CO
41	59.2415	-135.4979	Enter same marsh as previous two tributaries.		

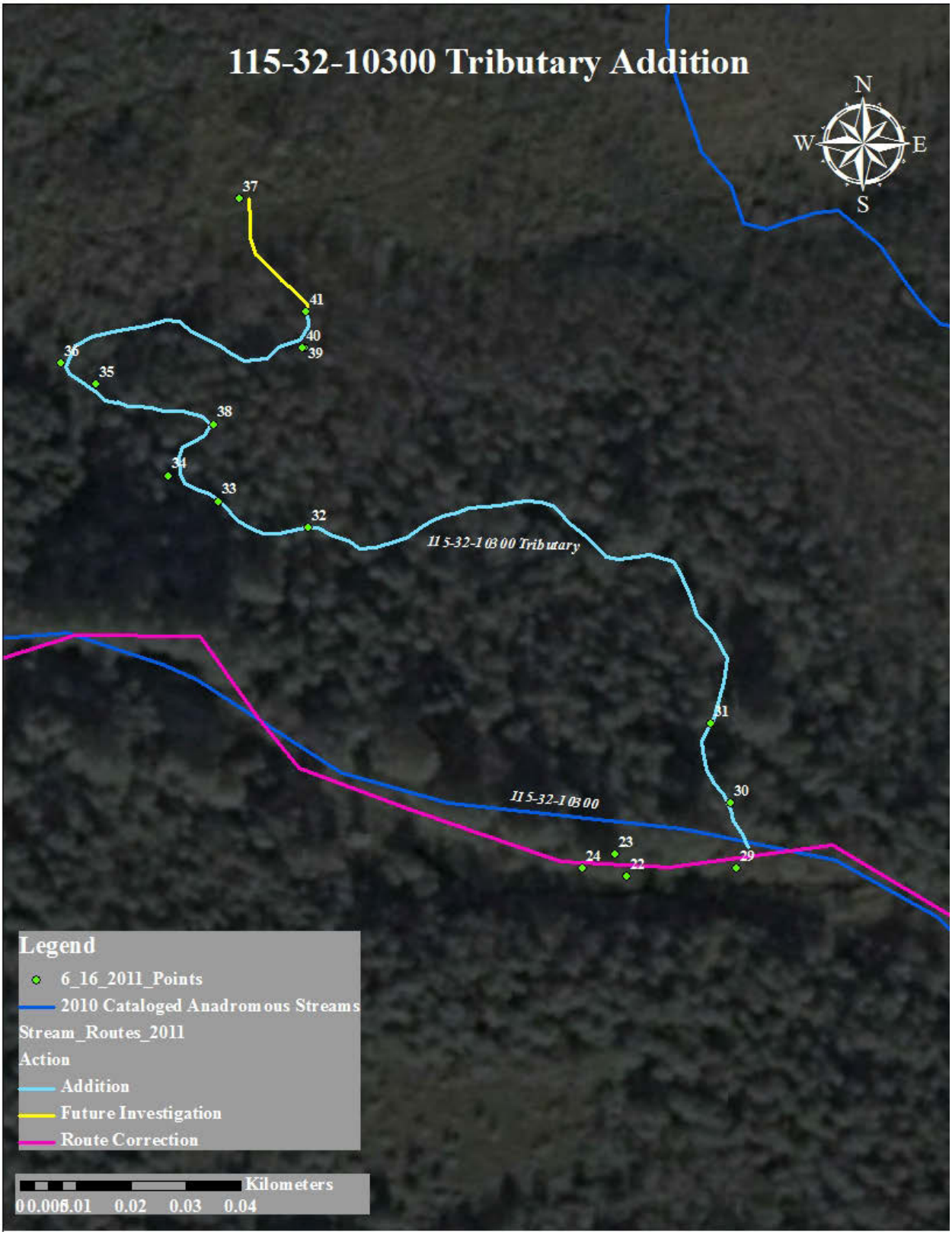

Figure 114.–115-32-10300 tributary addition map.

115-32-10250-2137 TRIBUTARY ADDITION

Stream: Moose Stache Creek (115-32-10250-2137).
Watershed: Takhin River.
MTRS: Township 27S, Range 55E, Section 28, Skagway C-3.
Date Surveyed: July 29, 2011.
Findings: Moose Stache Creek flows into a large pond that is connected to stream 115-32-10250-2137. After crossing the Mosquito Lake Spur Road and going through the forest, this stream eventually braids out along the Bear Flats Creek Pond complex and appears to provide great rearing habitat for juvenile coho salmon.
Recommendations: Add this stream to the AWC. Although we did not track the pond, the arc can be extended through the pond habitat to intersect with Bear Flats Creek 115-32-10250-2137 to remove any confusion about where this stream empties into.

Table 51.–115-32-10250-2137 tributary survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.5109	-136.0872	Electrofished and caught no fish.	EF	No fish
2	59.5092	-136.0821	Electrofished.	EF	No fish
3	59.5094	-136.0748	End of Moosetache Creek. Empties into lake. Handnet 1 CO - 40 mm.	HN	CO - 40 mm
4	59.5080	-136.0803	New braid of Moosetache Creek that was not followed.		

Figure 115.–Stream tracking 115-32-10250-2137 tributary.

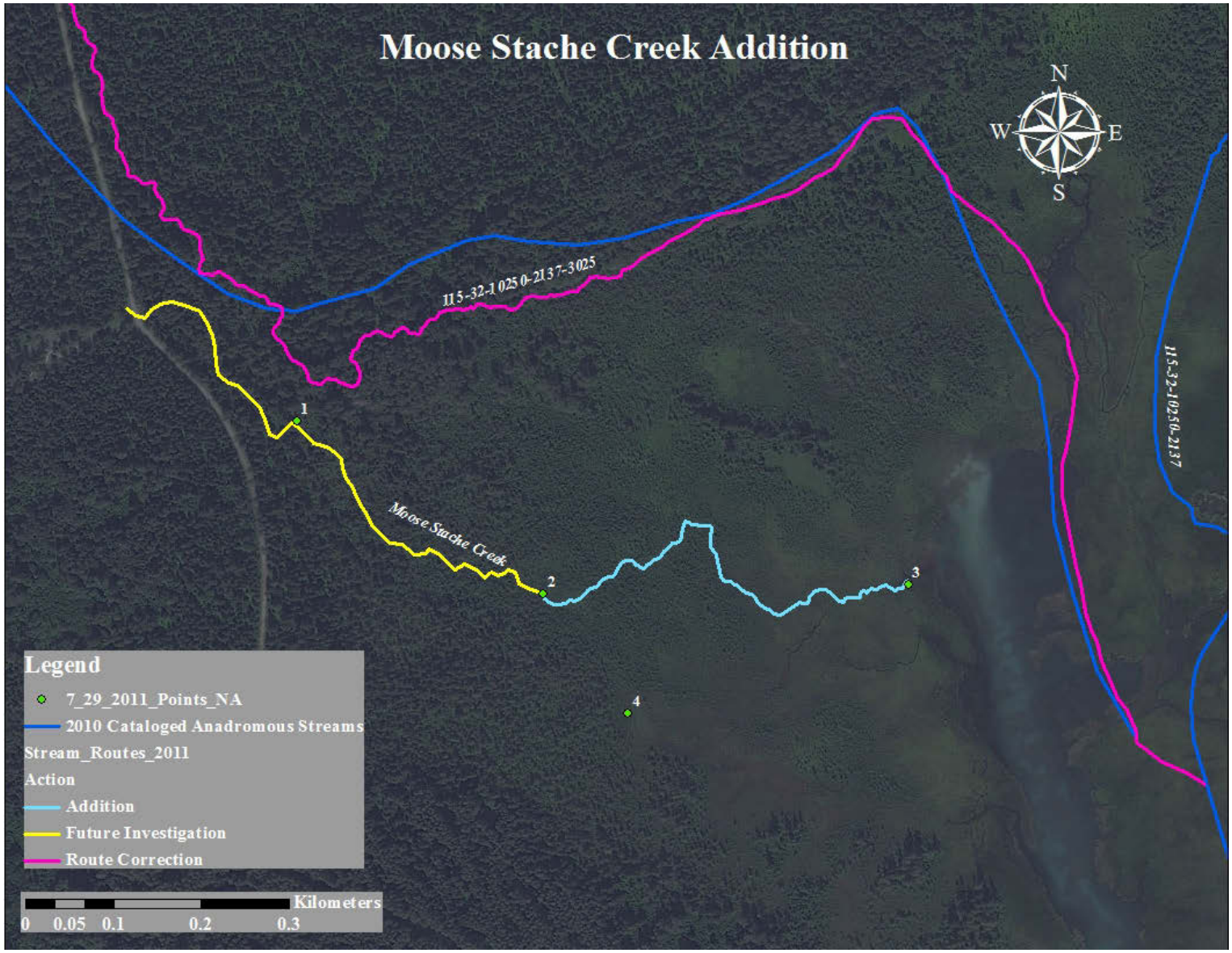

Figure 116.–115-32-10250-2137 tributary addition map.

115-32-10250-2004 ROUTE CORRECTION

Stream: 115-32-10250-2004 (cataloged for DVr, COpr).
Watershed: Battery Point.
MTRS: Township 30S, Range 58E, Section 24, Skagway B-2.
Date Surveyed: July 3, 2011.
Findings: The upper and lower limits of Stream No. 115-32-10250-2004 were found to differ from the AWC. The stream takes a more sinuous path before meeting the Chilkat River. This stream's upper extent is below a steep rocky hillside in the parking area of Southeast Roadbuilders. The stream empties into the Chilkat River at a different location than is illustrated in the current AWC.
Recommendations: Update this stream's route, upper, and lower limits in the AWC.

Table 52.–115-32-10250-2004 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
11	59.2524	-135.5432	The start of creek, flowing into the Chilkat River. Tracking upstream. Visual on some CO.	VI	CO
12	59.2525	-135.5432	Culvert entering from river left. Handnet 5 CO ~ 45mm.	HN	5 CO ~ 45mm
13	59.2530	-135.5434	Culvert entering from river left. No water flow coming from the culvert.		
14	59.2547	-135.5451	There is a beaver dam like structure in the stream. Does not appear to be stopping fish, able to see CO above structure.		
15	59.2548	-135.5455	Culvert for stream that goes under the highway.		
16	59.2551	-135.5455	Tributary entering from river right.		
17	59.2556	-135.5449	Tributary entering from river right. Tracking up.		
18	59.2556	-135.5447	Handnet 4 CO ~ 30-35mm.	HN	4 CO ~ 40-45mm
19	59.2560	-135.5446	Handnet 1 CO ~ 30mm.	HN	1 CO ~ 50mm
20	59.2564	-135.5460	Creek goes through culvert. Continuing up.		
21	59.2567	-135.5466	End of the tributary. The water is coming through rock that is part of edge of platform. End track.		

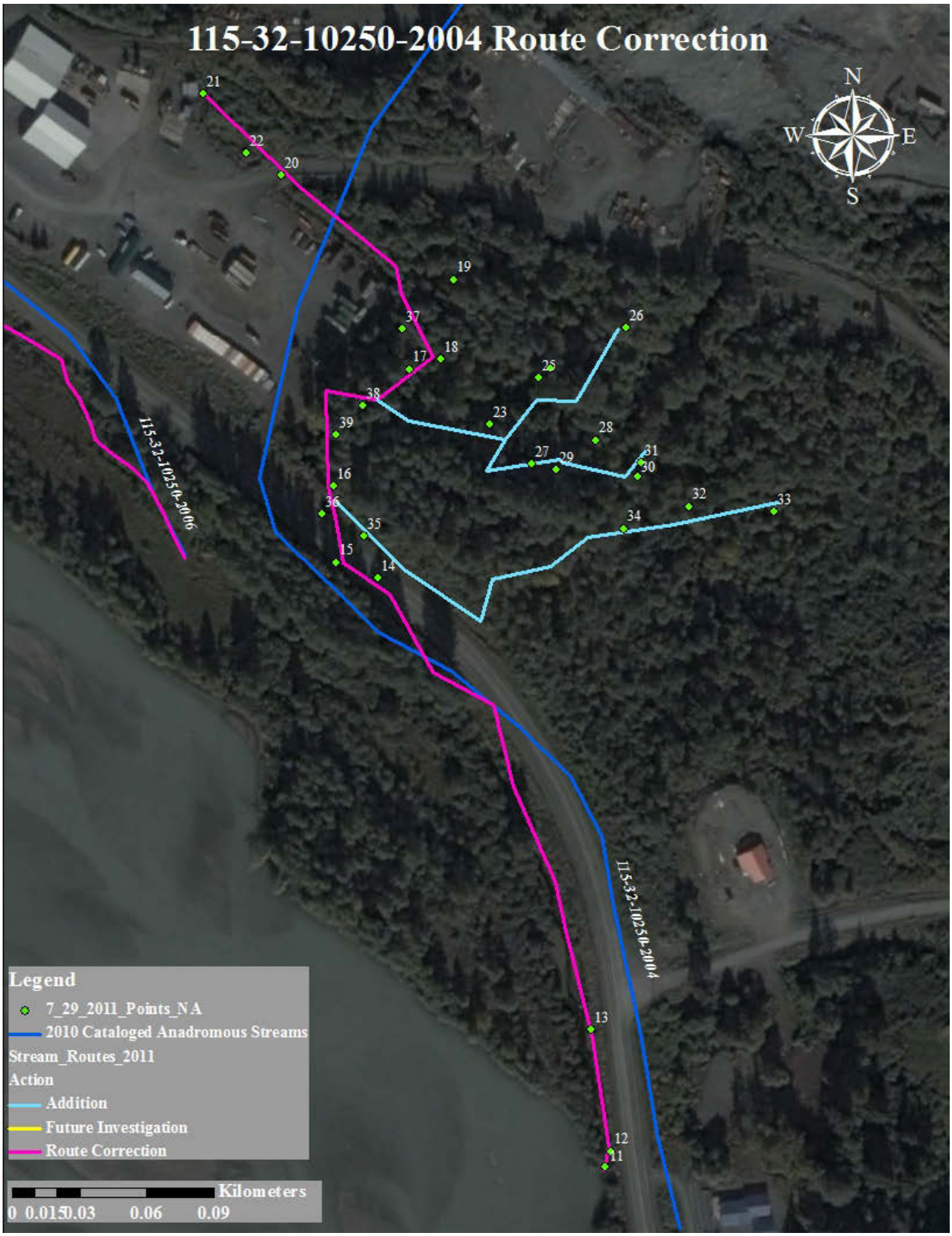

Figure 117.–115-32-10250-2004 route correction map.

3 ½ MILE MUD BAY ROAD CREEK ADDITION

Stream: 3 ½ Mile Mud Bay Road Creek.
Watershed: Battery Point.
MTRS: Township 31S, Range 59E, Section 13, Skagway A-2.
Date Surveyed: July 19, 2012.
Findings: This uncataloged stream is located at 3 ½ mile Mud Bay Road. A potential barrier of large boulders and steep gradient is present just below the road culvert. Another potential velocity barrier is present above the culvert comprised of bedrock and no resting pools. No fish were found above the culvert.
Recommendations: Add this stream to the AWC.

Table 53.–3 ½ Mile Mud Bay Road Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
205	59.1906	-135.4129	Mouth of creek entering into the Chilkat River and ocean mix. Electrofished 1 S ~ 40 mm. Even with average high tide line.	EF	1 S ~ 40mm
206	59.1907	-135.4128	Electrofished 1 P ~ 25 mm and 2 CO ~ 45 mm. Just above the average high tide line.	EF	1 P ~ 25 mm, 2 CO ~ 45 mm
207	59.1907	-135.4127	Electrofished 1 DV ~ 65mm and 1 CO between 35-55 mm.	EF	1 DV~65mm, 2 CO ~ 35-55mm
208	59.1908	-135.4128	Handnet 2 CO between 35-60 mm. Even with the highest high tide line.	HN	2 CO 35-60 mm
209	59.1908	-135.4127	Electrofished 2 CO ~ 60 mm.	EF	2 CO ~ 60 mm
210	59.1909	-135.4126	Electrofished 1 CT ~ 80 mm.	EF	1 CT ~ 80 mm
211	59.1911	-135.4126	Handnet 1 CT ~ 65 mm.	HN	1 CT ~ 65 mm
212	59.1911	-135.4124	Electrofished 3 CT ~ 40-90 mm.	EF	3 CT between 40-90 mm
213	59.1911	-135.4123	Electrofished 2 CO ~ 50 mm.	EF	2 CO ~ 50 mm
214	59.1912	-135.4122	Electrofished 1 DV ~ 70 mm, 1 CT ~ 60 mm, and 1 SC.	EF	1 DV ~ 70 mm, 1 CT ~60 mm, 1 SC
215	59.1912	-135.4119	Culvert crosses Mud Bay Road, empties out and flows to ocean. From here to WPT#214 there are big boulders and steep gradient. Problem for both up and downstream migration. Especially for downstream migration from Lily Lake.		

216	59.1917	-135.4107	Calling the top. The beach side is a barrier and then once across road there is a place where flow is running across bedrock and no pools for resting or jumping making a velocity barrier. Electrofished above road also and caught no fish.	EF	no fish

Figure 118.–Looking upstream from near mouth 3 ½ Mile Creek.

Figure 119.–Map of 3½ Mile Mud Bay Road route correction map.

14 MILE CREEK ROUTE CORRECTION

Stream: 14 Mile Creek (115-32-10250-2044, cataloged for COr, DVr, Kr).
Watershed: Takhin River.
MTRS*:* Township 29S, Range 57E, Section 25, Skagway B-2.
Date Surveyed: July 19, 2012.
Findings: We surveyed this 14 Mile Creek and found the stream route differs from the AWC.
Recommendations: Update this streams route in the AWC.

Table 54.–14 Mile Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
189	59.3268	-135.7412	Start of 14 Mile Creek flowing into Chilkat River. Tracking up.		
190	59.3272	-135.7412	14 Mile Creek crosses the Haines Highway through two culverts that are completely under water. Handnet 5 CO ~ 30 mm.	HN	5 CO ~ 30 mm
191	59.3290	-135.7425	Branch goes river left and appears to be getting most of the flow. Tracking.		
192	59.3291	-135.7422	Branch mentioned in WPT #191 connects with another branch. Tracking downstream.		
193	59.3288	-135.7420	Branch reconnects with other branch that went river right in WPT #191.		
194	59.3298	-135.7429	Tributary entering river left. Tracking up.		
195	59.3298	-135.7428	Handnet 3 CO ~ 35 mm.	HN	3 CO ~35 mm
196	59.3305	-135.7432	Calling this the top of this tributary. We electrofished and did not get any fish.	EF	no fish
197	59.3298	-135.7434	Top of this branch. The water is seeping out of the ground. Electrofished 4 CO ~ 30 mm.	EF	4 CO ~30 mm
198	59.3299	-135.7446	Water is flowing through forested area and shows high evidence of creek changing channel direction and width. Tracking up.		

199	59.3310	-135.7447	Calling this the top of 14-Mile Creek. The high velocity water is very channelized with minimal resting pools. Electrofished in calm areas and caught no fish.	EF	no fish

Figure 120.–Looking upstream in 14 Mile Creek above Haines Highway culvert.

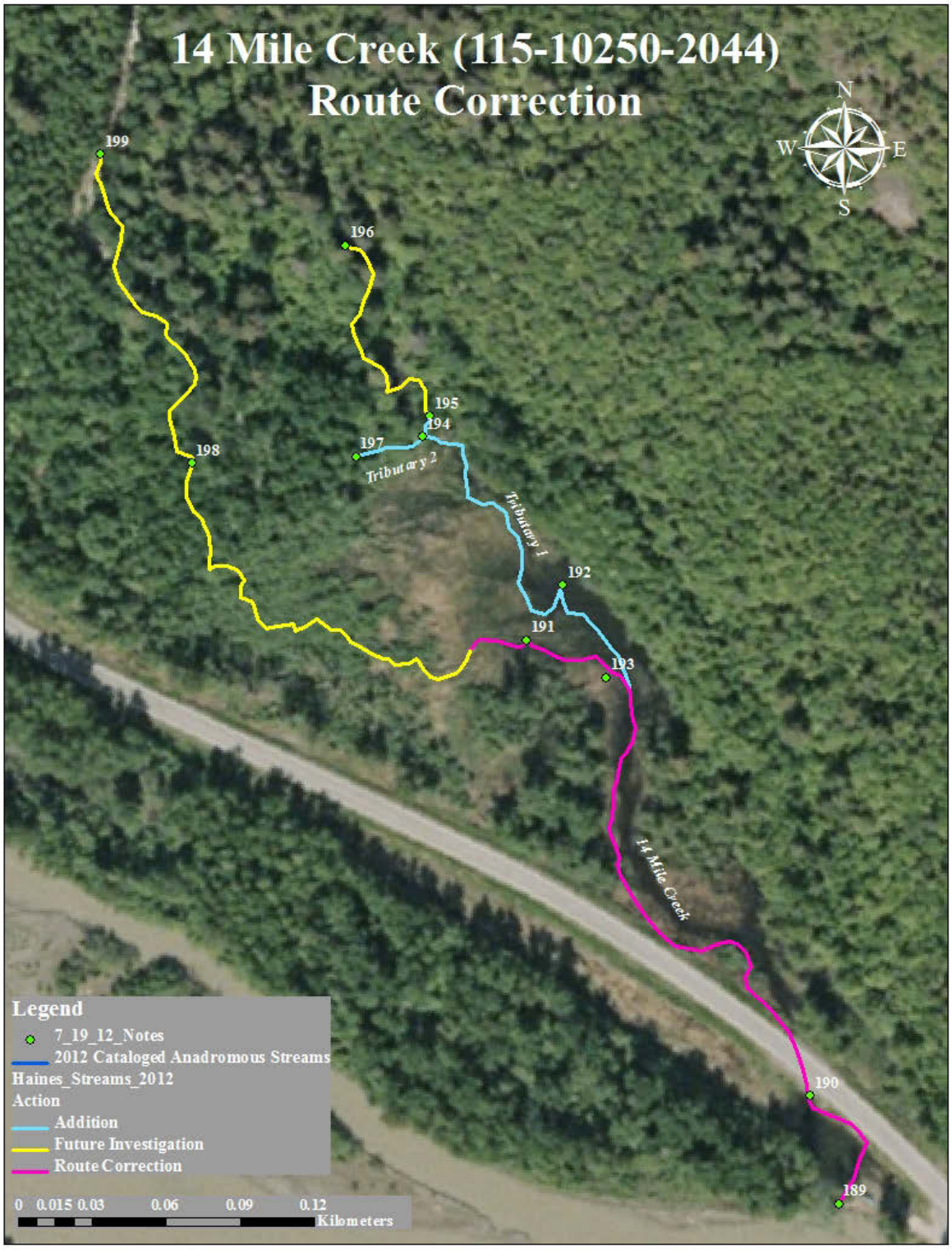

Figure 121.–14 Mile Creek route correction map.

14 MILE CREEK TRIBUTARY 1 ADDITION

Stream: 14 Mile Creek tributary 1 (115-32-10250-2044, cataloged for COr, DVr, Kr).
Watershed: Takhin River.
MTRS: Township 29S, Range 57E, Section 25, Skagway B-2.
Date Surveyed: July 19, 2012.
Findings: This is a tributary of 14 Mile Creek. We surveyed this stream and found juvenile coho salmon midway up.
Recommendations: Add this tributary to the AWC.

Table 55.–14 Mile Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
193	59.3288	-135.7420	Branch reconnects with other branch that went river right in WPT #191.		
194	59.3298	-135.7429	Tributary entering river left. Tracking up.		
195	59.3298	-135.7428	Handnet 3 CO ~ 35 mm.	HN	3 CO ~35 mm
196	59.3305	-135.7432	Calling this the top of this tributary. We electrofished and did not get any fish.	EF	no fish

Figure 122.–14 Mile Creek tributary 1 in the foreground.

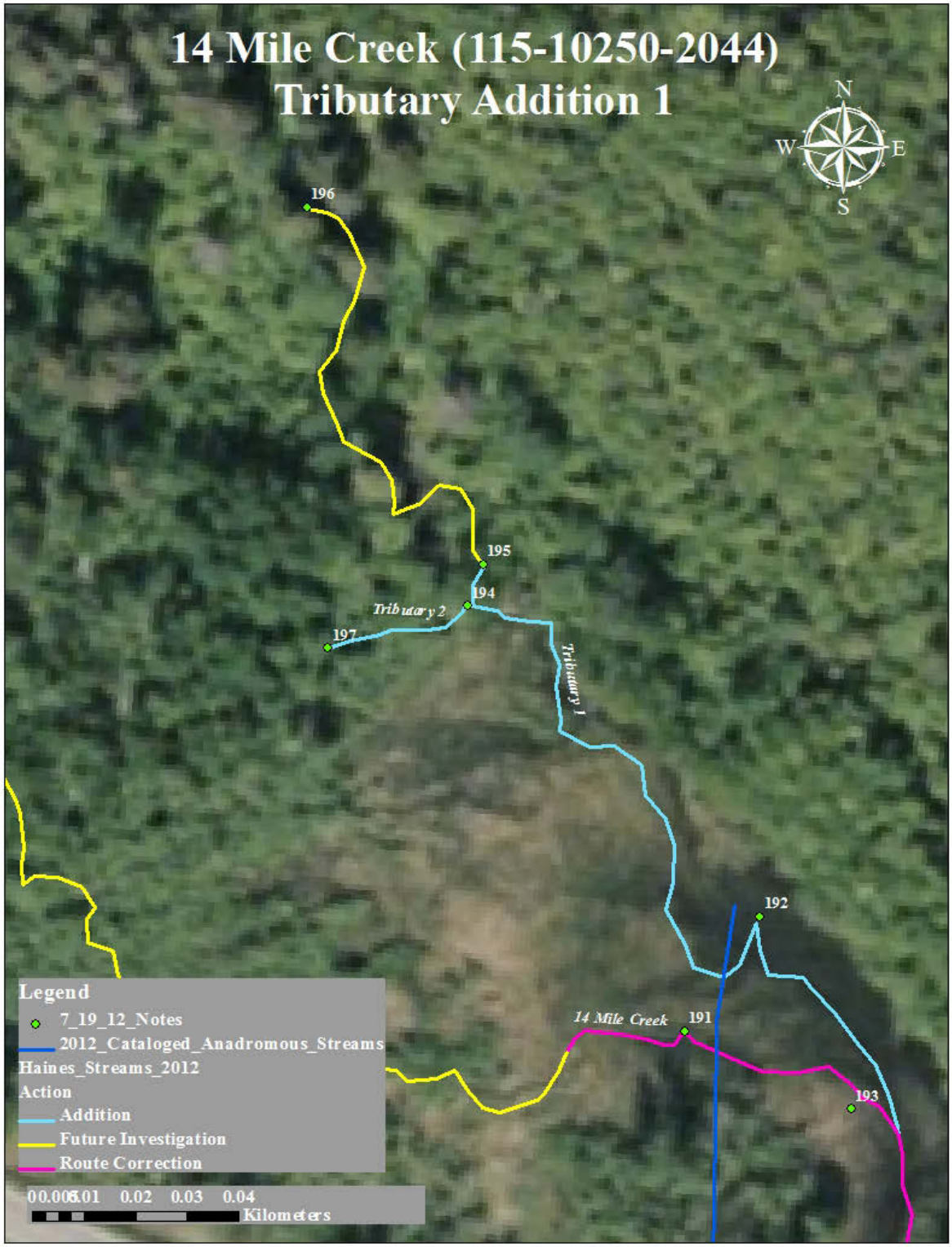

Figure 123.–14 Mile Creek tributary 1 addition map.

14 MILE CREEK TRIBUTARY 2 ADDITION

Stream: 14 Mile Creek tributary 2 (115-32-10250-2044, cataloged for COr, DVr, Kr).
Watershed: Takhin River.
MTRS: Township 29S, Range 57E, Section 25, Skagway B-2.
Date Surveyed: July 19, 2012.
Findings: This is a small tributary of 14 Mile Creek originating from a small seep in the ground. Juvenile coho salmon were found at the headwaters.
Recommendations: Add this tributary to the AWC.

Table 56.–14 Mile Creek tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
194	59.3298	-135.7429	Tributary entering river left. Tracking up.		
197	59.3298	-135.7434	Top of this branch. The water is seeping out of the ground. Electrofished 4 CO ~ 30 mm.	EF	4 CO ~30 mm

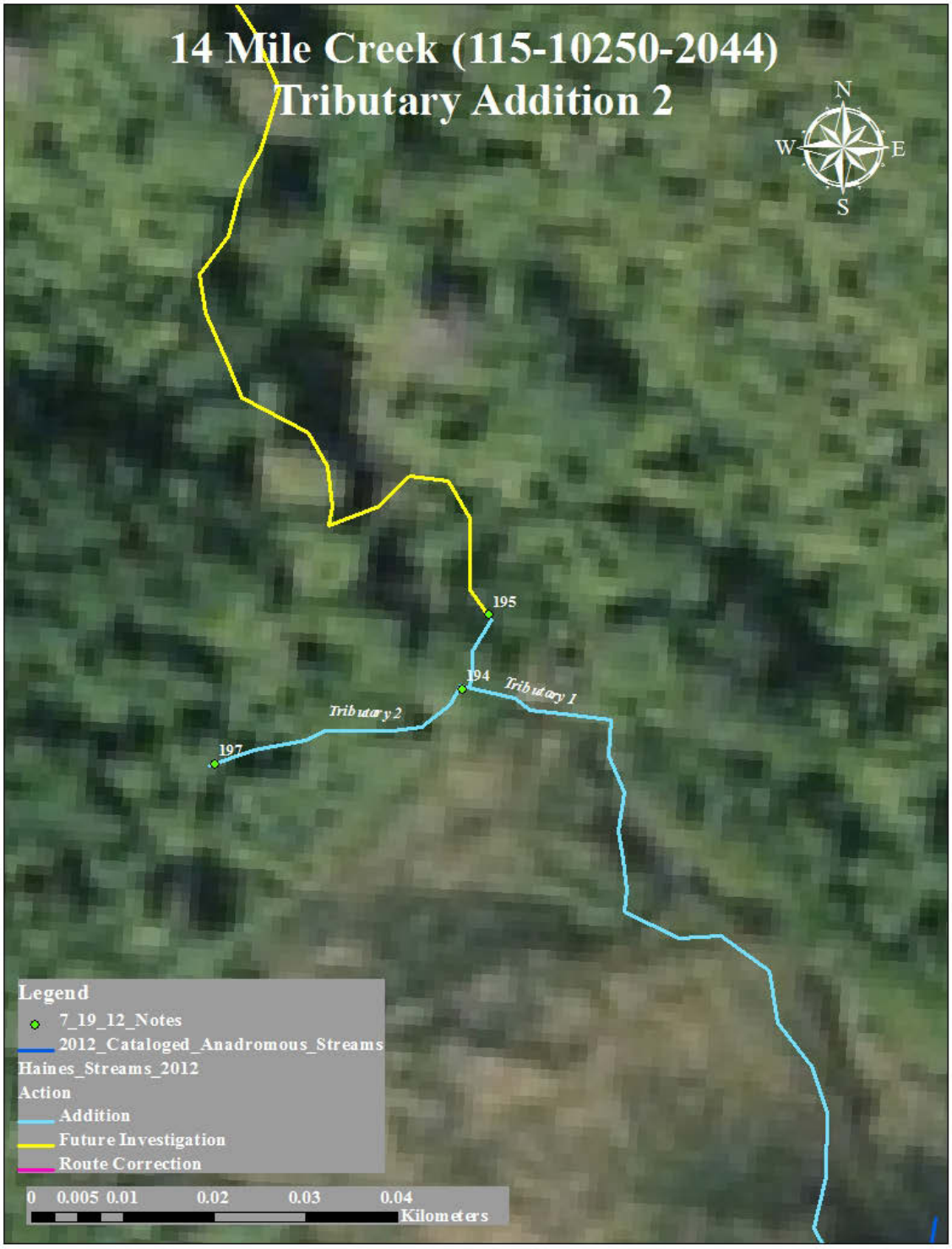

Figure 124.–14 Mile Creek tributary 2 addition map.

23.1 MILE CREEK ADDITION

Stream: 23.1 Mile Creek.
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 32, Skagway B-3.
Date Surveyed: July 30, 2012.
Findings: This stream is a tributary to the Chilkat River. Juvenile coho and Chinook salmon were caught in the lower portion of the stream; however, the upper portion of the stream is channelized with higher velocity and larger substrate and no anadromous fish were captured. There is a jeep road that crosses the stream.
Recommendations: Add the lower section of this stream to the AWC where coho and Chinook were found to be present.

Table 57.–23.1 Mile Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
49	59.4091	-135.9149	Culvert goes under road.		
50	59.4073	-135.9238	ATV road crosses the stream.		
51	59.4069	-135.9262	Stream enters the Chilkat River.		
52	59.4069	-135.9257	Electrofished 3 K ~ 45 mm.	EF	3 K ~ 45 mm
53	59.4070	-135.9257	Electrofished 2 CO ~ 40 mm.	EF	2 CO ~ 40 mm
54	59.4070	-135.9251	Electrofished 1 K ~ 45 mm.	EF	1 K ~ 45 mm
55	59.4069	-135.9249	Electrofished 1 K ~ 40 mm.	EF	1 K ~ 40 mm
56	59.4071	-135.9241	Electrofished 3 K ~ 45 mm and 1 DV ~ 60 mm.	EF	3 K ~ 45 mm, 1 DV ~ 60 mm
57	59.4073	-135.9233	Electrofished 1 K ~ 50 mm.	EF	1 K ~ 50 mm
58	59.4073	-135.9232	Electrofished 2 K ~ 40 mm.	EF	2 K ~ 40 mm
59	59.4072	-135.9225	Electrofished 1 K ~ 45 mm.	EF	1 K ~ 45 mm
60	59.4073	-135.9219	Electrofished 1 K ~ 40 mm and 1 DV ~ 55 mm.	EF	1 K ~ 40 mm, 1 DV ~ 55 mm
61	59.4073	-135.9216	Electrofished 2 K ~ 45 mm.	EF	2 K ~ 45 mm
62	59.4073	-135.9213	Electrofished 1 K and DV both ~ 50 mm.	EF	1 K ~ 50 mm, 1 DV ~ 50 mm
63	59.4075	-135.9201	Electrofished 1 DV ~ 65 mm.	EF	1 DV ~ 65 mm
64	59.4086	-135.9149	Culvert crosses under Haines Highway.		

Figure 125.–Looking downstream at 23.1 Mile Creek where it crosses a road (WPT 50).

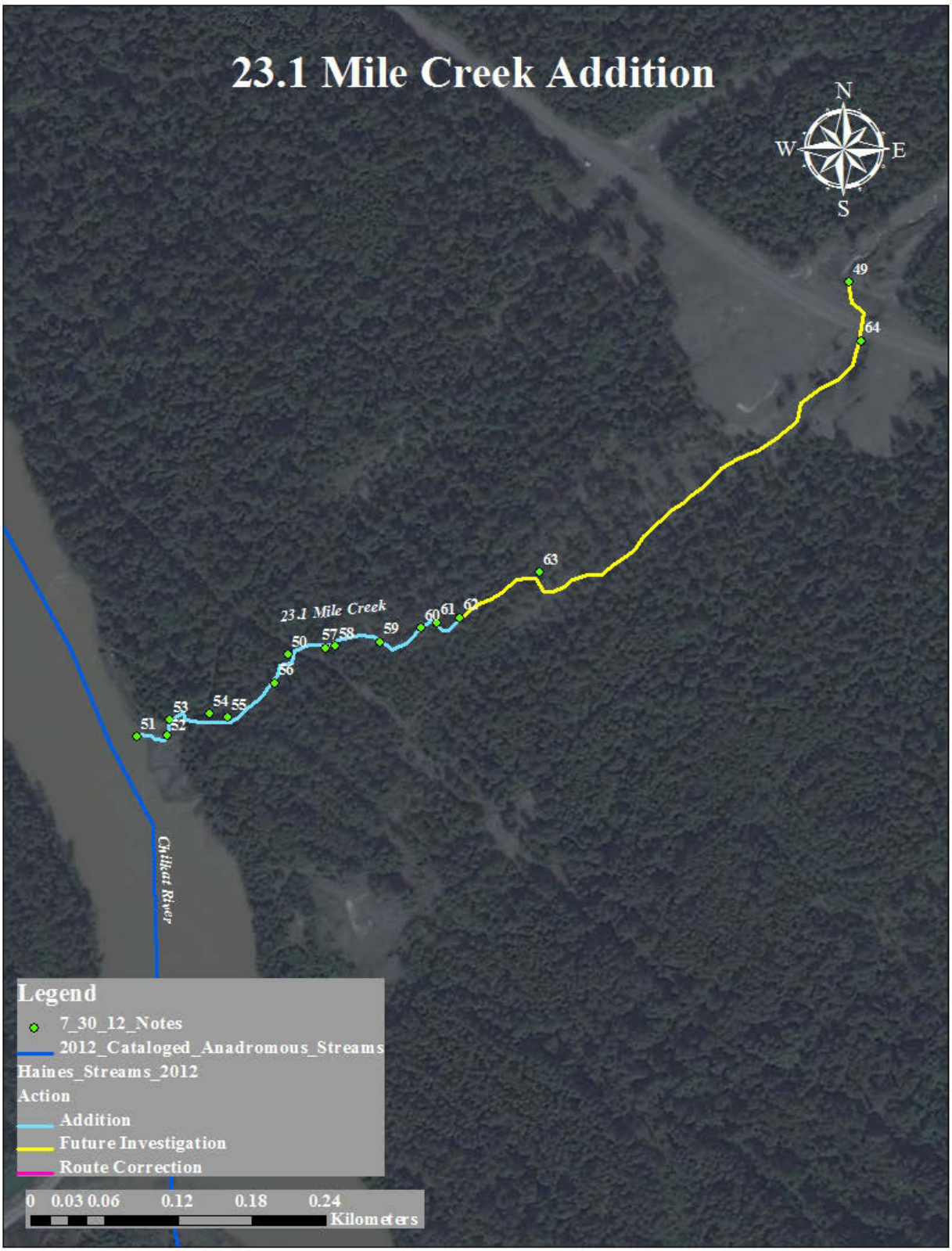

Figure 126.–23.1 Mile Haines Highway Creek addition map.

115-32-10240 ROUTE CORRECTION

Stream: 115-32-10240 (cataloged for COr, CTr).
Watershed: Takhin River.
MTRS: Township 31S, Range 59E, Section 11, Skagway A-2.
Date Surveyed: July 31, 2012.
Findings: We surveyed Stream No. 115-32-10240 and found the route differs from the AWC. Several juvenile chum salmon were milling at the mouth of the stream. It looked like the culvert outfall is a barrier to fish passage except at a rather high tide.
Recommendations: Update this stream route in the AWC. Add chum to the lower extent of this stream.

Table 58.–115-32-10240 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
65	59.2026	-135.4311	Mouth of 1 Mile Creek. 10-20 milling CH around confluence. Handnet 1. Looks like the culvert outfall is a barrier to fish passage except at rather high tides. Some kind of rock or other fish ladder would allow fish passage at other times.	HN	1 CH
66	59.2029	-135.4304	Electrofished 2 DV ~ 55-65 mm, 1 CT ~ 65 mm @ 230 V, 30 Hz, 12 % duty cycle.	EF	2 DV ~ 55-65 mm, 1 CT ~ 65 mm
67	59.2028	-135.4303	Electrofished1 unidentifiable 25 mm salmonid, (probably a CO or CT) 3 CT ~ 60-70 mm	EF	1 unidentified salmonid ~25 mm, 3 CT ~ 60-70 mm
68	59.2028	-135.4301	Electrofished 2 CO ~ 50-65 mm- resuming upstream	EF	2 CO ~ 50-65 mm
69	59.2030	-135.4293	Electrofished 3 CT ~ 50-85 mm. Resuming upstream.	EF	3 CT ~ 50-85 mm
70	59.2030	-135.4292	Electrofished 3 CT~ 25-75 mm.	EF	3 CT~ 25-75 mm
71	59.2030	-135.4288	Electrofished 5 CT~ 45-80 mm. Continue upstream.	EF	5 CT ~ 45-80 mm
72	59.2030	-135.4281	Electrofished 3 CT ~ 65-80 mm. Habitat remains good- lots of small pools, plenty of resting habitat and refugia. Channel shows evidence of occasional high flows. Channel bed width ~ 4 ft.	EF	3 CT ~ 65-80 mm

73	59.2031	-135.4278	Electrofished 4 CT 35-85 mm, 1 DV 60 mm. Resuming upstream	EF	4 CT 35-85 mm, 1 DV 60 mm
74	59.2029	-135.4271	Electrofished 2 DV ~ 55-75 mm and 8 CT 35-65 mm-habitat remains similar to before but no CO since near the mouth. Will continue to track and fish periodically until a barrier is reached.	EF	2 DV~ 55-75 mm, 8 CT 35-65 mm
75	59.2028	-135.4263	Electrofished 3 CT - 55-85 mm. Habitat remains good and connected. Now very low gradient-resume upstream.	EF	3 CT~ 55-85mm
76	59.2027	-135.4259	Electrofished 2 CT ~ 75-85 mm. Continue upstream. Still low gradient but becomes less water.	EF	2 CT ~75-85mm
77	59.2030	-135.4257	Electrofished 2 CT ~ 60-95 mm. Visual ID'd more CT.	EF	2 CT ~ 60-95-mm
78	59.2028	-135.4249	Small tributary enters on river right. Very little flow but some connected deep pool. Tracking upstream.		
79	59.2029	-135.4248	Electrofished 3 CT - 1-35 mm, 1-65mm, 1-85 mm. Top of really good looking habitat, still some pools and likely some more CT. Back to mainstem.	EF	3 CT- 1-35mm, 1-65mm, 1-85mm
80	59.2024	-135.4233	Handnet 1 CT - 50 mm Gradient increasing slightly.	HN	1 CT-50 mm
81	59.2024	-135.4218	Calling it the top- no barrier but getting late. Still numerous CTs present in stream. Visual ID'd > 20 since last WPT.		

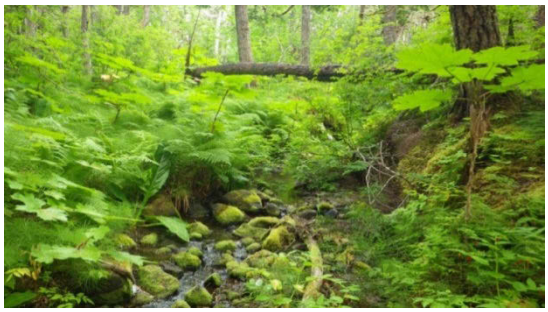

Figure 127.–Representative reach of Stream No. 115-32-10240.

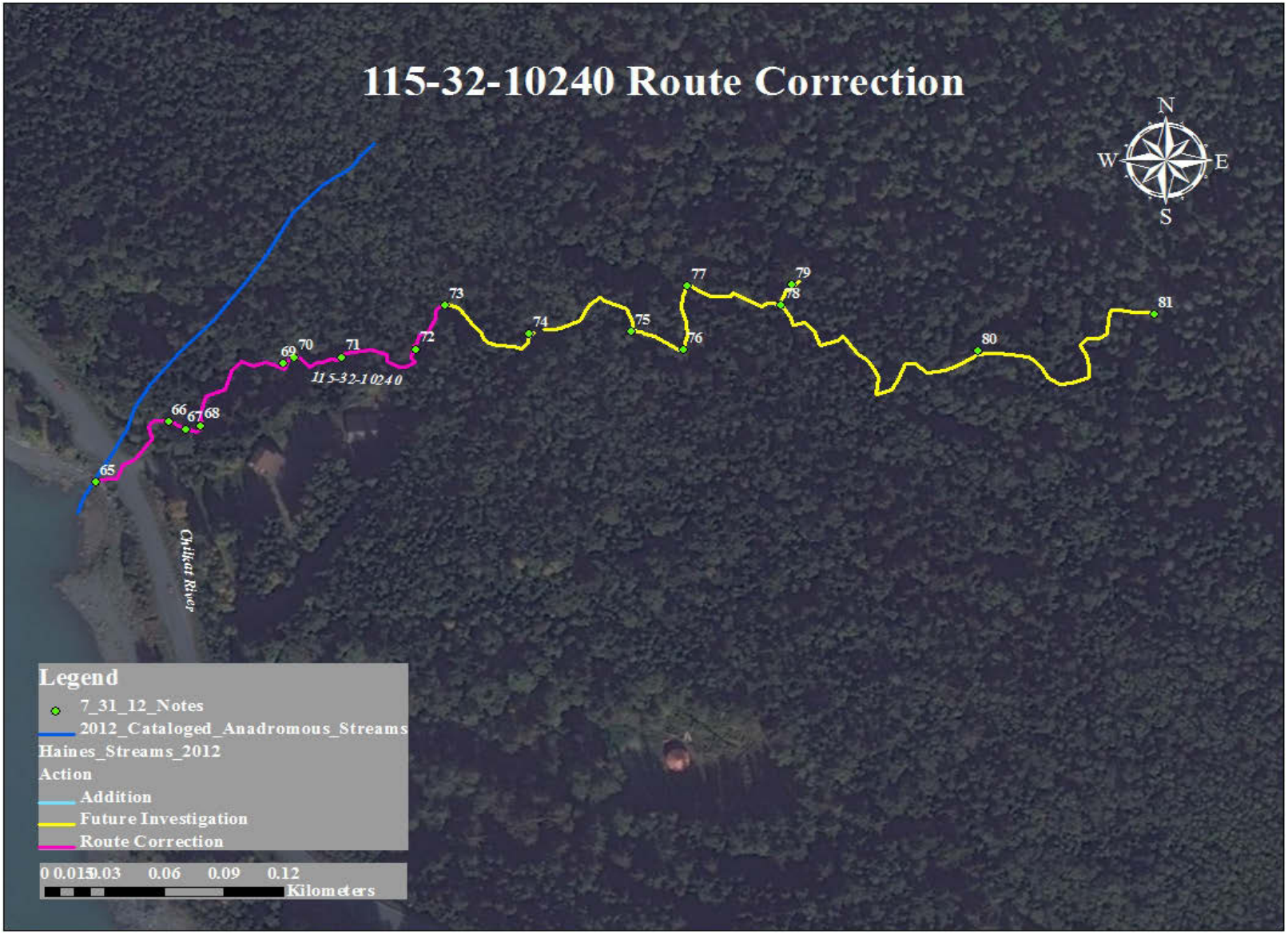

Figure 128.–115-32-10240 route correction map.

115-32-10250-2977 ROUTE CORRECTION

Stream: 115-32-10250-2977 (cataloged for CHs, Sp).
Watershed: Takhin River.
MTRS: Section 29, Township 28, Section 56E, Skagway B-3.
Date Surveyed: July 30, 2012.
Findings: We caught rearing coho past the documented upper extent of anadromy for Stream No. 115-32-10250-2977. Water quality in this stream may be worth investigating based on a thick, bright green coating of algae on nearly all stream substrate.
Recommendations: Add rearing coho to the AWC and extend the upper extent of anadromy for this stream.

Table 59.–115-32-10250-2977 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
35	59.4118	-135.9399	Top of spawning channel, almost chest deep. The stream was covered in algae the entire way. Electrofished 2 CO ~ 45.	EF	2 CO ~ 45 mm
36	59.4119	-135.9331	Spawning channel enters back log of water from Chilkat River and body of water where tributary enters. This back log could also be considered a part of the spawning channel even though silty bottom.		
37	59.4125	-135.9314	Where spawning channel back log enters into the Chilkat River. River backing up a lot of water.		

Figure 129.–Representative reach of Stream No. 115-32-10250-2977, Klehini River spawning channel.

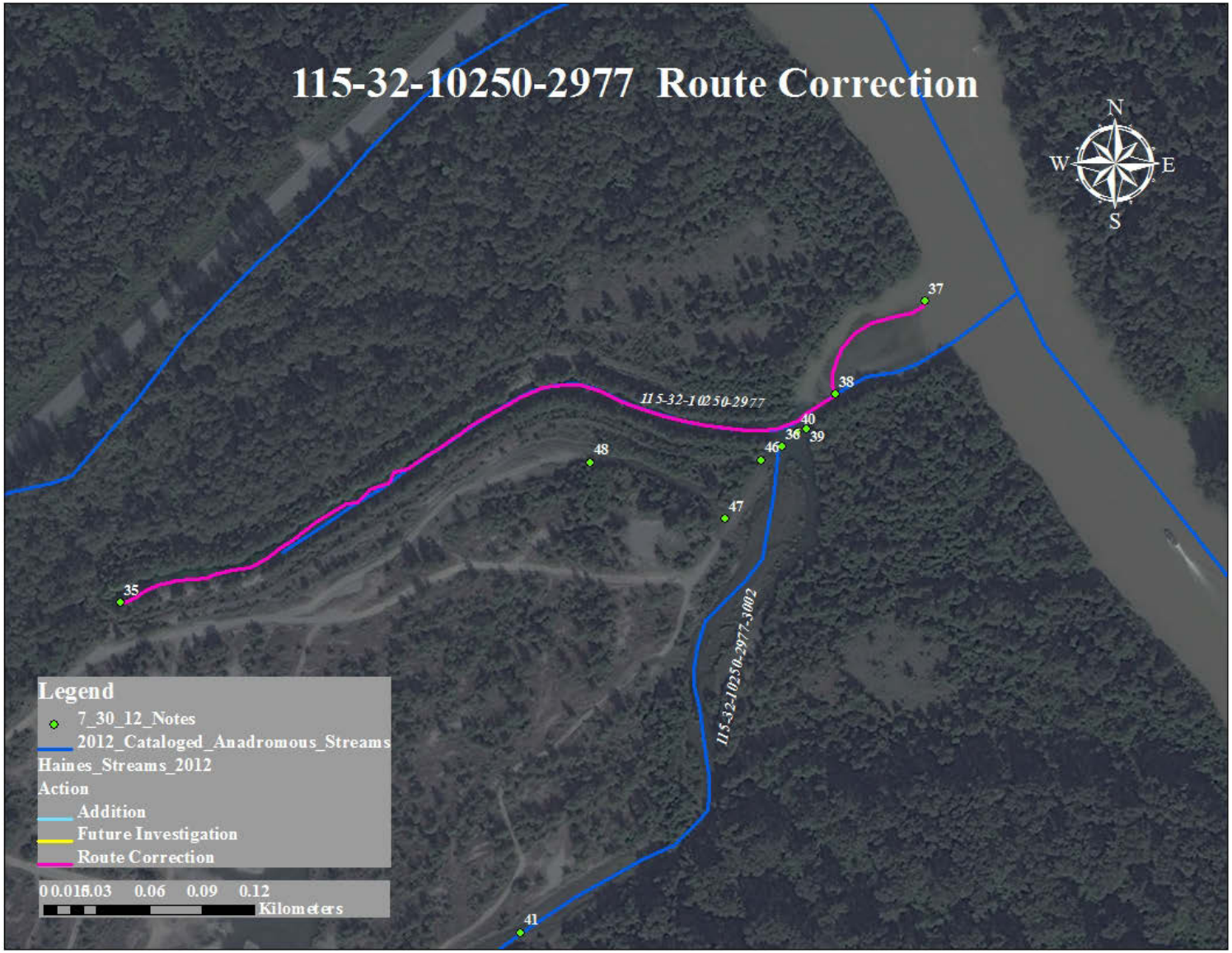

Figure 130.–115-32-10250-2977 route correction map.

115-32-10260 ROUTE CORRECTION

Stream: 115-32-10260 (cataloged for COs, Kr).
Watershed: Takhin River.
MTRS: Township 31S, Range 59E Sections 1 and 2, Skagway A-2.
Date Surveyed: July 21, 2012.
Findings: Stream No. 115-32-10260 has extensive history of modification from nearby landowners and developers. A shrimp cannery once diverted flows and blocked fish passage, but since then, local residents installed a small rock fish ladder to improve fish passage. The lower and middle extents of this Stream No. 115-32-10260 differ from that illustrated in the AWC. Small personal bridges were present over the stream where it passes through private property. We caught juvenile coho salmon up to our last survey point. One juvenile chum salmon was caught at waypoint 246.
Recommendations: Update this stream route in the AWC.

Table 60.–115-32-10260 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
245	59.2150	-135.4528	Mouth of creek entering near where Chilkat River enters the ocean. There are quite a few TS around ~ 40-45 mm. Tracking.	HN	2 TS ~ 45 mm
246	59.2152	-135.4504	Handnet 1 CH ~ 35 mm and 1 CO ~ 40 mm.	HN	1 CO ~ 40 mm, 1 CH ~ 35 mm
247	59.2147	-135.4501	Handnet 3 CO ~ 35 mm and 1 SC.	HN	3 CO ~ 35 mm, 1 SC
248	59.2138	-135.4497	Handnet 7 CO ~30-65 mm.	HN	7 CO ~30-65 mm
249	59.2122	-135.4490	Handnet 1 CO ~ 35 mm. Culvert that crosses Mud Bay Road.	HN	1 CO ~ 35 mm
250	59.2122	-135.4481	There is a small personal bridge here that land owner uses to access the rest of property and a pipe coming in that could be used for personal use water intake.		
251	59.2120	-135.4481	Handnet 2 CO ~ 40 mm.	HN	2 CO ~ 40 mm
252	59.2113	-135.4473	Another personal bridge that crosses stream to connect property. Start of rock fish ladder.		
253	59.2113	-135.4470	Handnet 1 CO ~ 45 mm.	HN	1 CO ~ 45 mm
254	59.2115	-135.4459	Handnet 2 CO ~25-40 mm.	HN	2 CO ~ 25-40 mm
255	59.2120	-135.4445	Handnet 1 CO ~ 30 mm.	HN	1 CO ~ 30 mm

256	59.2120	-135.4434	Culvert under a personal road. Handnet 1 DV ~ 20 mm and 1 CO ~ 30 mm.	HN	1 CO ~ 30 mm, 1 DV ~ 20 mm
257	59.2117	-135.4431	Handnet 1 CO ~ 25 mm.	HN	1 CO ~ 25 mm
258	59.2116	-135.4422	Handnet 1 DV ~ 25 mm and 2 CO ~ 30 mm.	HN	2 CO ~ 30 mm, 1 DV ~ 25 mm
259	59.2112	-135.4406	Handnet 1 CO ~ 35 mm.	HN	1 CO ~ 35 mm
260	59.2108	-135.4393	Handnet 1 CO ~ 35 mm.	HN	1 CO ~ 35 mm
261	59.2107	-135.4385	Water pump goes to a property and there is an electrical cord for pump along with hose to property. There was a juvenile CO swimming in bucket with no screen.	VI	1 CO
262	59.2104	-135.4376	Handnet 1 CO ~ 35mm.	HN	1 CO ~ 35 mm
263	59.2106	-135.4374	Culvert that goes under Small Tracts Road. Ending tracking since above this culvert was tracked last summer.		

Figure 131.–Culvert beneath Mud Bay Road with fish passage modifications.

Figure 132.–Juvenile coho salmon captured in Stream No. 115-32-10260.

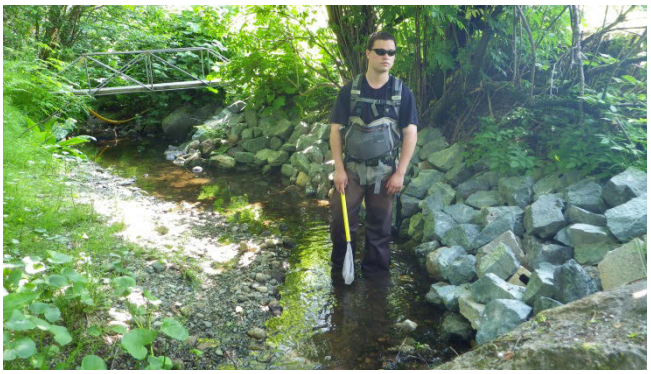

Figure 133.–Residential rock revetment to prevent stream bank erosion.

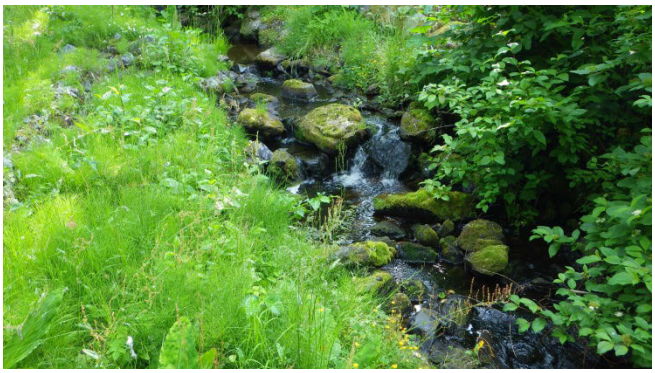

Figure 134.–Man-made rock fish ladder installed to help fish passage.

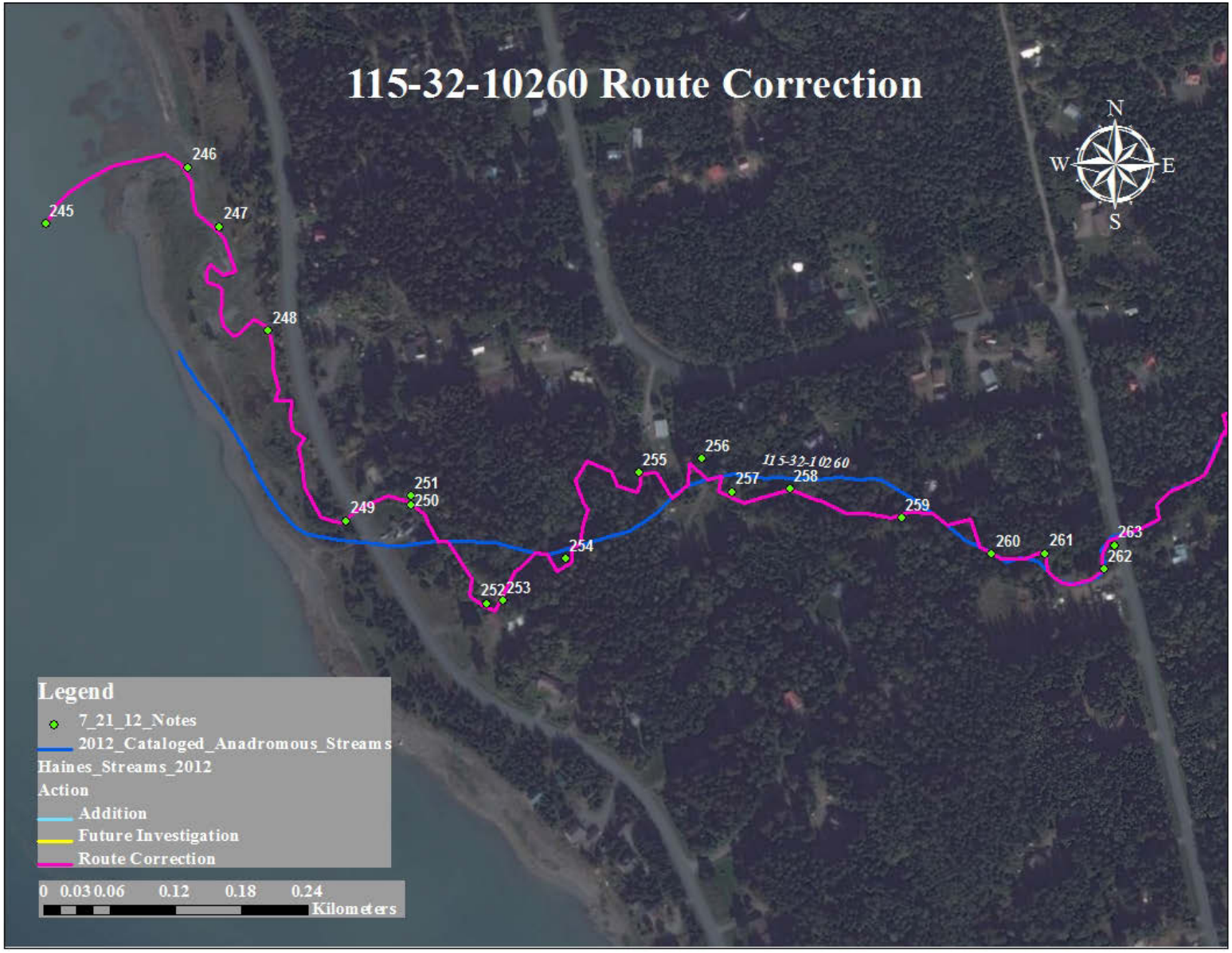

Figure 135.–115-32-10260 route correction map.

115-32-10250-2002 ROUTE CORRECTION

Stream: 115-32-10250-2002 (cataloged for COsr, DVr).
Watershed: Takhin River.
MTRS: Township 30S, Range 59E, Section 29, Skagway A-2.
Date Surveyed: August 15-16, 2012.
Findings: Over the course of two days we tracked and surveyed Stream No. 115-32-10250-2002 at the Haines Airport. We found this streams route differs from the current AWC route.
Recommendations: Correct the stream route in the AWC.

Table 61.–115-32-10250-2002 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
111	59.2441	-135.5203	Culvert under runway thick with equisetum. End of track.		
112	59.2426	-135.5135	Culvert under runway. Visual on large fish. No ID.		
118	59.2424	-135.5130	Beginning of track for last part of airport.		
119	59.2405	-135.5098	Mouth into Chilkat River.		

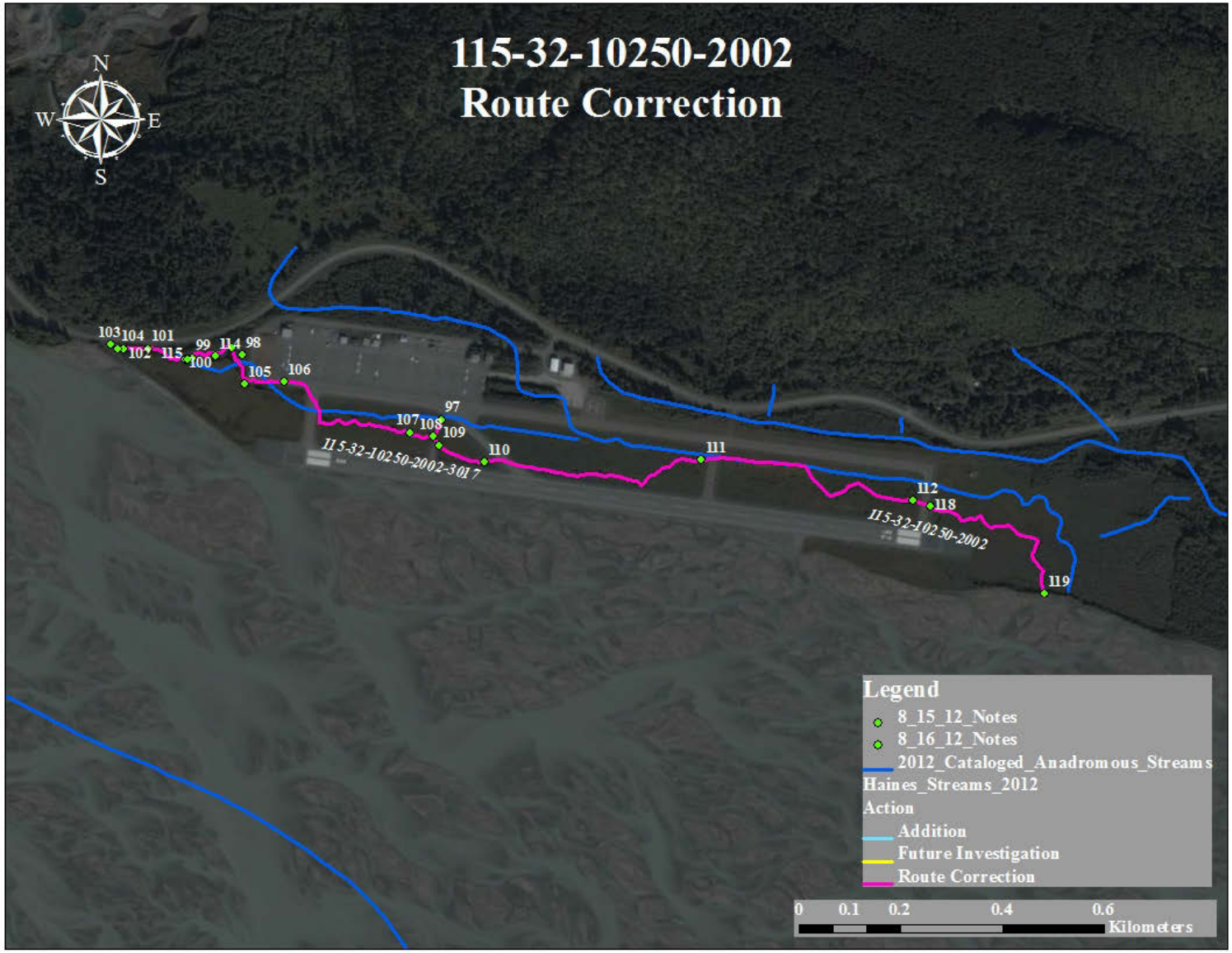

Figure 136.–115-32-10250-2002 route correction map

115-32-10250-2002-3017 ROUTE CORRECTION

Stream: 115-32-10250-2002-3017 (cataloged for COr).
Watershed: Takhin River.
MTRS: Township 30S, Range 59E, Section 29, Skagway A-2.
Date Surveyed: August 15-16, 2012.
Findings: Over the course of two days we tracked and surveyed Stream No. 115-32-10250-2002-3017 at the Haines Airport. We found juvenile coho salmon above the current AWC upper extent for this stream.
Recommendations*:* Correct the stream route and extend the upper extent for coho in the AWC for stream 115-32-10250-2002-3017.

Table 62.–115-32-2002-3017 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
97	59.2458	-135.5286	Perched culvert runs under runway.		
98	59.2476	-135.5348	Beginning polygon track around airport marsh.		
99	59.2478	-135.5365	Electrofished 1 CO ~ 75 mm.	EF	1 CO ~ 75 mm
100	59.2478	-135.5367	Electrofished 1 CO ~ 75 mm. Continuing tracking polygon.	EF	1 CO ~ 75 mm
101	59.2481	-135.5379	Electrofished 1 CO ~ 65 mm. All CO so far are caught in marsh pools.	EF	1 CO ~ 65 mm
102	59.2482	-135.5387	Electrofished 1 CO ~ 65 mm in pool. Continuing polygon track.	EF	1 CO ~ 65 mm
103	59.2483	-135.5391	Stopped track near road maybe upwelling or seepage. End of water.		
104	59.2482	-135.5389	Continuing track.		
105	59.2471	-135.5350	Ended track.		
106	59.2470	-135.5336	1 TS > 25mm	EF	1 TS >25 mm
107	59.2457	-135.5298	Electrofished 2 CO. Very good flow and channel here.	EF	2 CO
108	59.2455	-135.5290	Tributary on river left. A man made channel full of grass. Double Culverts under the runway.		
109	59.2453	-135.5289	Electrofished 1 CO.	EF	1 CO
110	59.2449	-135.5275	Culvert that runs under runway.		
111	59.2441	-135.5203	Culvert under runway thick with equisetum.		

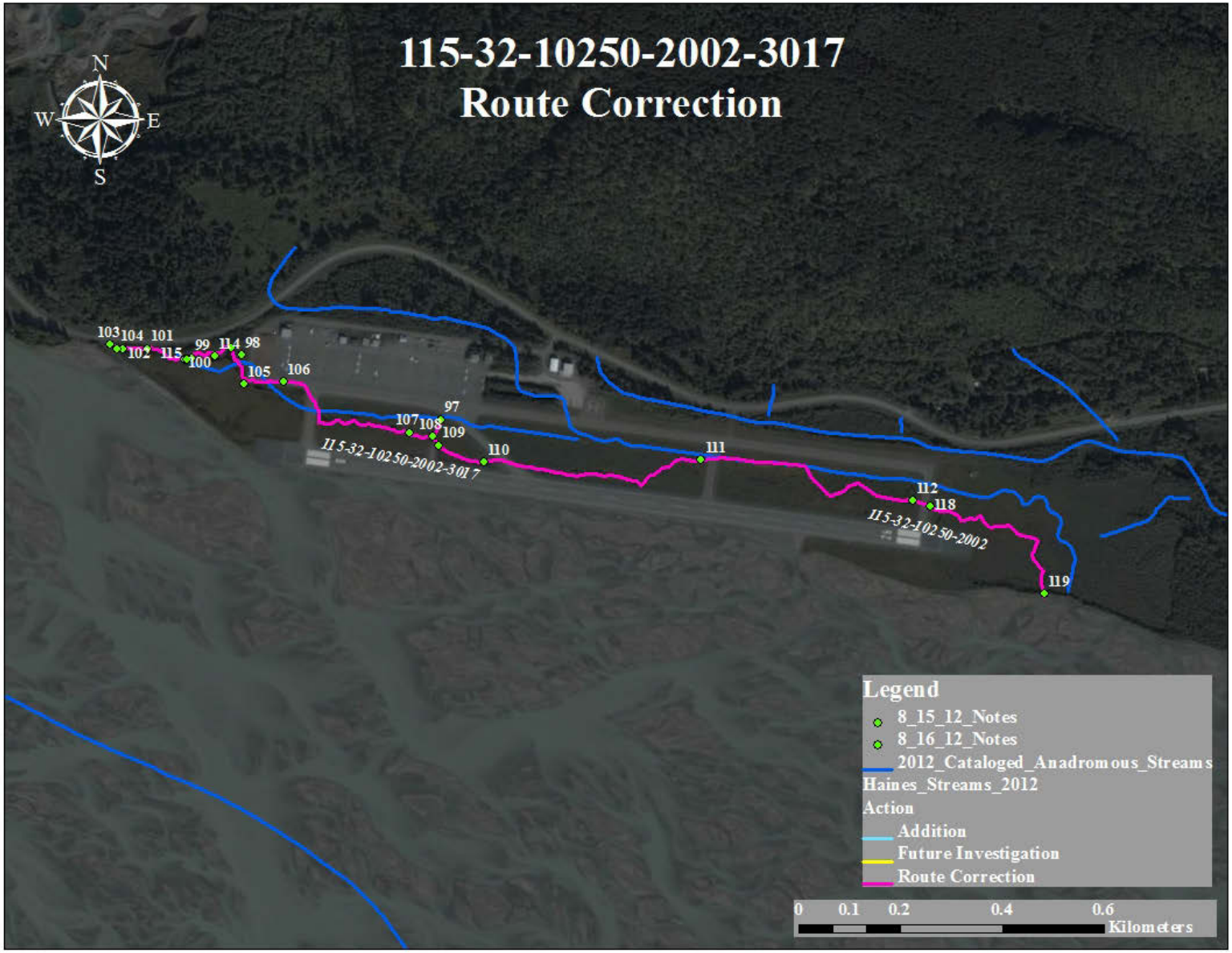

Figure 137.–115-32-10250-3017 route correction map.

115-34-10220 ROUTE CORRECTION

Stream: 115-34-10220 (cataloged for COr, CTp, DVp).
Watershed: Takhin River.
MTRS: Township 31S, Range 60E, Section 29, Skagway A-1.
Date Surveyed: July 20 and 26, 2012.
Findings: Over the course of three days of surveying we mapped out the mainstem and associated tributaries of stream 115-34-10220, and found the AWC to be incorrect on the upper section of the stream.
Recommendations: Add this stream to the AWC.

Table 63.–115-34-10220 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
218	59.1581	-135.3551	Possible tributary enters on river left. Begin tracking upstream.		
221	59.1587	-135.3574	Tributary enters river right, beginning tracking and electrofishing up.		
1	59.1587	-135.3573	Confluence of tributary to Halibut Cove Creek.		
2	59.1601	-135.3580	Tributary on river right. Handnet TS.	HN	TS
9	59.1605	-135.3584	Tributary into main tributary on river right.		
14	59.1606	-135.3584	Back to main tributary.		
15	59.1610	-135.3581	Tributary entering on river left. Tracking up.		
17	59.1612	-135.3581	Back on mainstem tributary.		
18	59.1625	-135.3583	Handnet 1 CO.	HN	1 CO
19	59.1635	-135.3587	Electrofished 2 CT.	EF	2 CT
20	59.1640	-135.3593	Electrofished 3 CT, 65-80 mm.	EF	3 CT - 65-80
21	59.1644	-135.3594	Electrofished 1 CO, 95 mm with positive ID of 3 more individuals.	EF	1 CO - 95 mm
22	59.1646	-135.3602	Electrofished 2 CO - 100 mm. Very smolty.	EF	2 CO - 100mm

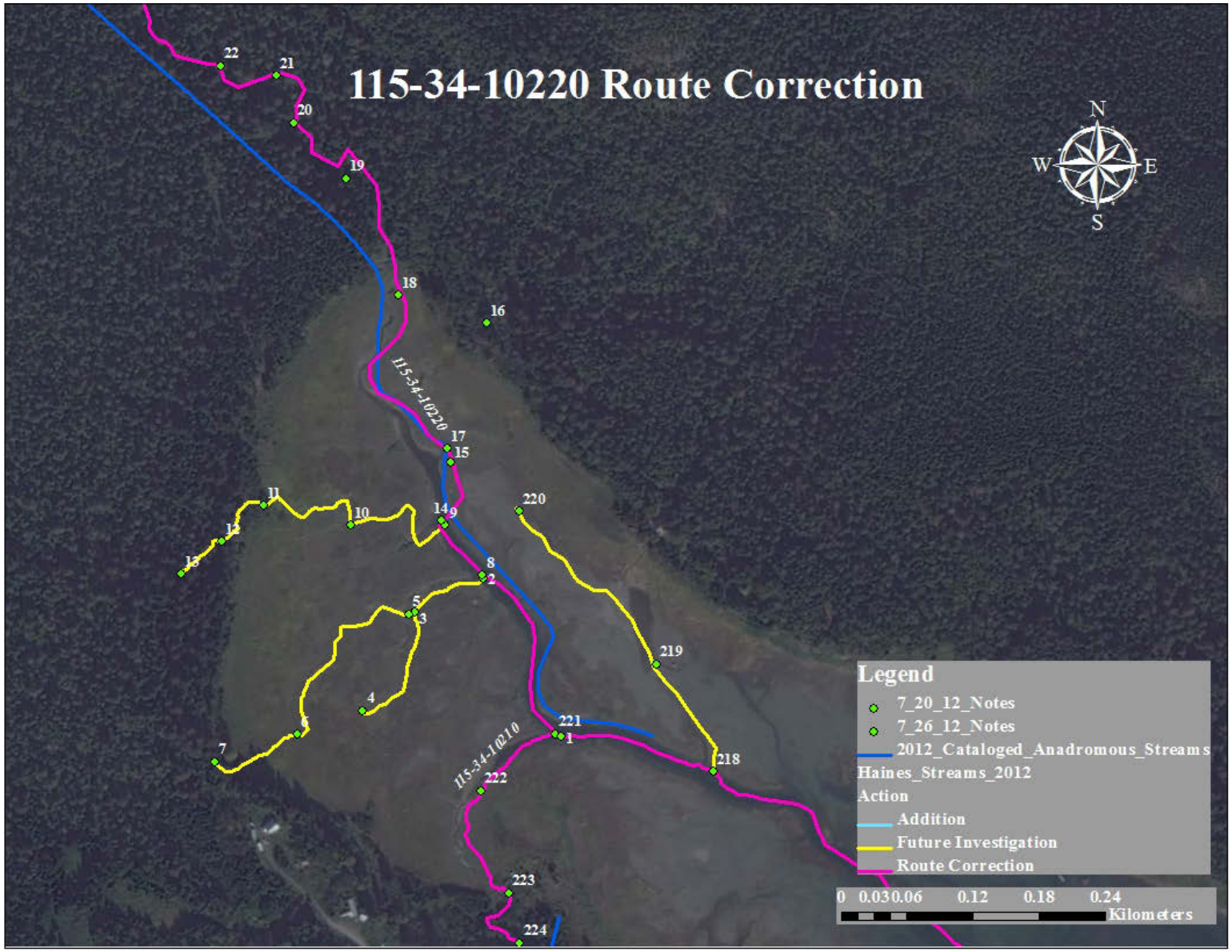

Figure 138.–115-34-10220 route correction map.

CANNERY CREEK ROUTE CORRECTION

Stream: Cannery Creek (115-32-10230, cataloged for COr, DVr).
Watershed*:* Battery Point.
MTRS: Township 31S, Range 60E, Section 24, Skagway A-2.
Date Surveyed: July 9, 2012.
Findings: We surveyed Cannery Creek and found the stream route differs from the AWC. Cannery Creek flows through two culverts that may be restricting fish passage. The downstream culvert only passes fish at high tides, while the series of culverts upstream had a debris jam. We will continue to monitor anadromous fish presence in upstream reaches of this stream as culvert improvements are made. Dolly Varden char and cutthroat trout were abundant all the way up to the headwaters in this system.
Recommendations: Update this streams route in the AWC.

Table 64.–Cannery Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	59.1722	-135.3885	Mouth of Cannery Creek. Tracking and electrofishing up.		
2	59.1713	-135.3878	Floating dock. Water is disconnected now but will reconnect at high tide.		
3	59.1710	-135.3874	Culvert. Damaged in center. Might be a fish barrier or in intertidal zone so fish might be able to pass occasionally. Handnet 3 CO in pool below culvert.	HN	3 CO
4	59.1708	-135.3873	Upstream end of culvert is rusting out and water is going under culvert. Does not seem to allow fish to pass.		
5	59.1706	-135.3871	Handnet 1 juvenile DV, continue tracking.	HN	1 DV
6	59.1702	-135.3858	Electrofished 1 CO ~ 80 mm. Double road culvert. Continuing upstream.	EF	1 CO ~ 80 mm
7	59.1702	-135.3856	Upstream end of both culverts. Culverts are blocked with woody debris. Restricted flow. We cleared one culvert. Flow is now unrestricted through one culvert.		
8	59.1702	-135.3854	Electrofished 1 CO ~ 108 mm. Continuing upstream.	EF	1 CO ~ 108 mm
9	59.1702	-135.3851	Electrofished 1 DV ~ 85 mm.	EF	1 DV ~ 85 mm

10	59.1706	-135.3840	Creek becomes marshy and spread out. Will continue tracking upstream.		
11	59.1711	-135.3813	End of marsh area. Stream rechannelizes. Will continue to electrofish and track upstream.		
12	59.1712	-135.3813	Electrofished 4 DV ~ 35-45 mm. Continuing upstream.	EF	4 DV ~ 35-45 mm
13	59.1710	-135.3802	Electrofished 1 CT ~ 160 mm, 1 TS ~ 35 mm.	EF	1 CT ~ 160 mm, 1 TS ~ 35 mm
14	59.1707	-135.3798	Electrofished 1 DV ~ 60 mm.	EF	1 DV ~ 60 mm
15	59.1705	-135.3796	Electrofished 3 DV ~ 55-65 mm, 1 CT ~ 60 mm.	EF	3 DV~55-65 mm, 1 CT ~ 60mm
16	59.1704	-135.3791	Electrofished 1 CT ~ 64 mm, 1 dead DV in pool.	EF	1 CT ~ 64 mm, 1 DV
17	59.1703	-135.3789	Electrofished 2 CT ~ 75 and 58 mm	EF	2 CT ~ 75 and 58 mm
18	59.1699	-135.3787	Electrofished 2 CT ~180 and 60 mm. 1 DV ~ 70 mm. Continue upstream.	EF	2 CT ~ 180 and 60 mm, 1 DV ~ 70 mm
19	59.1697	-135.3782	Electrofished 5 CT ~ 180, 65, 60, 60, 120 mm	EF	5 CT ~ 180, 65, 60, 60, 120 mm
20	59.1697	-135.3778	Electrofished 1 CT	EF	1 CT
21	59.1696	-135.3775	Electrofished 3 CT ~ 140, 55, 50 mm.	EF	3 CT ~ 140, 55, 50 mm
22	59.1695	-135.3771	Electrofished 2 CT ~ 60 and 70 mm. Continue upstream.	EF	2 CT ~ 60 and 70 mm
23	59.1693	-135.3766	Electrofished 1 DV ~ 65 mm, 1 CT ~ 130 mm.	EF	1 DV ~ 65 mm, 1 CT ~ 130 mm
24	59.1691	-135.3762	Electrofished 1 DV ~ 35 mm. Continue upstream.	EF	1 DV ~ 35 mm
25	59.1692	-135.3755	Electrofished 2 DV ~ 25 mm, 1 CT ~ 60 mm, 1 DV ~ 100 mm.	EF	2 DV ~ 25 mm, 1 CT ~ 60 mm, 1 DV ~ 100 mm
26	59.1689	-135.3749	Electrofished 1 CT ~ 85 mm, 1 DV ~ 70 mm.	EF	1 CT ~ 85 mm, 1 DV ~ 70 mm
59	59.1685	-135.3727	Electrofished 1 CT ~ 55 mm.	EF	1 CT ~ 55 mm
60	59.1684	-135.3723	Electrofished 1 CT ~ 95 mm.	EF	1 CT ~ 95 mm
61	59.1682	-135.3716	Electrofished 1 CT ~ 80 mm, 1 DV 65 mm.	EF	1 CT ~ 80 mm, 1 DV ~ 65 mm
62	59.1680	-135.3699	Electrofished 1 DV ~ 50 mm.	EF	1 DV ~ 50 mm
63	59.1678	-135.3698	Electrofished 1 CT ~ 115 mm.	EF	1 CT ~ 115 mm
64	59.1680	-135.3665	Calling it the top of tributary. Water is still trickling though the moss. Substrate is organics and fines with small woody debris.		

Figure 139.–Perched and damaged culvert near mouth of Cannery Creek (WPT 3).

Figure 140.–Tess Quinn surveying Cannery Creek.

Figure 141.–Culvert filled with debris restricting flow (WPT 7).

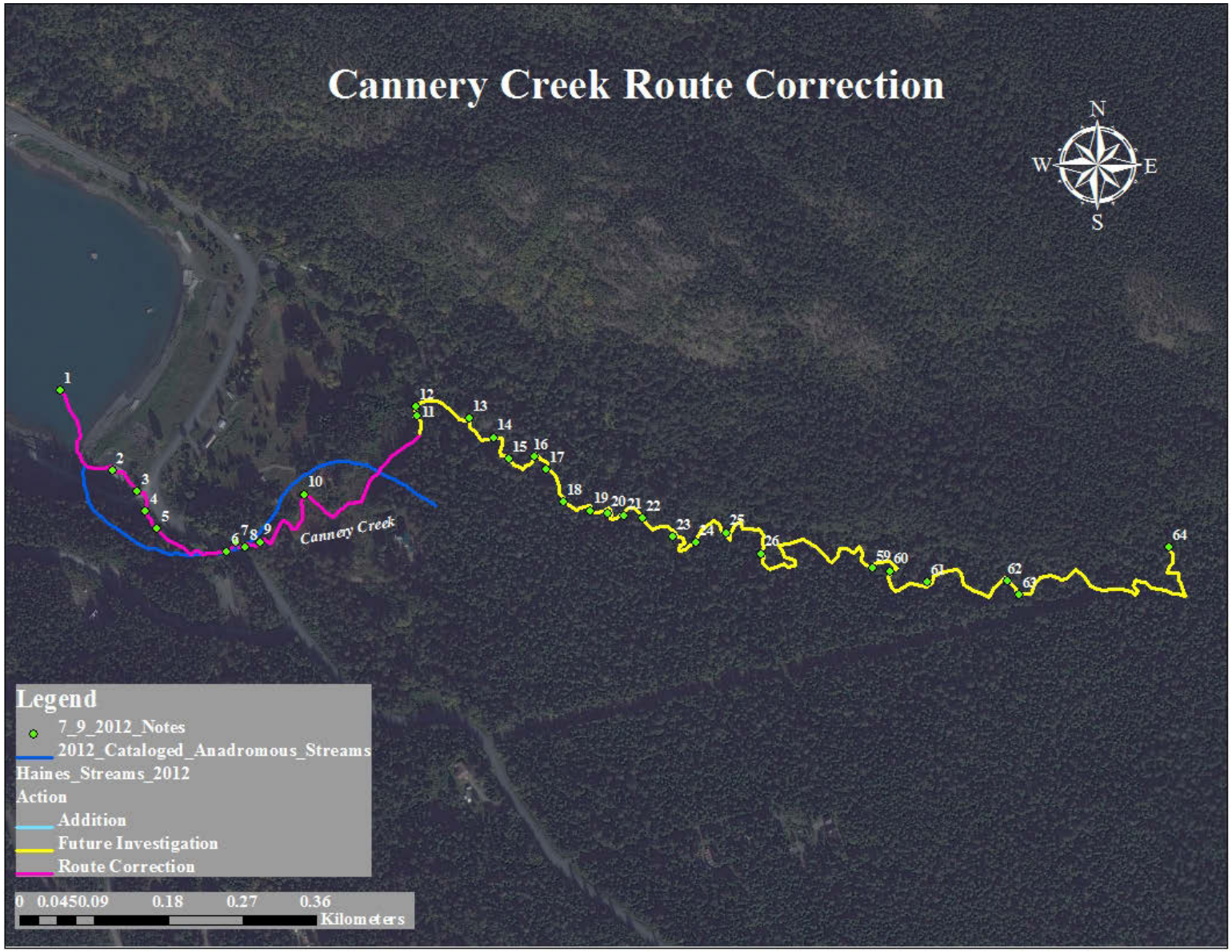

Figure 142.–Cannery Creek route correction map.

HOLGATE CREEK ROUTE CORRECTION

Stream: Holgate Creek (115-32-10260-2005, cataloged for COr, CTs).
Watershed*:* Battery Point.
MTRS: Township 31S, Range 59E, Section 2, Skagway A-2.
Date Surveyed: June 2, 2011.
Findings: Holgate Creek was surveyed to determine route accuracy and upper extent. Fish were observed visually throughout the system, but no trapping events yielded any fish. The habitat was ideal for rearing and substrate varied between muddy organics and large mossy cobbles.
Recommendations: Update this stream route in the AWC.

Table 65.–Holgate Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
4	59.2112	-135.4355	Stream splits with equal flows. Tracking river right fork.		
5	59.2128	-135.4328	Tiny tributary on river right. Too small to track.		
6	59.2128	-135.4324	Culvert perched 2" to 4" under grassy road leading to the aircraft control towers.		
7	59.2141	-135.4304	Stream forks. Taking the tributary on river right.		
8	59.2142	-135.4303	Set a minnow trap in small tributary in a corner pool beneath a partially-submerged log in the stream. Great rearing habitat.	MT	No fish
9	59.2145	-135.4297	Set trap in organicy pool. Stream goes subsurface for ~ 20' to 30' downstream of the trap placement.	MT	No fish
10	59.2149	-135.4294	Ended the tributary survey at a 2' falls. Stream reduces to an organicy seep above.		
11	59.2140	-135.4304	Beginning trapping on mainstem after encountering no barrier at the cataloged end of anadromy. Set a trap at the confluence of the mainstem and tributary.	MT	2 CT - 75mm, 1 DV - 70mm
12	59.2142	-135.4296	Set a trap under a small falls. Substrate is gravels and fines. Great riparian habitat.	MT	2 CT - 75-90mm

13	59.2143	-135.4297	Set trap upstream of a small falls in a corner pool next to a large log in the stream. Substrate is gravels and fines.	MT	2 CT - 60-90mm
14	59.2146	-135.4290	Set a trap in a bouldery pool, still nice habitat, no barrier encountered yet. Gravels, fines, and cobbles. Gradient slightly increasing.	MT	No fish
15	59.2146	-135.4282	Handnet 1 CT- 55mm. Ending survey above another subsurface flow.	HN	1 CT - 55mm
16	59.2144	-135.4294	Handnet 1 DV and visual ID of 2 CT.	HN VI	1 DV - 60mm 2 CT

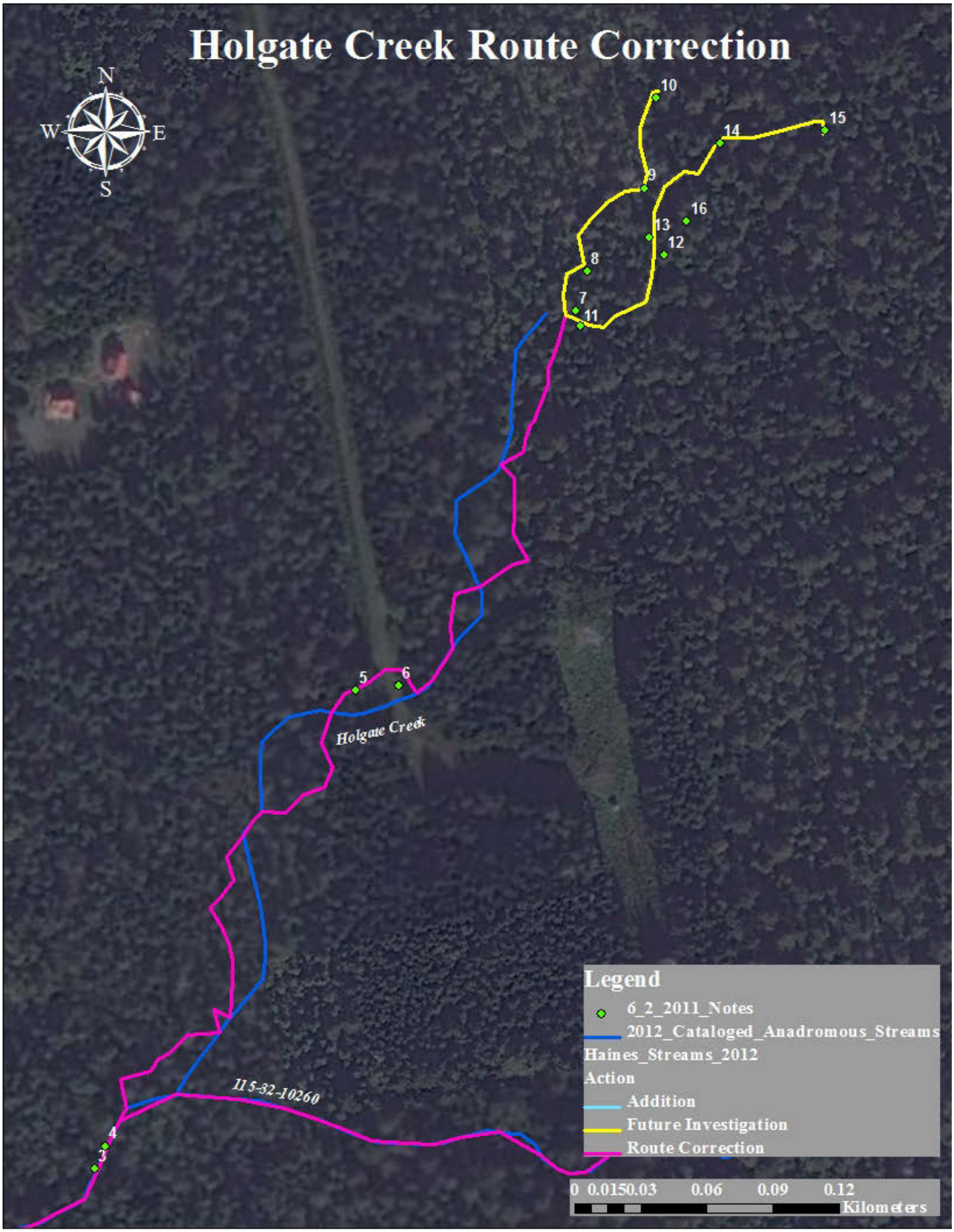

Figure 143.–Holgate Creek route correction map.

LITTLE SALMON RIVER ROUTE CORRECTION

Stream: Little Salmon River (115-32-10250-2067-3002, cataloged for COsr, CTsr, CHp, DVp).
Watershed: Takhin River.
MTRS: Township 29S, Range 55E, Sections 1 and 6, and Township 28S, Range 55E, Section 34, Skagway B-3.
Date Surveyed: August 2, 13, 14, 17, 24, and 25, 2012.
Findings: Over the course of six days we tracked and surveyed the upper portion of the Little Salmon River and its tributaries. This area has many beaver dams. As shown in Figure 64, we tracked a polygon around one of the beaver dams. Juvenile coho salmon were found throughout the entire polygon perimeter. We also tracked a side channel with rearing coho throughout the stream. The Little Salmon River track differs from the AWC.
Recommendations: Update this stream route in the AWC.

Table 66.–Little Salmon River survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
10	59.3841	-136.0751	Bridge that crosses the Little Salmon River. The road goes to the Tsirku River. River is moving along and we will be tracking and electrofishing up.		
11	59.3848	-136.0813	Tributary entering river left. Just small clear stream compared to Little Salmon River. Track/electrofish.		
19	59.3847	-136.0817	Back on Little Salmon mainstem, heading up.		
21	59.3835	-136.0934	At steep, incised portion. Close to the cataloged upper extent. Ending survey here. Rapids and increasing gradient.		
70	59.3841	-136.0751	Bridge that crosses the Little Salmon River. We will be heading downstream.		
71	59.3836	-136.0683	Electrofished 11 DV between 30-85 mm, 1 SC and 2 CO ~ 45 mm.	EF	11 DV ~ 30-85 mm, 1 SC, 2 CO ~ 45 mm
72	59.3855	-136.0662	Tributary entering river left. Tracking and electrofishing.		
74	59.3885	-136.0641	Side channel entering river left. Tracking and electrofishing up.		
75	59.3886	-136.0649	Start of beaver complex. Electrofished 6 DV ~ 50 mm.	EF	6 DV ~ 50 mm
76	59.3885	-136.0655	Top of small back load of water. Electrofished 3 CO ~ 50 mm.	EF	3 CO ~ 50 mm

77	59.3880	-136.0659	One of many beaver dams. Currently not much flow from dam.		
78	59.3880	-136.0658	A disconnected pool from water. We saw CO and electrofished 5 CO ~ 45 mm.	EF	5 CO ~ 45 mm
79	59.3881	-136.0663	Main beaver dam ~ 3 ft. high. Will track down to where it connects with WPT's 74 and 75. Electrofished 1 DV ~ 45 mm and 3 CO ~ 40 mm at base of dam .	EF	1 DV ~ 45 mm, 3 CO ~ 40 mm
80	59.3872	-136.0666	Back on mainstem, headed down to see where it connects.		
81	59.3874	-136.0665	Far edge of beaver pond. We can hear Little Salmon River from here.		
92	59.3887	-136.0659	Handnet 3 CO in the beaver pond.	HN	3 CO
93	59.3892	-136.0652	Schooling CO.	VI	CO school
94	59.3893	-136.0651	Electrofished 3 CO, 65-80 mm.	EF	3 CO -65-80 mm
95	59.3895	-136.0650	Third beaver dam installment. Tons of fish stuck in pool below dam.		
25	59.3901	-136.0644	Tributary hits a barrier. No throughway, but flow on the other side.		
26	59.3915	-136.0607	Confluence with Little Salmon River. This tributary had spots with no water but there were CO in every pool.	VI	CO
31	59.3885	-136.0640	Continuing tracking down the Little Salmon River.		
37	59.3906	-136.0604	River spreads out into channels. Tracking river left		
38	59.3914	-136.0601	Start of beaver complex.		
39	59.3909	-136.0594	Beaver pond. Tracked a polygon around the complex.		
40	59.3903	-136.0591	Electrofished 2 CO caught on edge of beaver complex.	EF	2 CO
41	59.3909	-136.0582	Electrofished 4 CO ~ 45 mm. Continuing polygon.	EF	4 CO ~ 45 mm
42	59.3910	-136.0574	Electrofished 3 CO, 1 SC.	EF	3 CO , 1 SC
43	59.3916	-136.0571	Water leaving beaver complex into Little Salmon River.		
44	59.3916	-136.0598	One outlet from complex.		

45	59.3916	-136.0598	This is where WPT 38 meets WPT 44.
46	59.3921	-136.0587	Branch of Little Salmon river left. Will track up.
47	59.3948	-136.0570	Top of beaver complex. End of tracking for the day.
48	59.3921	-136.0584	On mainstem of Little Salmon. Started tracking downstream.
49	59.3959	-136.0511	Main flow from beaver pond by road. Nice step pool with majority of water flow. Continuing down.
50	59.3957	-136.0443	End tracking for the day. Should come back to investigate other side channel.

Figure 144.–Habitat Biologist Nicole Legere surveying the Little Salmon River.

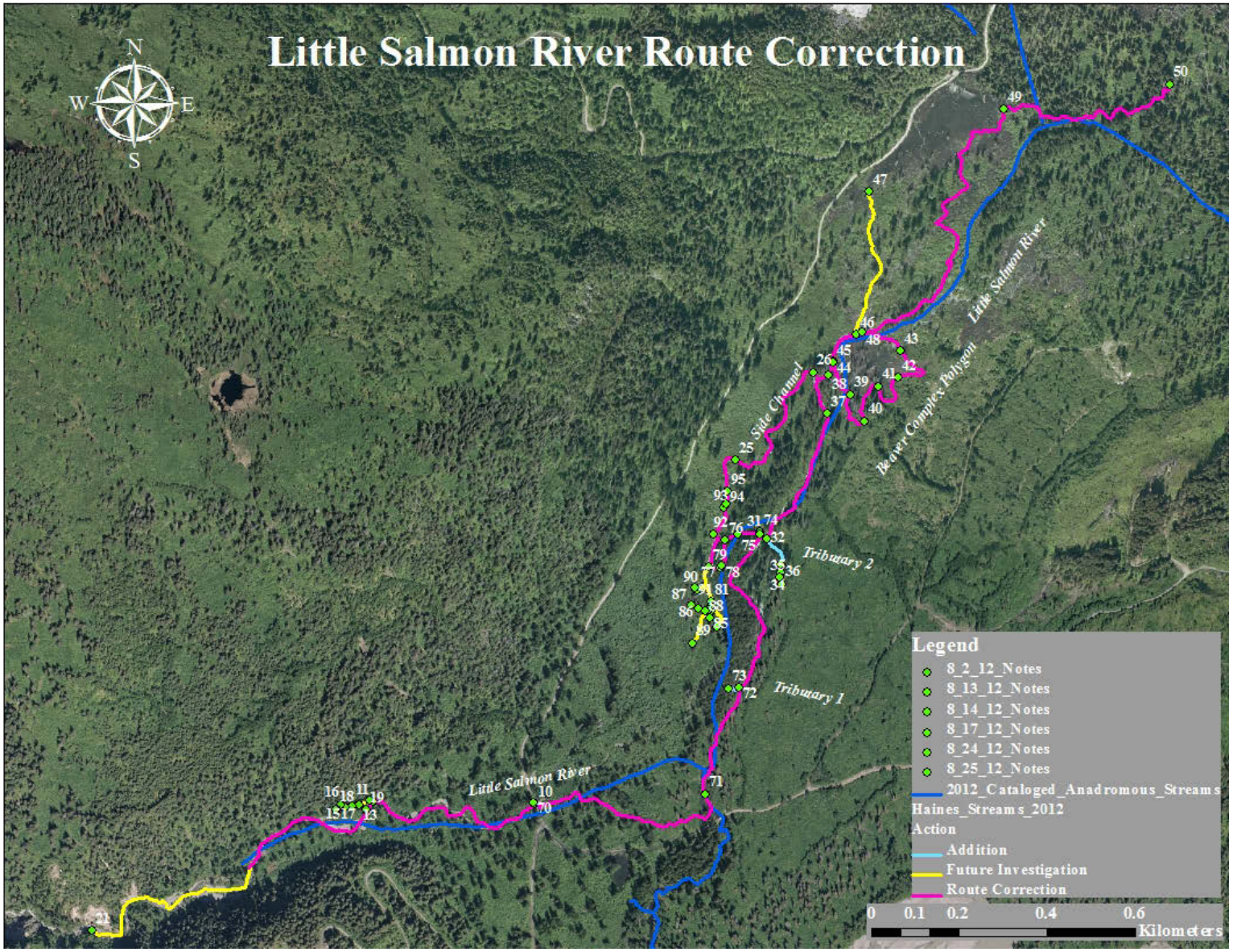

Figure 145.–Little Salmon River route correction map.

LITTLE SALMON RIVER TRIBUTARY 1 ADDITION

Stream: Little Salmon River tributary 1 (115-32-10250-2067-3002, cataloged for COsr, CTsr, CHp, DVp,).
Watershed: Takhin River.
MTRS: Township 29S, Range 55E, Section 1, Skagway B-3.
Date Surveyed: August 13, 2012.
Findings: This is a short tributary on the Little Salmon River. We caught juvenile coho salmon in the small headwater pool of this stream.
Recommendations: Add this stream to the AWC.

Table 67.–Little Salmon River tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
72	59.3855	-136.0661	Tributary entering river left. Tracking and electrofishing.		
73	59.3856	-136.0666	Top of tributary, just water coming up and out of the ground. Electrofished 7 DV ~ 20-120 mm and 2 CO ~ 40 mm.	EF	7 DV ~ 20-120 mm, 2 CO ~ 40 mm

Figure 146.–Little Salmon River tributary 1 addition map.

LITTLE SALMON RIVER TRIBUTARY 2 ADDITION

Stream: Little Salmon River tributary 2 (115-32-10250-2067-3002, cataloged for CHp, COsr, Sp, CTsr, DVp).
Watershed: Takhin River.
MTRS: Township 29S, Range 55E, Section 1, Skagway B-3.
Date Surveyed: August 24, 2012.
Findings: This is a tributary to the Little Salmon River. We found juvenile coho salmon in the upper portion of this stream. The headwater of this stream is a small upwelling.
Recommendations*:* Add this stream to the AWC.

Table 68.–Little Salmon River tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
32	59.3884	-136.0638	Tracking up.		
33	59.3878	-136.0635	Electrofished 1 DV ~60 mm.	EF	1 DV ~ 60 mm
34	59.3877	-136.0636	Electrofished 6 DV ~ 35-60 mm.	EF	6 DV ~ 35-60 mm
35	59.3876	-136.0637	Electrofished 2 CO ~ 35 mm.	EF	2 CO ~ 35 mm
36	59.3874	-136.0636	Top of tributary upwelling. We will continue tracking Little Salmon River.		

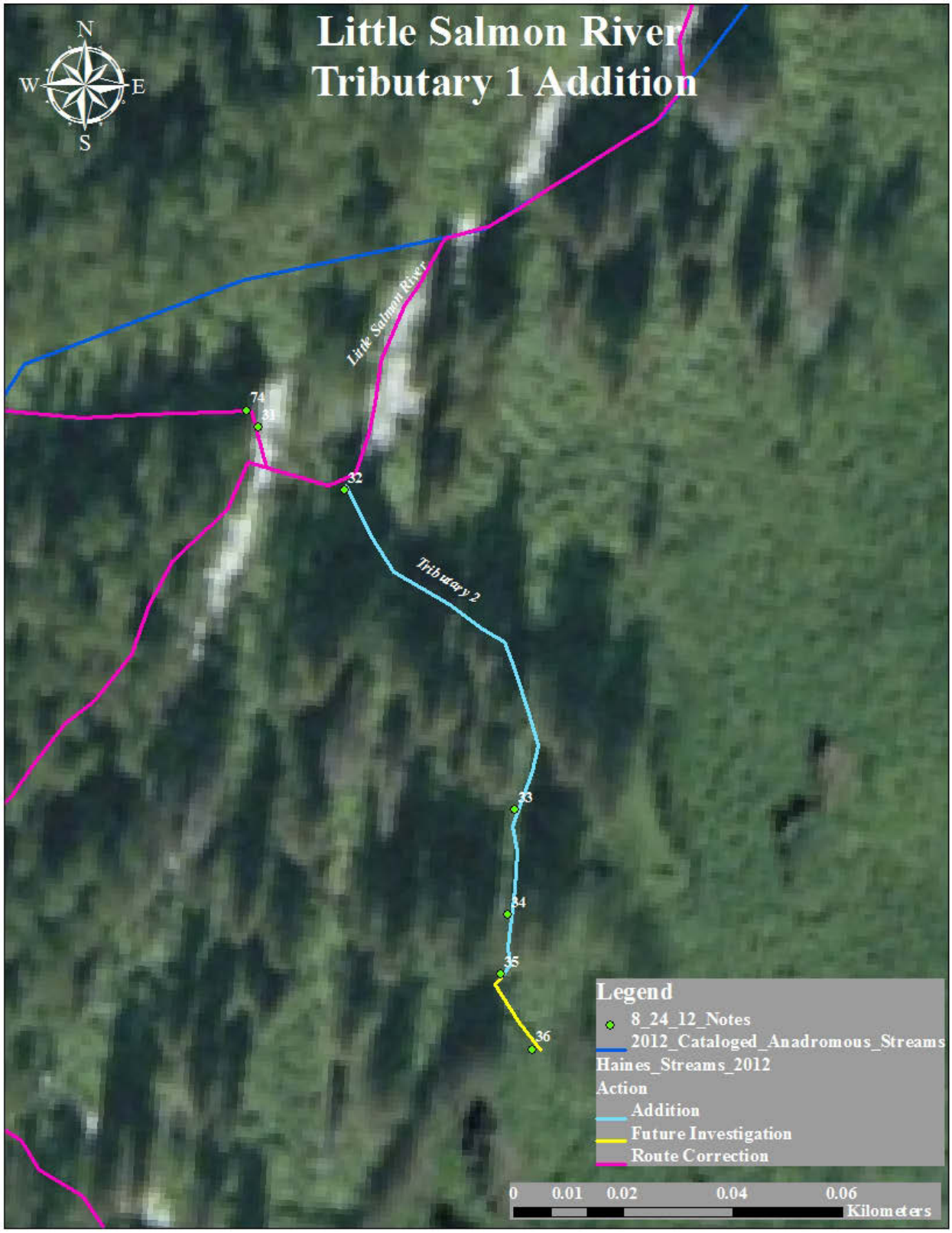

Figure 147.–Little Salmon River tributary 2 addition map.

MOOSE MEADOWS CREEK TRIBUTARY 1 ADDITION

Stream: Moose Meadows Creek tributary 1 (115-32-10120 cataloged for COr, CTsr).
Watershed: Battery Point.
MTRS: Township 32S, Range 60E, Section 6, Skagway A-1.
Date Surveyed: July 11, 2012.
Findings: This stream is a tributary to Moose Meadows Creek. We captured juvenile coho salmon, cutthroat trout, and Dolly Varden char in this small stream.
Recommendations: Add this stream to the AWC

Table 69.–Moose Meadows Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
92	59.1304	-135.3718	Tributary enters on river left, begin tracking.		
93	59.1300	-135.3716	Electrofished 1 DV, 1 CT, 1 SC.	EF	1 DV, 1 CT, 1 SC
94	59.1297	-135.3712	Electrofished 1 DV, 1 SC.	EF	1 DV, 1 SC
95	59.1296	-135.3713	Electrofished 2 DV.	EF	2 DV
96	59.1295	-135.3710	Stream disappears under rootwad, dry but very muddy channel for ~15ft, then resurfaces, possible barrier.		
97	59.1294	-135.3709	Electrofished 1 CO ~80.	EF	1 CO ~80
98	59.1292	-135.3712	Electrofished 1 DV.	EF	1 DV
99	59.1291	-135.3712	Electrofished 2 DV.	EF	2 DV
100	59.1290	-135.3710	Electrofished 1 DV.	EF	1 DV
101	59.1288	-135.3707	Electrofished 1 DV.	EF	1 DV
102	59.1287	-135.3706	Electrofished 2 DV, 1 SC.	EF	2 DV, 1 SC
103	59.1284	-135.3706	Electrofished 1 DV.	EF	1 DV
104	59.1282	-135.3707	Electrofished 2 DV.	EF	2 DV
105	59.1279	-135.3705	Trail crossing, bridge.		
106	59.1278	-135.3704	Electrofished 1 CO.	EF	1 CO
107	59.1278	-135.3703	Electrofished 1 DV.	EF	1 DV
108	59.1270	-135.3696	End of tributary. It branches and both branches are pretty small, a little marshy, calling it the end.		

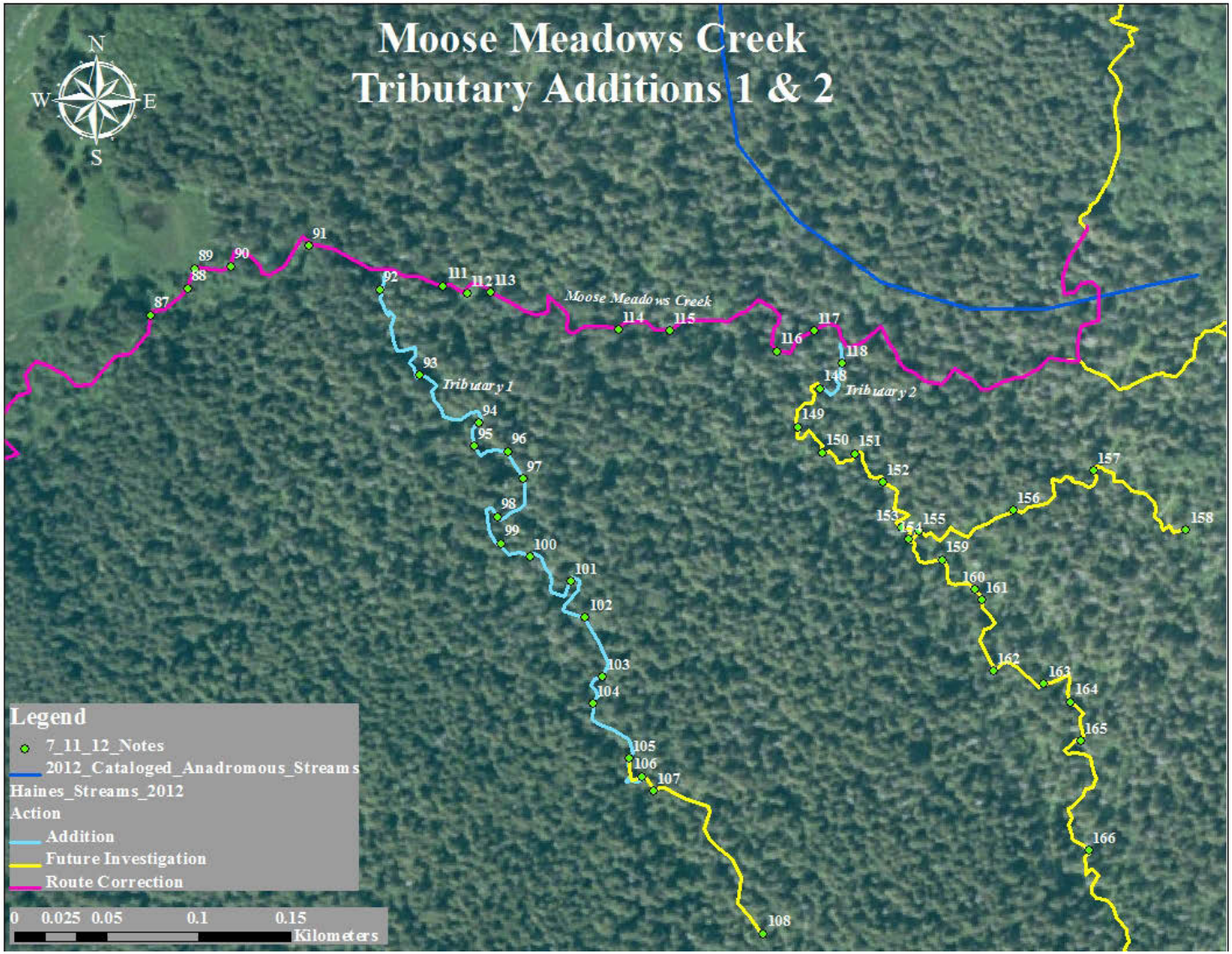

Figure 148.–Moose Meadows Creek tributary 1 addition map.

MOOSE MEADOWS CREEK TRIBUTARY 2 ADDITION

Stream: Moose Meadows Creek tributary 2 (115-32-10120 cataloged for COr, CTsr).
Watershed: Battery Point.
MTRS: Township 32S, Range 60E, Section 6, Skagway A-1.
Date Surveyed: July 11, 2012.
Findings: This stream is a tributary to Moose Meadows Creek. We captured juvenile coho salmon, cutthroat trout, and Dolly Varden char in this small stream.
Recommendations: Add this stream to the AWC.

Table 70.–Moose Meadows Creek tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
118	59.1296	-135.3680	Tributary enters on river left, begin tracking.		
148	59.1295	-135.3680	Electrofished 1 CO ~ 65, 1 CT ~85.	EF	1 CO ~ 65, 1 CT ~ 85
149	59.1293	-135.3680	Electrofished 1 CT.	EF	1 CT
150	59.1292	-135.3680	Electrofished 3 CT, 2 DV.	EF	3 CT, 2 DV
151	59.1291	-135.3680	Electrofished 1 CT, 1 DV.	EF	1 CT, 1 DV
152	59.1290	-135.3680	Electrofished 1 DV.	EF	1 DV
153	59.1287	-135.3680	Trail crossing-bridge.		

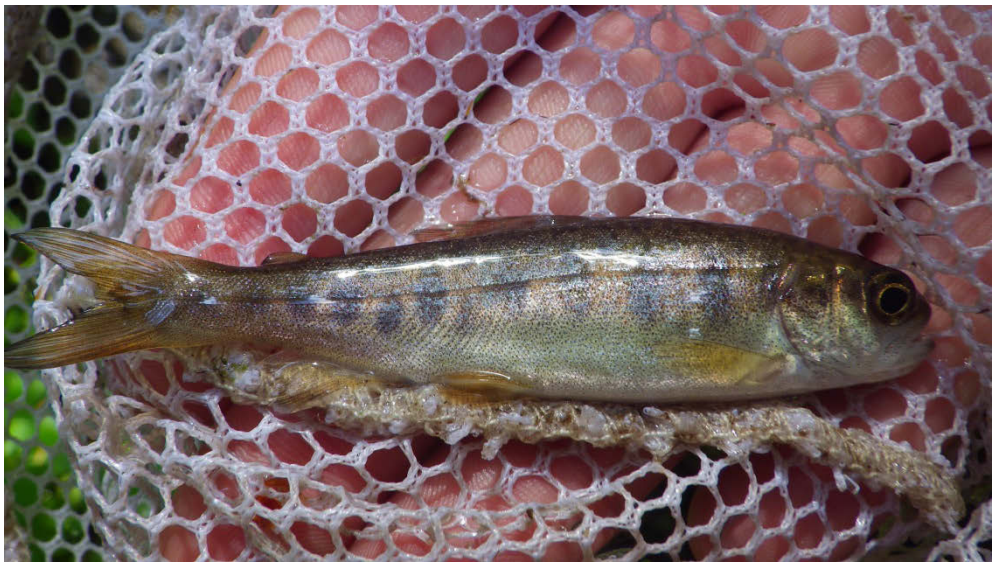

Figure 149.–Juvenile coho salmon captured in Moose Meadows Creek tributary 2.

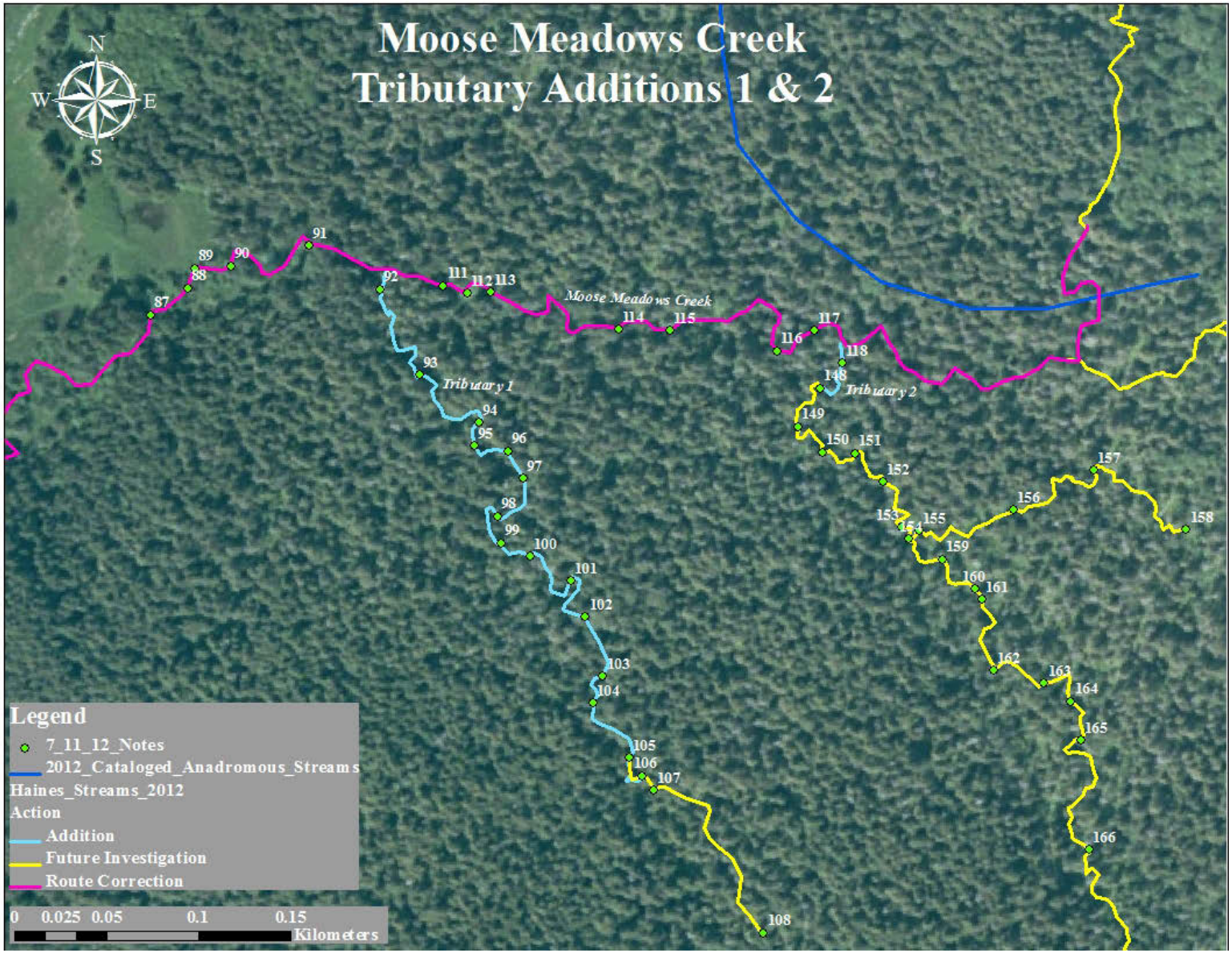

Figure 150.–Moose Meadows Creek Tributary 2 addition map.

MOOSE MEADOWS CREEK ROUTE CORRECTION

Stream: Moose Meadows Creek (115-32-10120 cataloged for COr, CTsr).
Watershed: Battery Point.
MTRS: Township 32S, Range 60E, Section 6, Skagway A-1.
Date Surveyed: July 10-12, 2012.
Findings: Moose Meadows Creek meanders through the forest with rearing coho throughout. One juvenile Chinook salmon was caught in the lower reach of the creek. This route of Moose Meadows Creek differs from that illustrated in the AWC.
Recommendations: Add this stream route correction to the AWC.

Table 71.–Moose Meadows Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
65	59.1310	-135.3797	Mouth of creek going into ocean/river. The tide is low so we are starting track below high water. Tracking and electrofishing up.		
66	59.1303	-135.3780	This is where foot trail crosses creek. There is no bridge or culvert here, the trail just runs through creek.		
67	59.1302	-135.3780	Electrofisher settings: 400V, 30Hz and 12% duty cycle. Electrofished 1 K and 1 CT, both ~ 45mm.	EF	1 K and 1 CT ~45mm
68	59.1301	-135.3767	Changed electrofisher to 350V. Electrofished 1 CT ~ 70mm.	EF	1 CT ~70mm
69	59.1301	-135.3759	Electrofished 1 CO ~ 40 mm and 1 CT ~ 85 mm.	EF	1 CO ~40 mm and 1 CT ~ 85 mm
70	59.1304	-135.3743	Foot trail bridge crosses creek.		
87	59.1305	-135.3740	Electrofished 1 DV, several SC.	EF	1 DV, SC
88	59.1306	-135.3736	Electrofished 1 CT, several SC.	EF	1 CT, SC
89	59.1307	-135.3735	Electrofished 1 CO ~85 mm, 1 large female CT ready to spawn.	EF	1 CO ~85 mm, 1 CT
90	59.1307	-135.3731	Electrofished 1 CO ~65.	EF	1 CO ~65
91	59.1307	-135.3724	Electrofished 2 CO ~60-70.	EF	2 CO ~60-70
92	59.1304	-135.3718	Tributary enters on river left, begin tracking.		
111	59.1304	-135.3712	Electrofished 1 DV, 1 SC.	EF	1 DV, 1 SC
112	59.1303	-135.3710	Electrofished 1 DV, 2 SC.	EF	1 DV, 2 SC
113	59.1303	-135.3708	Electrofished 1 CO ~ 64 mm.	EF	1 CO ~ 64 mm

114	59.1300	-135.3697	Electrofished 1 CO ~65 mm, 1 CT ~75, 1 SC.	EF	1 CO ~ 65 mm, 1 CT ~75 mm, 1 SC
115	59.1300	-135.3692	Electrofished 1 CO ~60 mm.	EF	1 CO ~ 60 mm
116	59.1297	-135.3683	Electrofished 2 CT.	EF	2 CT
117	59.1298	-135.3679	Electrofished 1 CT.	EF	1 CT
118	59.1296	-135.3677	Tributary enters on river left, begin tracking.		
169	59.1297	-135.3677	Begin tracking up mainstem. 1 DV - 30 mm, 2 SC, 2 CT 55-60 mm.	EF	2 CT - 55-60 mm, 1 DV - 30 mm, 2 SC
170	59.1297	-135.3673	Electrofished 1 CT - 110 mm.	EF	1 CT - 110 mm
171	59.1294	-135.3667	Electrofished 1 CT - 95 mm, 1 SC.	EF	1 CT - 95 mm, 1 SC
172	59.1293	-135.3665	Stream goes under trail bridge - electrofished 1 CT - 40 mm.	EF	1 CT - 40 mm
173	59.1293	-135.3663	Electrofished 1 DV - 65 mm, 3 CT 45-110 mm.	EF	1 DV - 65 mm, 3 CT 45-110 mm
174	59.1294	-135.3657	Tributary enters on river left - track and fish our way up.		
182	59.1295	-135.3656	Electrofished 4 CT - 40-60 mm, 1 DV 65 mm, resume upstream.	EF	4 CT - 40-60 mm, 1 DV - 65 mm
183	59.1295	-135.3653	Electrofished 3 CT 50-60 mm.	EF	3 CT 50-60 mm
184	59.1299	-135.3652	Gradient increases but will continue to fish our way upstream - no apparent barriers.		
185	59.1315	-135.3647	Calling it the top - likely well above anadromous habitat although habitat quality remains good. We attempted fishing several nice pools and haven't caught anything for quite a while.		

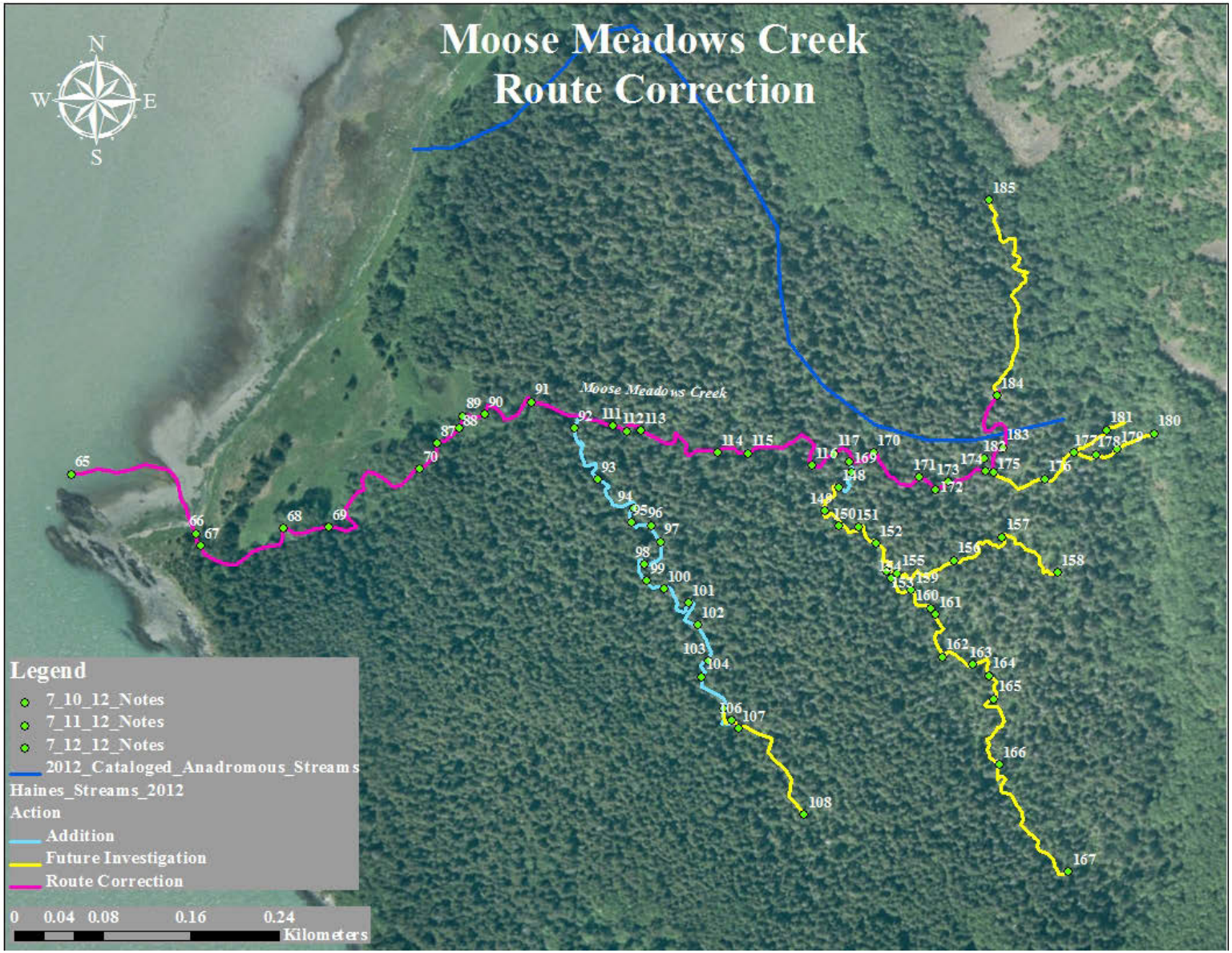

Figure 151.–Moose Meadows Creek route correction map.

MUSKRAT CREEK ROUTE CORRECTION

Stream: Muskrat Creek (115-32-10250-2081, cataloged for COsrp).
Watershed*:* Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed: August 9-11, 2012.
Findings*:* Over the course of three days we tracked and surveyed Muskrat Creek and its tributaries. We had several visual observations of spawning sockeye salmon in the lower-mid portion of the creek. We caught juvenile coho salmon above the current AWC upper extent. The headwater of Muskrat Creek is a small seep from ground adjacent to the Haines Highway.
Recommendations: Correct the stream route, add spawning sockeye, and extend the upper extent for coho in the AWC for Muskrat Creek.

Table 72.–Muskrat Creek survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
5	59.4174	-135.9440	Mouth of Muskrat Creek. ~ 45-50 feet wide. Will track up along bank.		
6	59.4137	-135.9475	Tributary enters river right. We will track up tributary. Electrofisher settings- 320 V, 12% duty cycle, 30 Hz. Electrofished one spot along tributary-no fish.	EF	No fish
7	59.4131	-135.9478	Calling it the top. No defined channel. Spreads out into a wooded wetland.		
8	59.4135	-135.9476	Electrofished the lower portion of tributary from WPT 6. Caught 2 CO.	EF	2 CO
9	59.4135	-135.9476	As we walked down the tracked tributary we found another branch of this tributary. We will track up.		
10	59.4132	-135.9482	Calling it the top. Forested, spread out marsh.		
11	59.4135	-135.9488	Visual of 3 (2M, 1 F) adult S.	VI	3 adult S
12	59.4128	-135.9501	More S and redds.	VI	S
13	59.4128	-135.9515	More S and redds.	VI	S
14	59.4128	-135.9517	Tributary entering river left. Gravel is very iron enriched.		
15	59.4128	-135.9527	Tributary enters river left. Will track up.		

16	59.4129	-135.9533	Electrofished 1 CO~ 35 mm, 1 visual on CO from electrofishing.	EF	1 CO ~35mm
17	59.4129	-135.9534	Electrofished 2 CO- system is very iron enriched and silty.	EF	2 CO
18	59.4131	-135.9536	Electrofished 2 CO.	EF	2 CO
19	59.4133	-135.9542	Visual ID- CO.	VI	CO
20	59.4133	-135.9548	Handnet 3 CO.	HN	3 CO
21	59.4136	-135.9566	Calling it the top-stagnant mud hole.		
25	59.4127	-135.9517	Return to Muskrat Creek today to finish where we left off from yesterday. We are going to start at WPT 14. Visual ID - 4 S at confluence. We are going to track river right today.	VI	4 S
26	59.4125	-135.9523	Tributary enters river right. Will track up.		
27	59.4124	-135.9523	Electrofished 3 CO.	EF	3 CO
28	59.4120	-135.9525	Top of watered area. Spreads out into forest.		
29	59.4125	-135.9524	S and redds present.	VI	S
30	59.4122	-135.9530	S and redds present up to this point and below. Great spawning habitat. Gravel and many upwellings.	VI	S
31	59.4119	-135.9548	We have not seen a S since WPT 30. Electrofished 3 DV. Continue to track up.	EF	3 DV
32	59.4117	-135.9550	Electrofished 2 CO and 13 DV.	EF	2 CO, 13 DV
33	59.4114	-135.9551	Electrofished 1 CO in a giant upwelling ~ 65mm.	EF	1 CO ~ 65mm
34	59.4107	-135.9548	Top of tributary. Right next to the road. We did not see any other fish past WPT 33.		
35	59.4128	-135.9531	Electrofished 2 CO ~ 35 mm and 10 ft. upstream from 1 adult S.	EF and VI	2 CO ~ 35mm, 1 adult S
36	59.4130	-135.9540	Electrofished 3 CO ~ 45 mm	EF	3 CO ~ 45 mm
37	59.4130	-135.9545	Electrofished 2 CO ~ 40 mm. 1 DV ~ 65 mm.	EF	2 CO ~ 40 mm, 1 DV~ 65 mm
38	59.4126	-135.9551	Electrofished 2 CO ~ 40 mm.	EF	2 CO ~ 40 mm
39	59.4123	-135.9558	Electrofished 2 CO ~ 35 mm.	EF	2 CO ~ 35 mm
40	59.4122	-135.9564	Electrofished 3 CO ~ 45 mm.	EF	3 CO ~ 45 mm
41	59.4121	-135.9563	Electrofished 2 DV ~ 35 mm and 2 CO ~ 40 mm.	EF	2 DV ~ 35 mm, 2 CO~ 40 mm

42	59.4119	-135.9564	Electrofished 2 CO ~ 40 mm.	EF	2 CO ~ 40 mm
43	59.4118	-135.9565	Tributary entering river right, tracking and electrofishing. 1 DV ~ 55 mm.	EF	1 DV ~ 55 mm
44	59.4112	-135.9567	Top of tributary ends in an upwelling hole. Electrofished 6 CO ~ 50 mm from the hole.	EF	6 CO ~ 50 mm
45	59.4115	-135.9580	Culvert outlet that goes under Duck Marsh Road. Wide culvert mouth and filled with silt and mud.		
46	59.4116	-135.9585	Electrofished 3 CO ~ 45 mm. One really dark one.	EF	3 CO ~ 45 mm
47	59.4116	-135.9589	Possible tributary. Entering river right. Will come back later to investigate.		
48	59.4117	-135.9595	Electrofished 1 CO ~ 40 mm.	EF	1 CO ~ 40 mm
49	59.4116	-135.9600	Electrofished 2 CO ~ 50 mm.	EF	2 CO ~ 50 mm
50	59.4113	-135.9606	Electrofished 3 CO ~ 45 mm.	EF	3 CO ~ 45 mm
51	59.4109	-135.9615	Electrofished 1 CO ~ 40 mm.	EF	1 CO ~ 40 mm
52	59.4107	-135.9622	Tributary entering river right, tracking and electrofishing.		
53	59.4105	-135.9624	Electrofished 4 CO ~ 50 mm.	EF	4 CO ~ 50 mm
54	59.4104	-135.9625	Top of tributary, just an upwelling. Electrofished 3 CO ~ 40 mm in pool at headwater.	EF	3 CO ~ 40 mm
55	59.4105	-135.9625	Split in creek, it is an even split in flow. Will track river left branch first.		
56	59.4105	-135.9626	Electrofished 2 CO ~ 40 mm.	EF	2 CO ~ 40 mm
57	59.4107	-135.9640	Electrofished 3 CO ~ 50 mm.	EF	3 CO ~ 50 mm
58	59.4103	-135.9655	Top of river left branch. The water is just seeping up out of the ground. There is channel here but does not appear to flow often. Very plant filled.		
59	59.4101	-135.9643	Top of river right branch. Then water just seeping up out of the ground. Electrofished to here and got nothing. Super irony.		

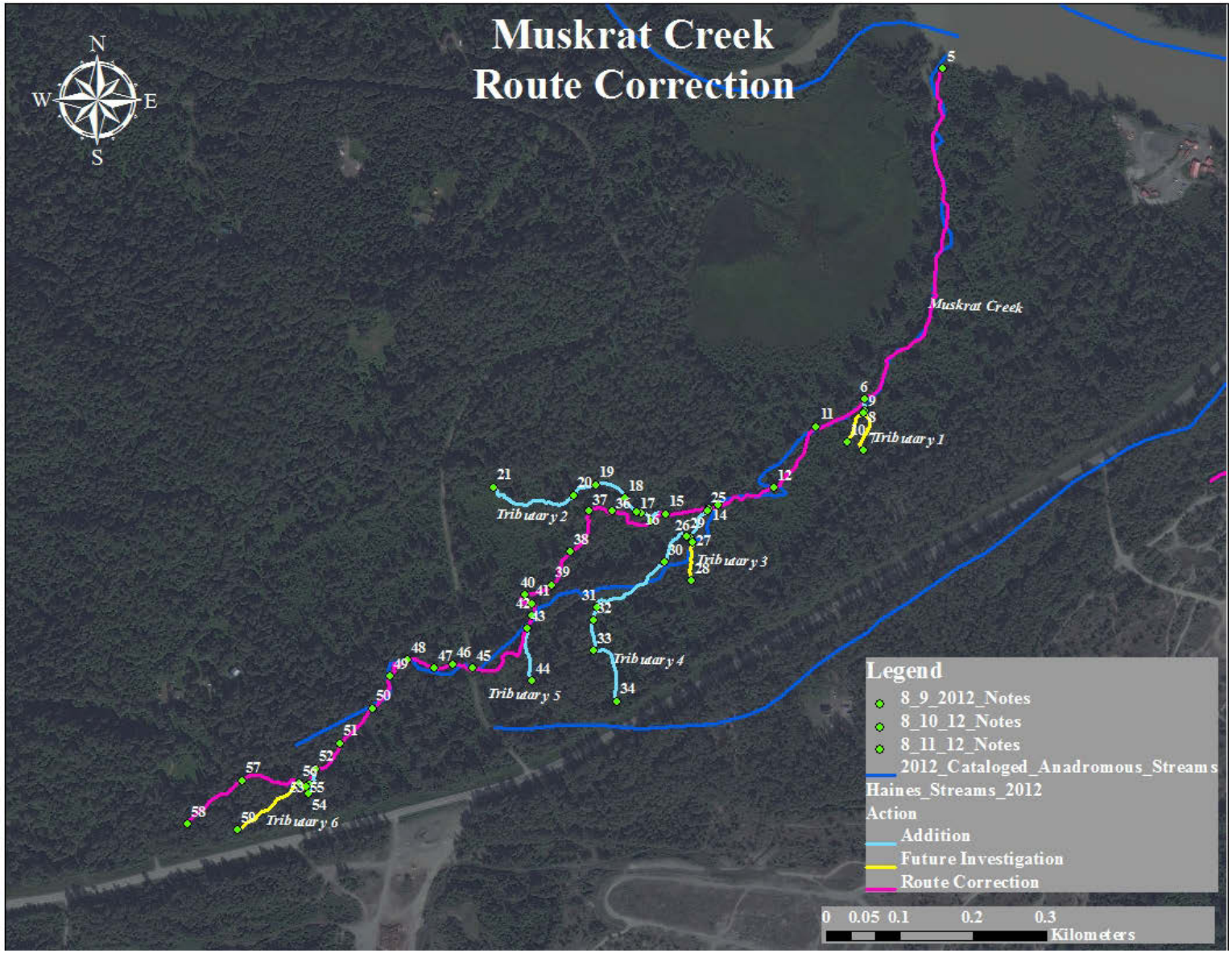

Figure 152.–Muskrat Creek route correction map.

MUSKRAT CREEK TRIBUTARY 1 ADDITION

Stream: Muskrat Creek tributary 1 (115-32-10250-2081, cataloged for COsrp).
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed: August 9, 2012.
Findings: We surveyed this uncataloged tributary to Muskrat Creek. We found juvenile coho salmon mid-way up the stream.
Recommendations: Add this tributary to the AWC.

Table 73.–Muskrat Creek tributary 1 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
6	59.4137	-135.9475	Tributary enters river right. Tracking up. Electrofished one spot along tributary-no fish.	EF	No fish
7	59.4131	-135.9478	Calling it the top. No defined channel. Spreads out into a wooded wetland.		
8	59.4135	-135.9476	Electrofished the lower portion of tributary from WPT 6. Caught 2 CO.	EF	2 CO
9	59.4135	-135.9476	As we walked down the tracked tributary we found another branch of this tributary. We will track up.		

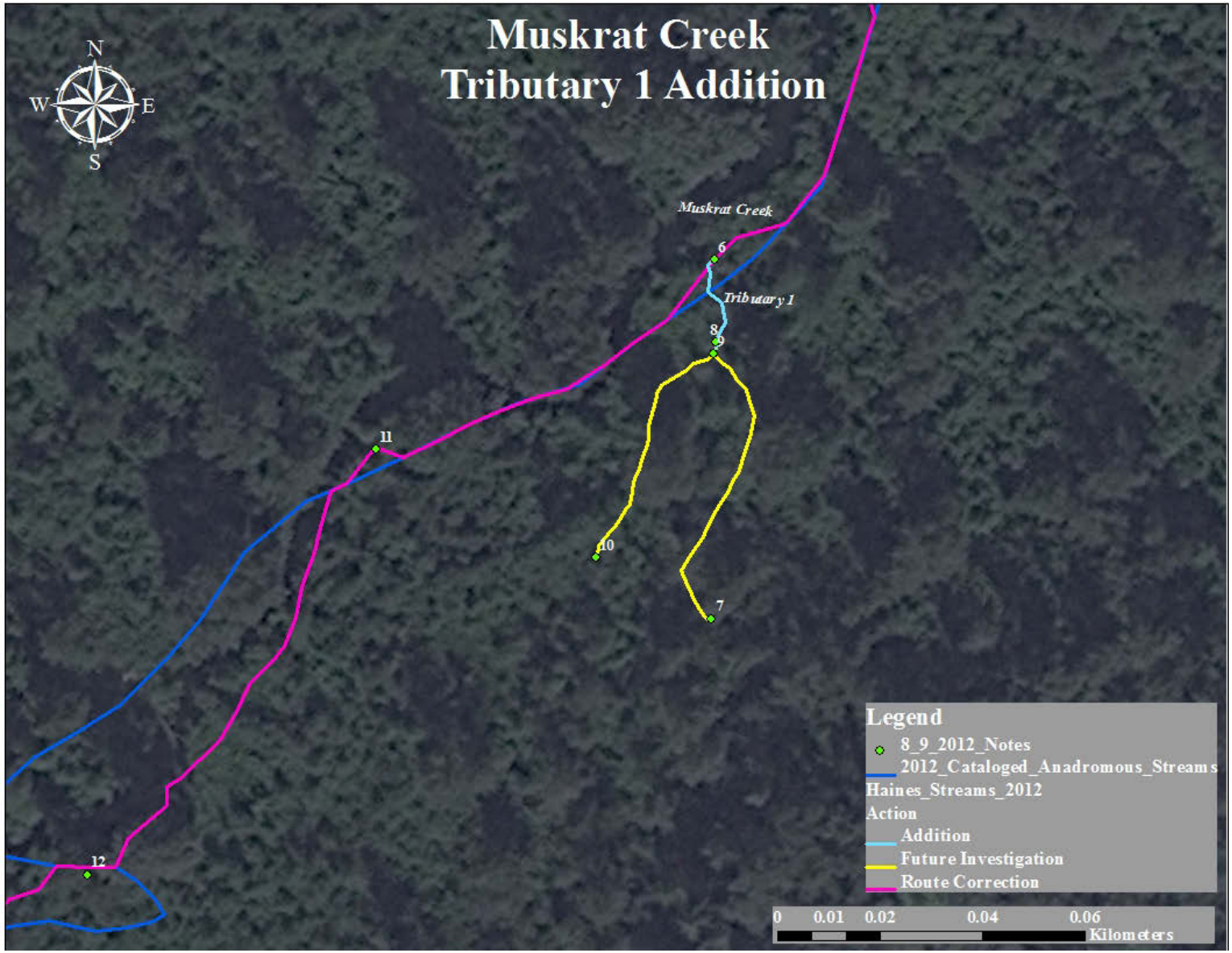

Figure 153.–Muskrat Creek tributary 1 addition map.

MUSKRAT CREEK TRIBUTARY 2 ADDITION

Stream: Muskrat Creek tributary 2 (115-32-10250-2081, cataloged for COsrp).
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed: August 9, 2012.
Findings: We surveyed this uncataloged tributary to Muskrat Creek. We found juvenile coho salmon mid-way up the stream. The stream is iron-enriched and originates from a small seep.
Recommendations: Add this tributary to the AWC.

Table 74.–Muskrat Creek tributary 2 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
15	59.4128	-135.9527	Tributary enters river left. Tracking up.		
16	59.4129	-135.9533	Electrofished 1 CO~ 35 mm.	EF	1 CO ~35mm
17	59.4129	-135.9534	Electrofished 2 CO- system is very iron enriched and silty.	EF	2 CO
18	59.4131	-135.9536	Electrofished 2 CO.	EF	2 CO
19	59.4133	-135.9542	Visual ID- CO.	VI	CO
20	59.4133	-135.9548	Handnet 3CO.	HN	3 CO
21	59.4136	-135.9566	Calling it the top-stagnant mud hole.		

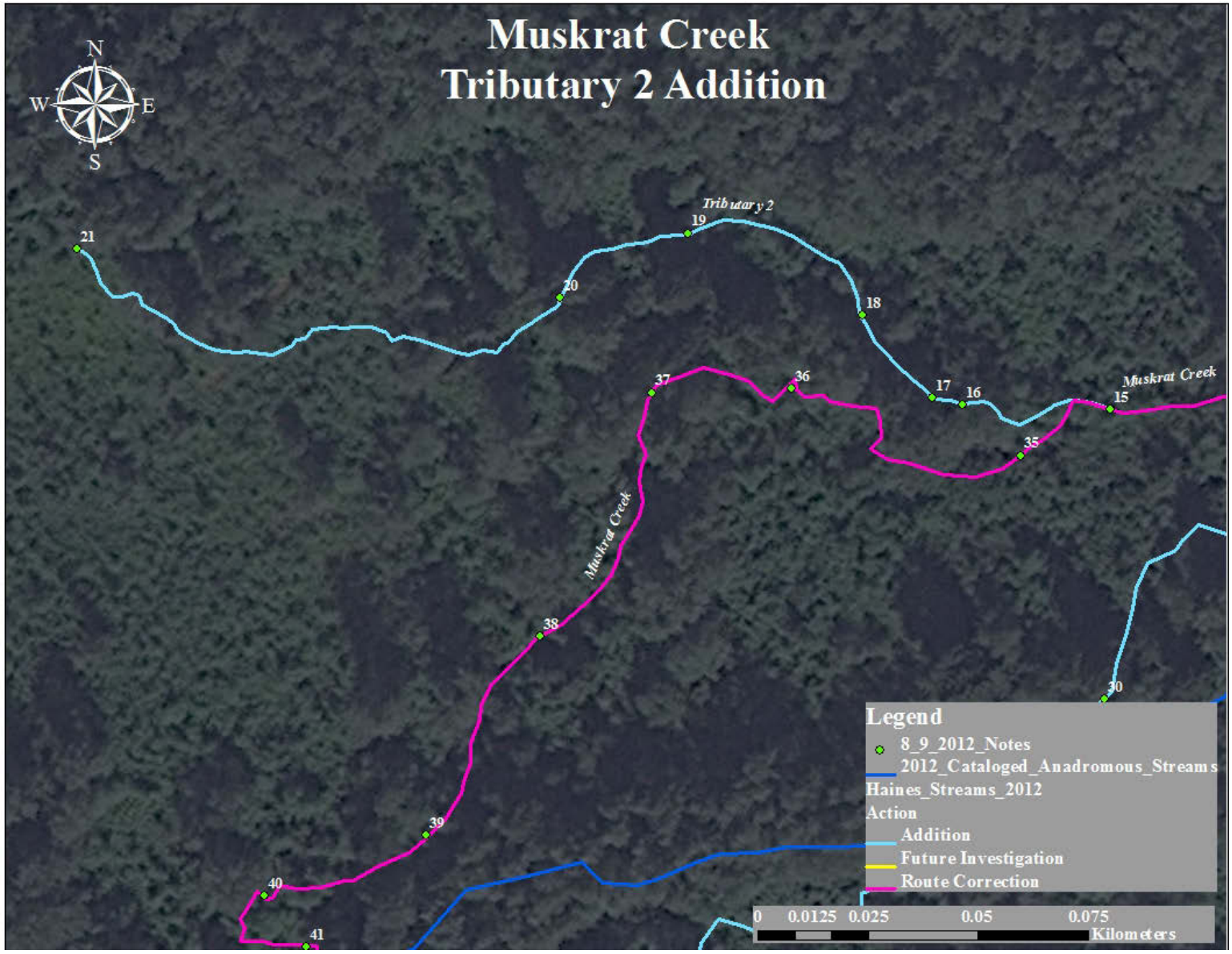

Figure 154.–Muskrat Creek tributary 2 addition map.

MUSKRAT CREEK TRIBUTARY 3 ADDITION

Stream: Muskrat Creek tributary 3 (115-32-10250-2081, cataloged for COsrp).
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed: August 10, 2012.
Findings: We surveyed this uncataloged tributary to Muskrat Creek. We found juvenile coho salmon in the lower portion of the stream. The top of this stream spreads out in the forest.
Recommendations: Add this tributary to the AWC.

Table 75.–Muskrat Creek tributary 3 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
26	59.4125	-135.9523	Tributary enters river right. Tracking up.		
27	59.4124	-135.9523	Electrofished 3 CO.	EF	3 coho
28	59.4120	-135.9525	Top of watered area. Spreads out into forest.		

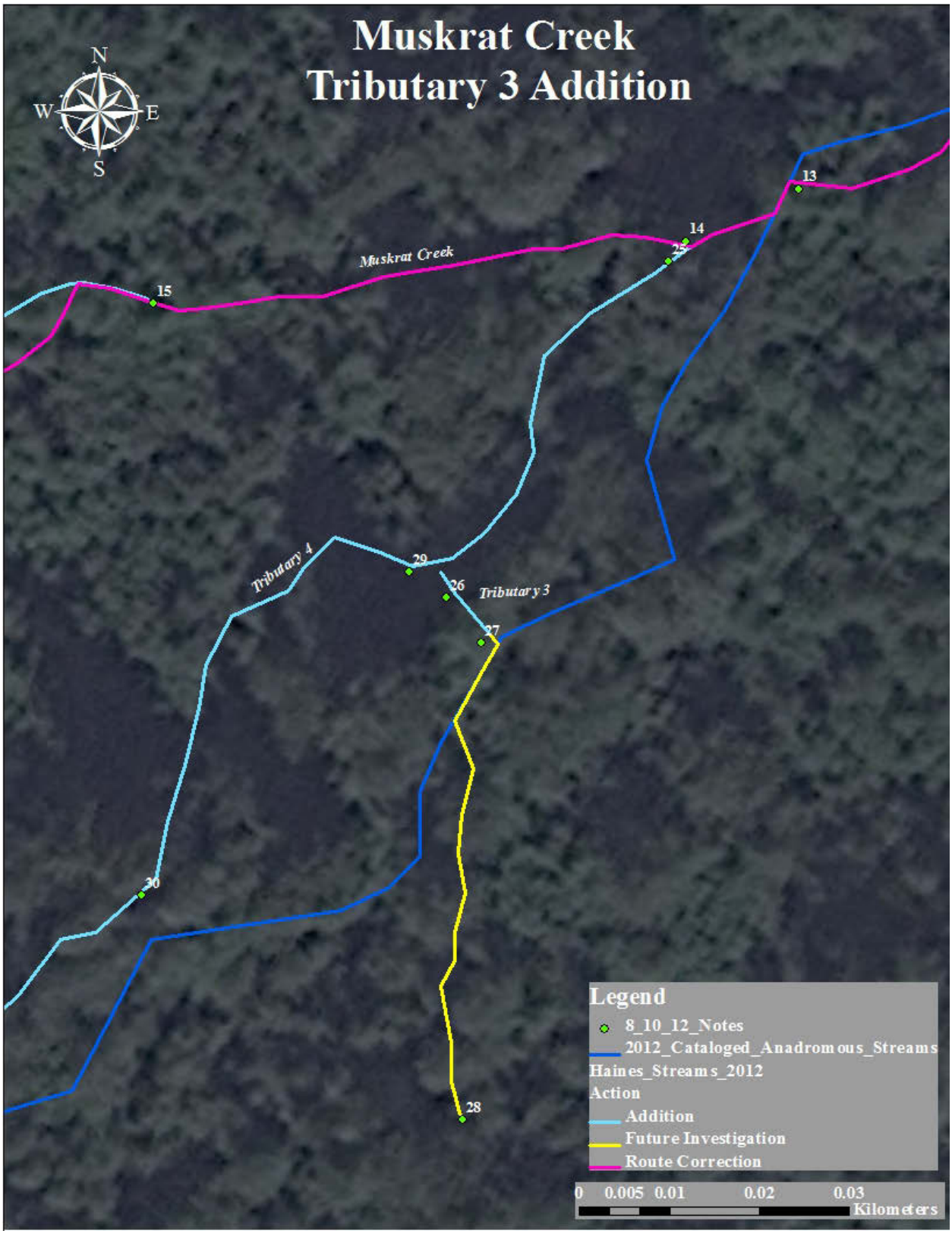

Figure 155.–Muskrat Creek tributary 3 addition map.

MUSKRAT CREEK TRIBUTARY 4 ADDITION

Stream: Muskrat Creek tributary 4 (115-32-10250-2081, cataloged for COsrp).
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed: August 10, 2012.
Findings: We surveyed this uncataloged tributary to Muskrat Creek. We found sockeye salmon spawning in the lower portion and juvenile coho salmon in the mid-portion of the stream. The top of this stream ends adjacent to the Haines Highway.
Recommendations*:* Add this tributary to the AWC.

Table 76.–Muskrat Creek tributary 4 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
25	59.4127	-135.9517	Returned to Muskrat Creek today to finish where we left off from yesterday. We are going to start at WPT 14. Visual ID-4 S at confluence. We are going to track river right today.	VI	4 sockeye
26	59.4125	-135.9523	Tributary enters river right. Will track up.		
29	59.4125	-135.9524	S and redds present.	VI	sockeye
30	59.4122	-135.9530	S and redds present up to this point and below. Great spawning habitat. Gravel and many upwellings.	VI	sockeye
31	59.4119	-135.9548	We have not seen a S since WPT 30. We are going to electrofish. Caught 3 DV. Continue to track up.	EF	3 DV
32	59.4117	-135.9550	Electrofished 2 CO and 13 DV.	EF	2 CO, 13 DV
33	59.4114	-135.9551	Caught one CO in a giant upwelling ~ 65mm.	EF	1 CO ~ 65mm
34	59.4107	-135.9548	Top of tributary. Right next to the Haines Highway. We did not see any other fish past WPT 33.		

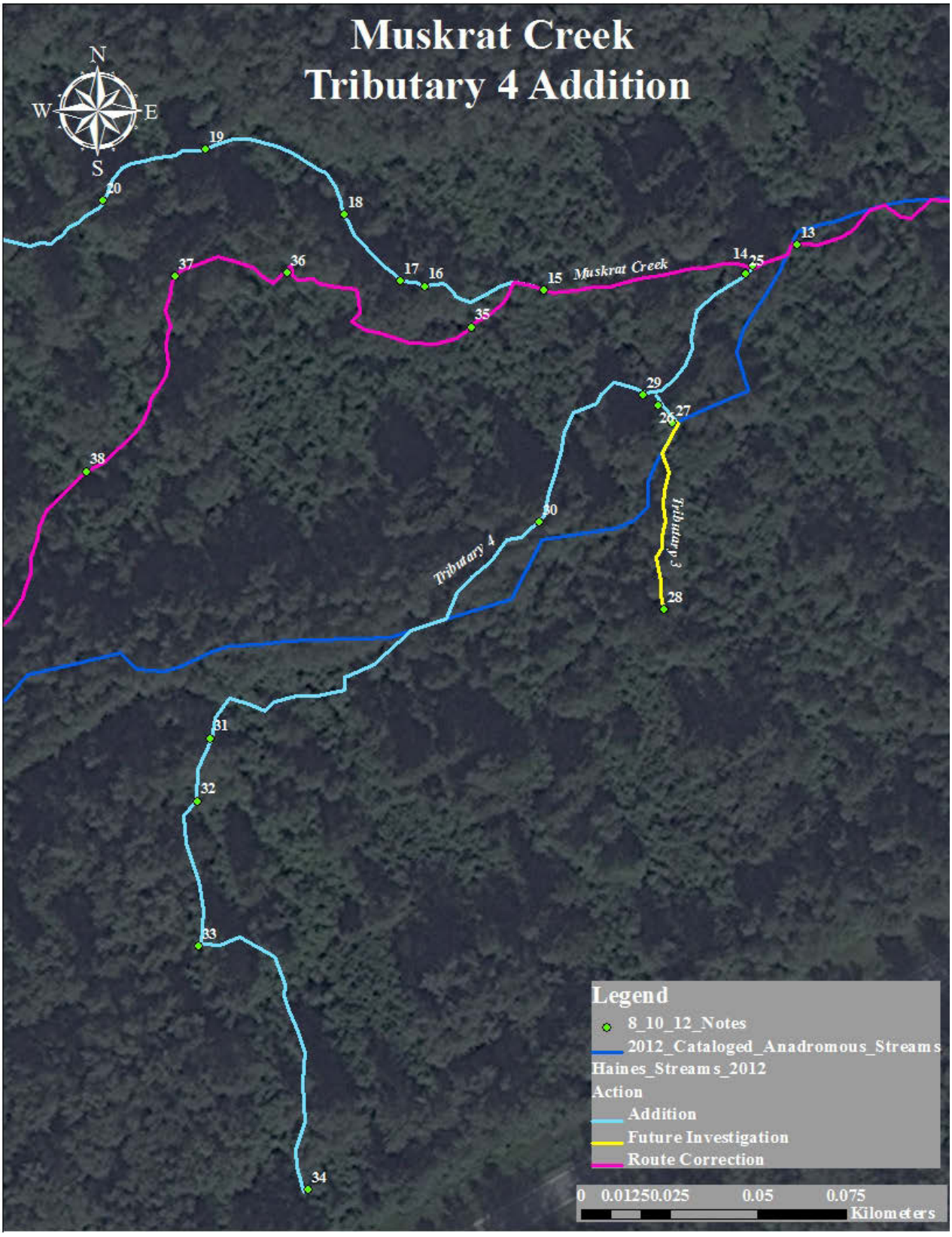

Figure 156.–Muskrat Creek Tributary 4 addition map.

MUSKRAT CREEK TRIBUTARY 5 ADDITION

Stream: Muskrat Creek tributary 5 (115-32-10250-2081, cataloged for COsrp).
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed: August 11, 2012.
Findings: We surveyed this uncataloged tributary to Muskrat Creek and found juvenile coho in the headwater upwelling hole.
Recommendations: Add this tributary to the AWC.

Table 77.–Muskrat Creek tributary 5 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
43	59.4118	-135.9565	Tributary entering river right, tracking and electrofishing. 1 DV ~ 55 mm.	EF	1 DV ~ 55 mm
44	59.4112	-135.9567	Top of tributary ends in an upwelling hole. Electrofished 6 CO ~ 50 mm.	EF	6 CO ~ 50 mm

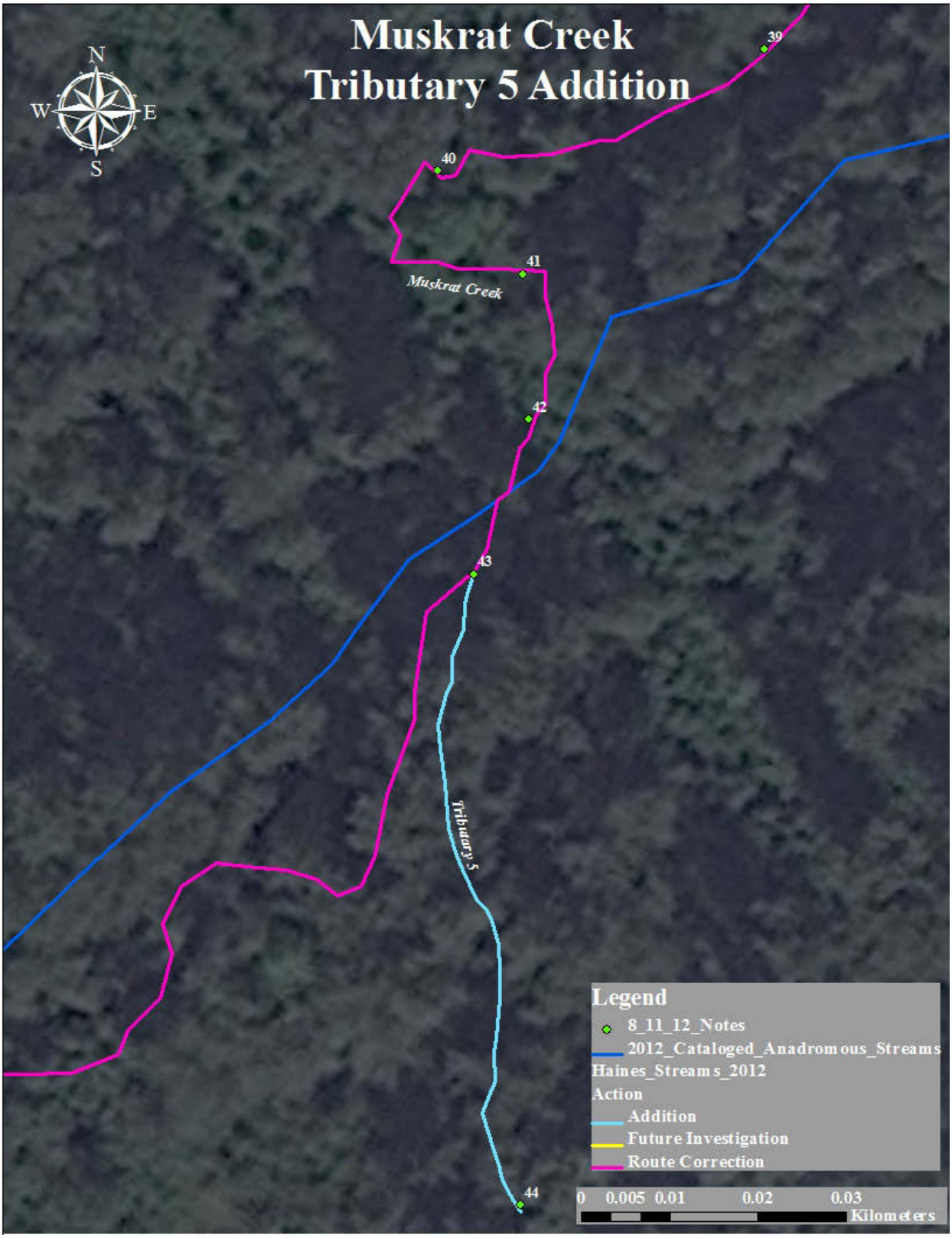

Figure 157.–Muskrat Creek tributary 5 addition map.

MUSKRAT CREEK TRIBUTARY 6 ADDITION

Stream: Muskrat Creek tributary 6 (115-32-10250-2081, cataloged for COsrp).
Watershed: Takhin River.
MTRS: Township 28S, Range 56E, Section 30, Skagway B-3.
Date Surveyed*:* August 11, 2012.
Findings: We surveyed this uncataloged tributary to Muskrat Creek and found juvenile coho in the headwater upwelling.
Recommendations: Add this tributary to the AWC.

Table 78.–Muskrat Creek tributary 6 survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
52	59.4107	-135.9622	Tributary entering river right, tracking and electrofishing.		
53	59.4105	-135.9624	Electrofished 4 CO ~ 50 mm.	EF	4 CO ~ 50 mm
54	59.4104	-135.9625	Top of tributary, just an upwelling. Electrofished pool at head and caught 3 CO ~ 40 mm.	EF	3 CO ~ 40 mm

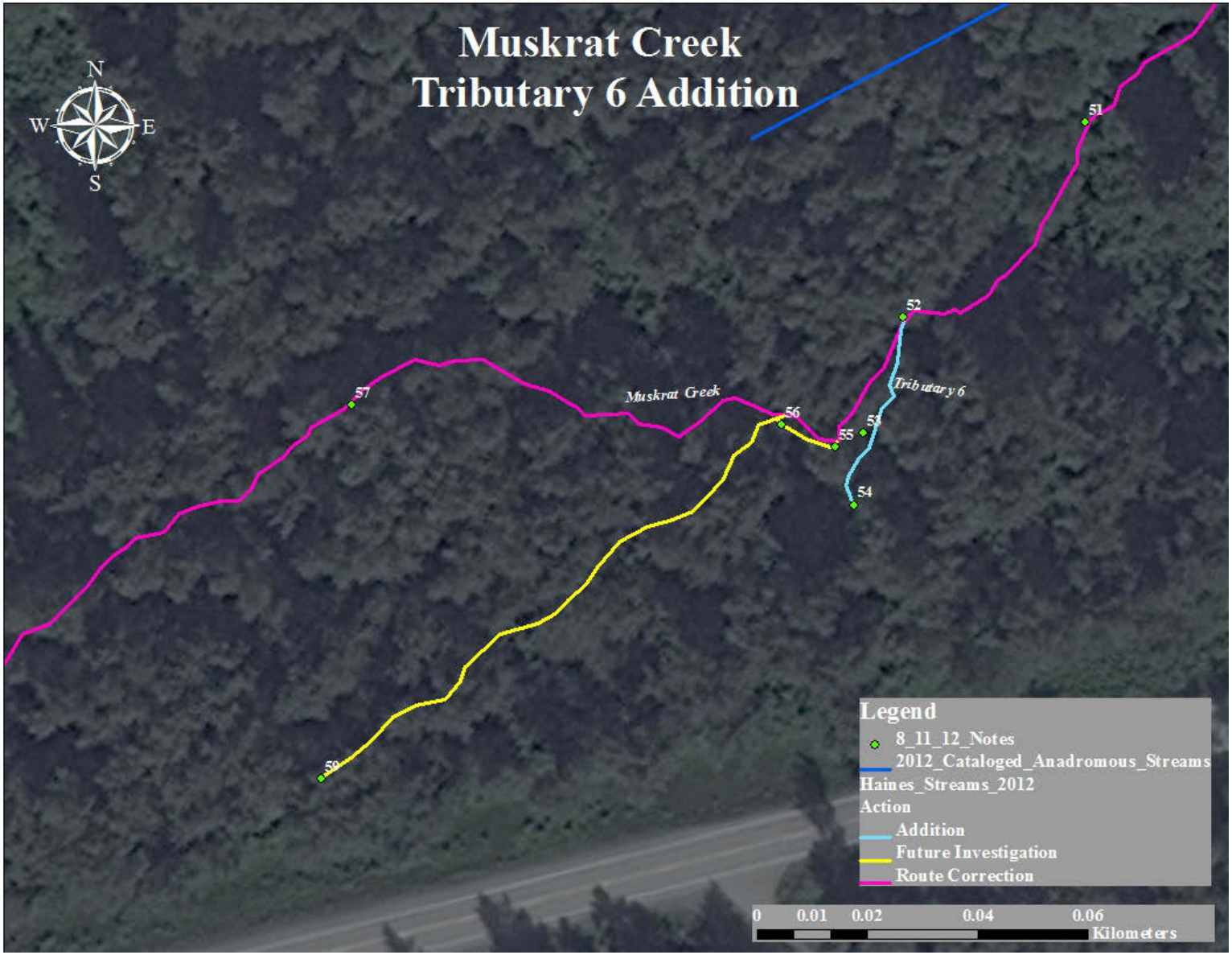

Figure 158.–Muskrat Creek tributary 6 addition map.

STATE PARK SLOUGH ROUTE CORRECTION

Stream: State Park Slough (115-33-10200-2001, cataloged for COr).
Watershed: Chilkoot River.
MTRS: Township 29S, Range 58E, Section 25, Skagway B-2.
Date Surveyed*:* August 11, 2012.
Findings: The upper section of State Park Slough is a high gradient clear water stream comprised of mostly cobble and boulder substrate. Midway down the stream the gradient starts to mellow and eventually levels and spreads out before reaching Chilkoot Lake. According to the AWC there is another anadromous steam that should have intersected with our State Park Slough track. We did not see another stream, however, State Park Slough spreads out and broadens in the lower section of the stream which may have caused us to miss the intersection, or the stream no longer exists.
Recommendations*:* Update this stream route to the AWC.

Table 79.–State Park Slough survey data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
60	59.3245	-135.5754	At first crossing. Clear water, cobbles and boulder substrate. Fairly steep gradient.		
61	59.3245	-135.5753	At first crossing. Clear water, cobbles and boulder substrate. Fairly steep gradient.		
62	59.3244	-135.5752	320 V, 30 Hz, 12 % duty cycle. Electrofished deep pool @ base of small cascade. Nothing.	EF	no fish
63	59.3249	-135.5750	Electrofishing large pool above log jam cascade. Very tiered section. Nothing.	EF	no fish
64	59.3288	-135.5751	Attempted electrofishing. Nothing.	EF	no fish
65	59.3288	-135.5751	Electrofished 3 DV. Gradient mellowing.	EF	3 DV
66	59.3295	-135.5759	Electrofished one big DV, 125 mm, in pool below cascade.	EF	1 DV ~ 125 mm
67	59.3300	-135.5760	Stream broadens and spreads in low lying open area.		
68	59.3311	-135.5769	Electrofished 1 DV.	EF	1 DV
69	59.3311	-135.5769	Electrofished 2 CO beneath overhanging vegetation.	EF	2 CO

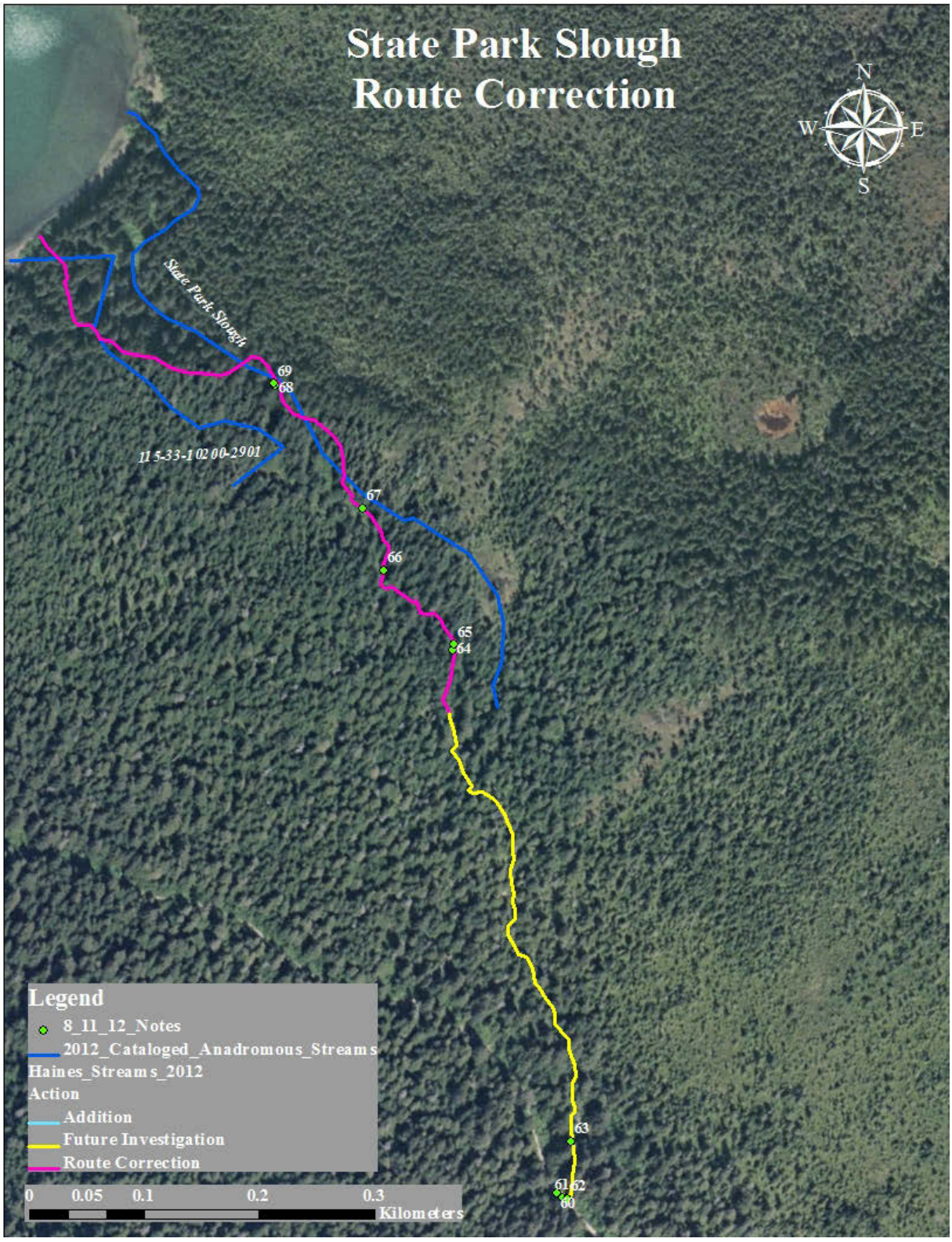

Figure 159.–State Park Slough route correction map.

HAINES FUTURE INVESTIGATION

Table 80.–Start points of Haines streams requiring future investigation.

Waypoint	Latitude	Longitude
1	59.4267	-136.1430
2	59.2377	-135.4860
3	59.1709	-135.3870
4	59.1706	-135.3840
5	59.1706	-135.3840
6	59.2391	-135.4880
7	59.4238	-136.1340
8	59.4208	-136.0910
9	59.4209	-136.0930
10	59.2654	-135.5950
11	59.2598	-135.5610
12	59.4469	-136.3540
13	59.4213	-136.0640
14	59.4240	-136.0650
15	59.4300	-136.1650
16	59.4299	-136.1620
17	59.4279	-136.1710
18	59.4283	-136.1650
19	59.4283	-136.1650
20	59.4292	-136.1600
21	59.4292	-136.1610
22	59.4288	-136.1600
23	59.4289	-136.1610
24	59.4405	-136.2870
25	59.4366	-136.2920
26	59.4363	-136.2950
27	59.4398	-136.2790
28	59.2404	-135.4810
29	59.2417	-135.4900
30	59.2420	-135.4900
31	59.2430	-135.4930
32	59.3138	-135.7250
33	59.3139	-135.7250
34	59.3139	-135.7250
35	59.3138	-135.7260
36	59.3139	-135.7260
37	59.3139	-135.7260

-continued-

Waypoint	Latitude	Longitude
38	59.3798	-136.0720
39	59.3795	-136.0720
40	59.3792	-136.0710
41	59.3808	-136.0700
42	59.3818	-136.0690
43	59.3806	-136.0720
44	59.3786	-136.0730
45	59.3750	-136.0710
46	59.3778	-136.0720
47	59.3781	-136.0730
48	59.3773	-136.0720
49	59.3765	-136.0720
50	59.3766	-136.0720
51	59.3752	-136.0700
52	59.3683	-136.0710
53	59.3701	-136.0710
54	59.4128	-136.0720
55	59.4129	-136.0760
56	59.4135	-136.0680
57	59.4131	-136.0860
58	59.4257	-136.1200
59	59.4257	-136.1210
60	59.4256	-136.1210
61	59.4207	-136.0930
62	59.4407	-136.2850
63	59.4387	-136.2850
64	59.4274	-136.1440
65	59.4155	-136.0580
66	59.4125	-136.0750
67	59.4131	-136.0770
68	59.5389	-136.1020
69	59.5386	-136.0990
70	59.5387	-136.1000
71	59.2390	-135.4740
72	59.2415	-135.4980
73	59.4182	-136.1220
74	59.4182	-136.1230

-continued-

Waypoint	Latitude	Longitude
75	59.2835	-135.6760
76	59.2834	-135.6770
77	59.4279	-136.1710
78	59.4283	-136.1670
79	59.3943	-135.6550
80	59.4259	-136.1190
81	59.4260	-136.1200
82	59.4259	-136.1190
83	59.2576	-135.5530
84	59.5092	-136.0820
85	59.5175	-136.0720
86	59.4221	-136.2400
87	59.4224	-136.2390
88	59.4221	-136.2420
89	59.4145	-136.0980
90	59.1295	-135.3680
91	59.1287	-135.3670
92	59.1294	-135.3660
93	59.1294	-135.3660
94	59.1299	-135.3650
95	59.2678	-135.4430
96	59.1710	-135.3810
97	59.3298	-135.7430
98	59.3290	-135.7430
99	59.2258	-135.4330
100	59.2267	-135.4340
101	59.1911	-135.4120
102	59.1581	-135.3550
103	59.1601	-135.3580
104	59.1599	-135.3590
105	59.1605	-135.3580
106	59.1561	-135.3610
107	59.1557	-135.3620
108	59.1656	-135.3620
109	59.1639	-135.3630
110	59.1670	-135.3640
111	59.2149	-135.4290

-continued-

Waypoint	Latitude	Longitude
112	59.2146	-135.4280
113	59.4073	-135.9210
114	59.2029	-135.4250
115	59.2031	-135.4280
116	59.2843	-135.4740
117	59.3000	-135.5160
118	59.3145	-135.5460
119	59.4135	-135.9480
120	59.4135	-135.9480
121	59.4124	-135.9520
122	59.4105	-135.9620
123	59.3283	-135.5750
124	59.3840	-136.0870
125	59.3921	-136.0590
126	59.3873	-136.0670
127	59.3872	-136.0670
128	59.3873	-136.0670
129	59.3872	-136.0670
130	59.3881	-136.0660
131	59.3877	-136.0670
132	59.3881	-136.0660
133	59.3876	-136.0640
134	59.3848	-136.0810
135	59.4628	-135.3020

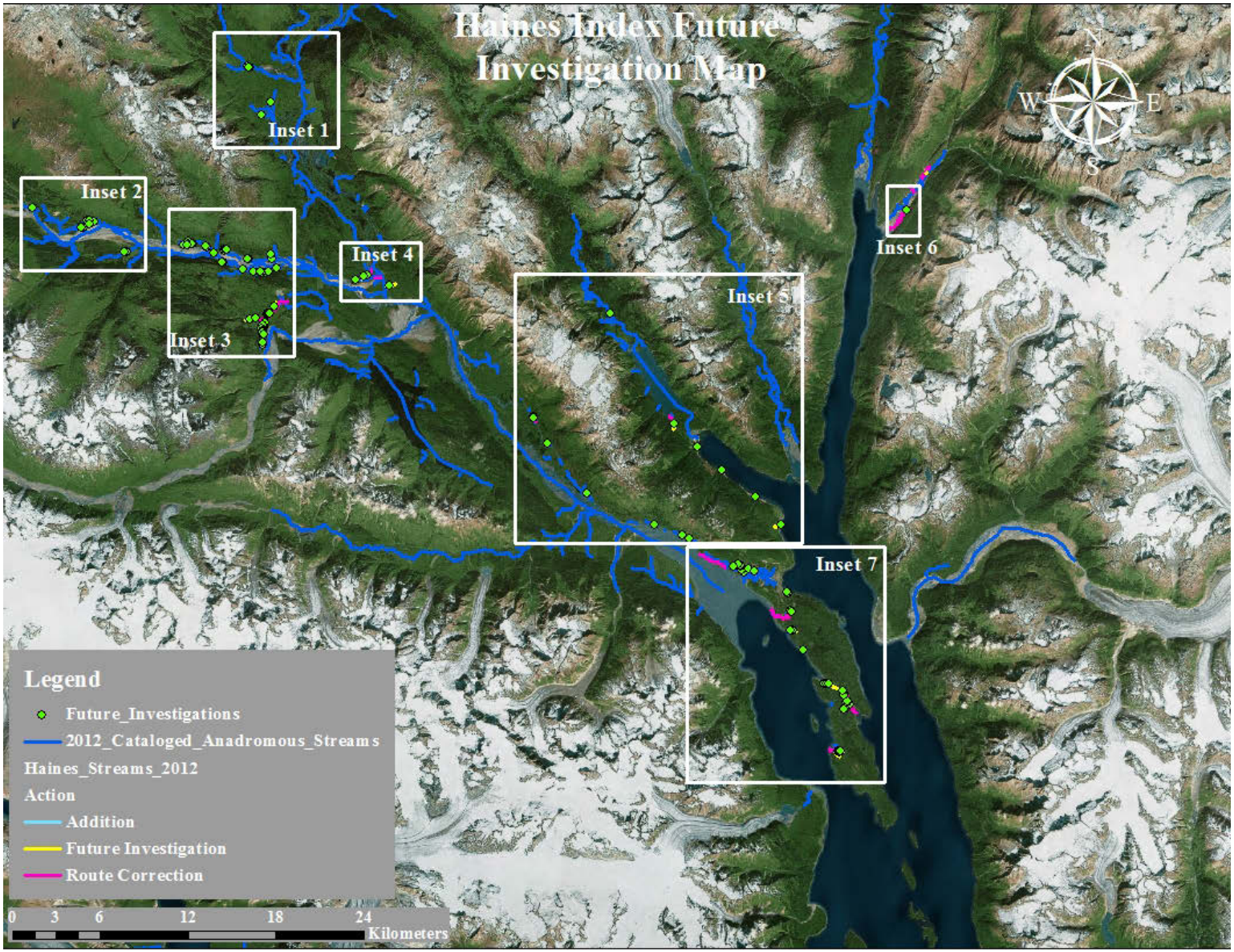

Figure 160.–Haines future investigation index map.

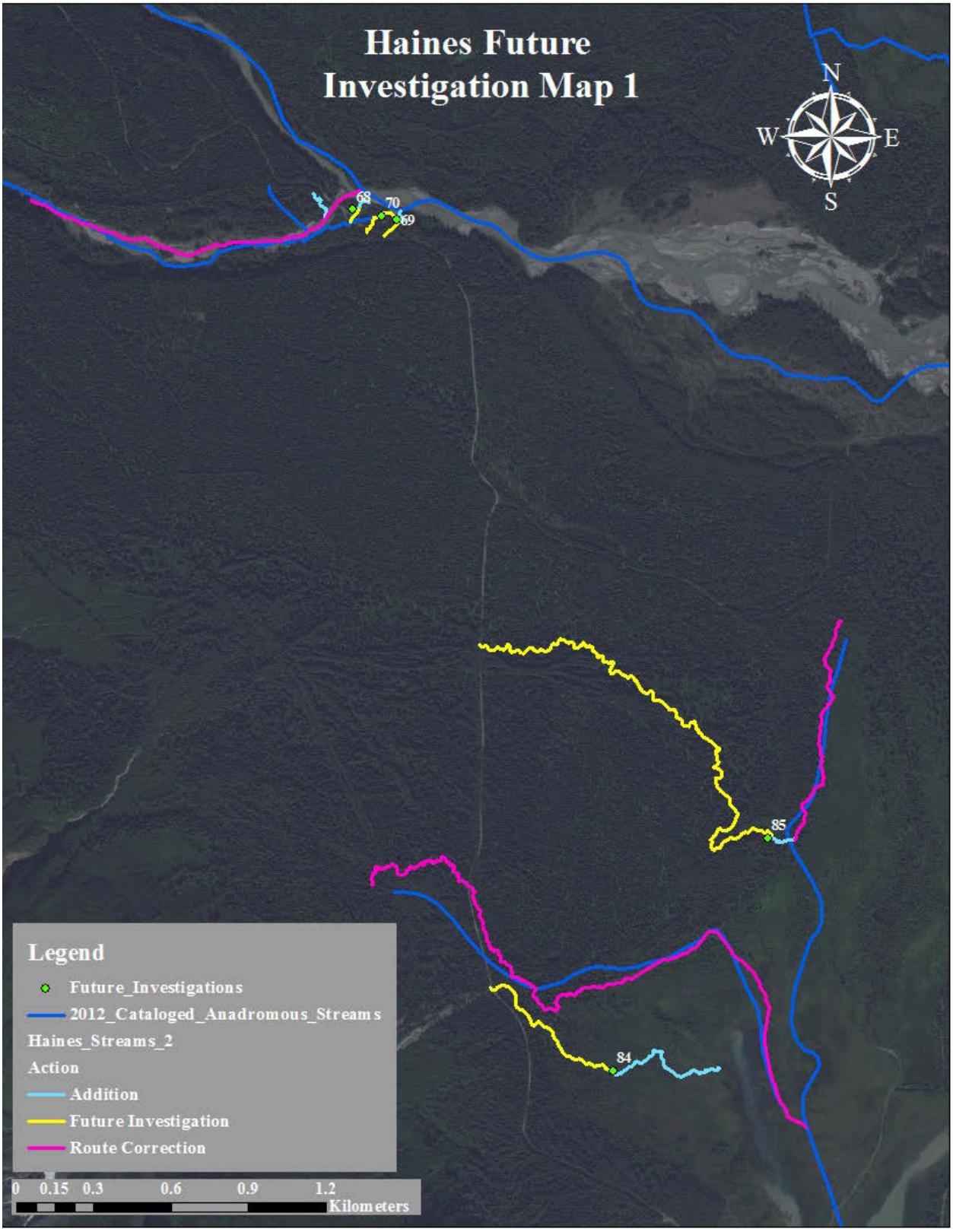

Figure 161.–Inset map 1 of Haines future investigations.

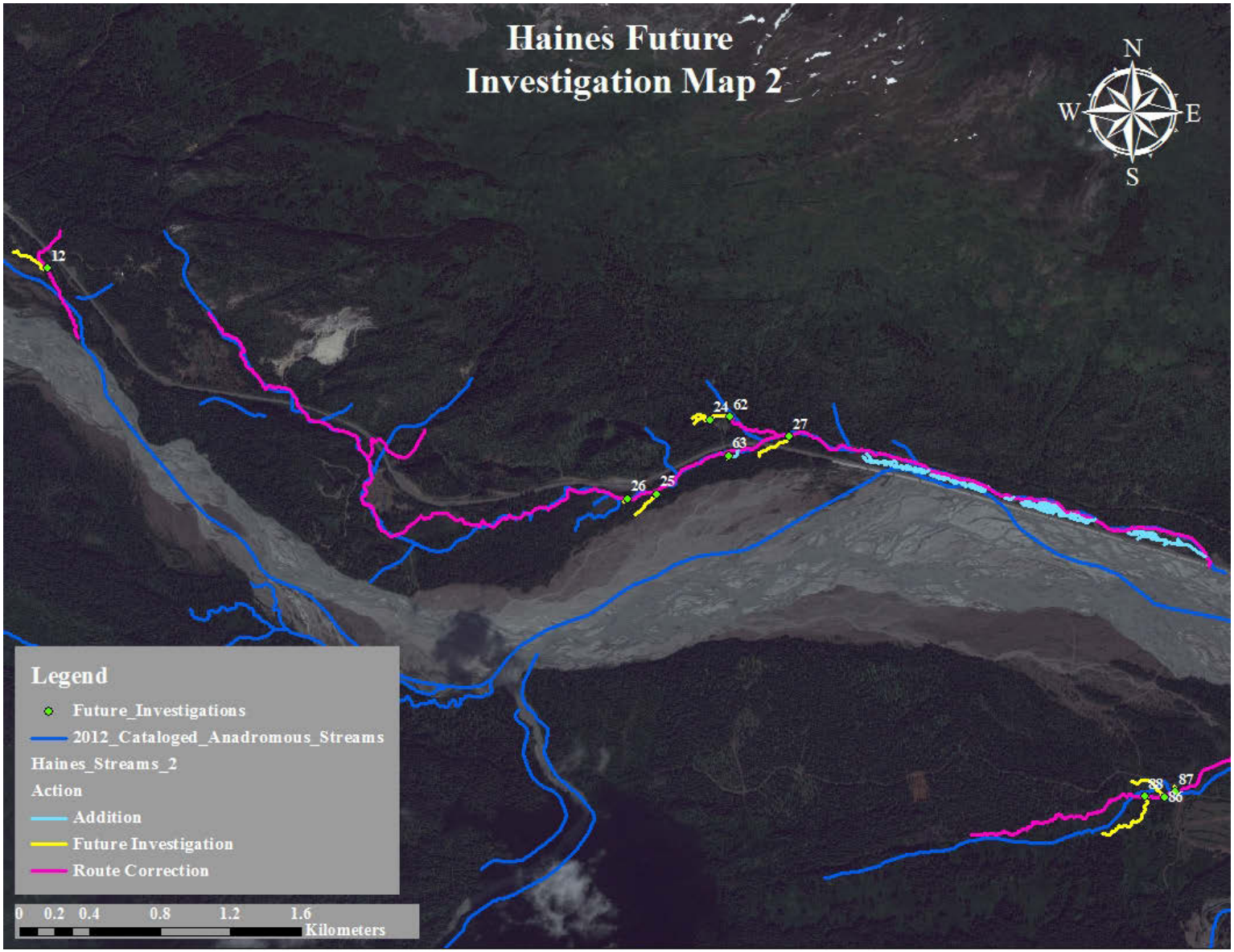

Figure 162.–Inset map 2 of Haines future investigations.

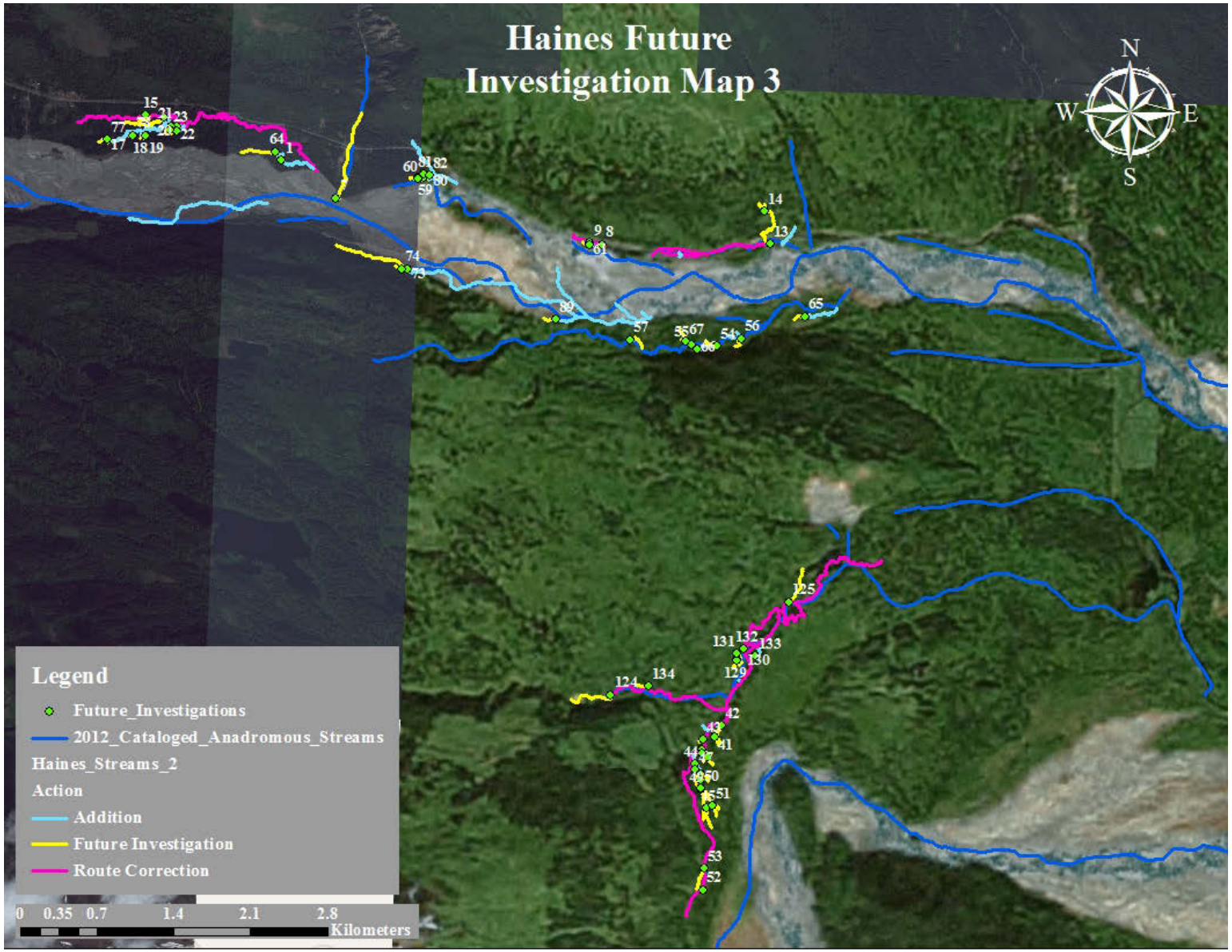

Figure 163.–Inset map 2 of Haines future investigations.

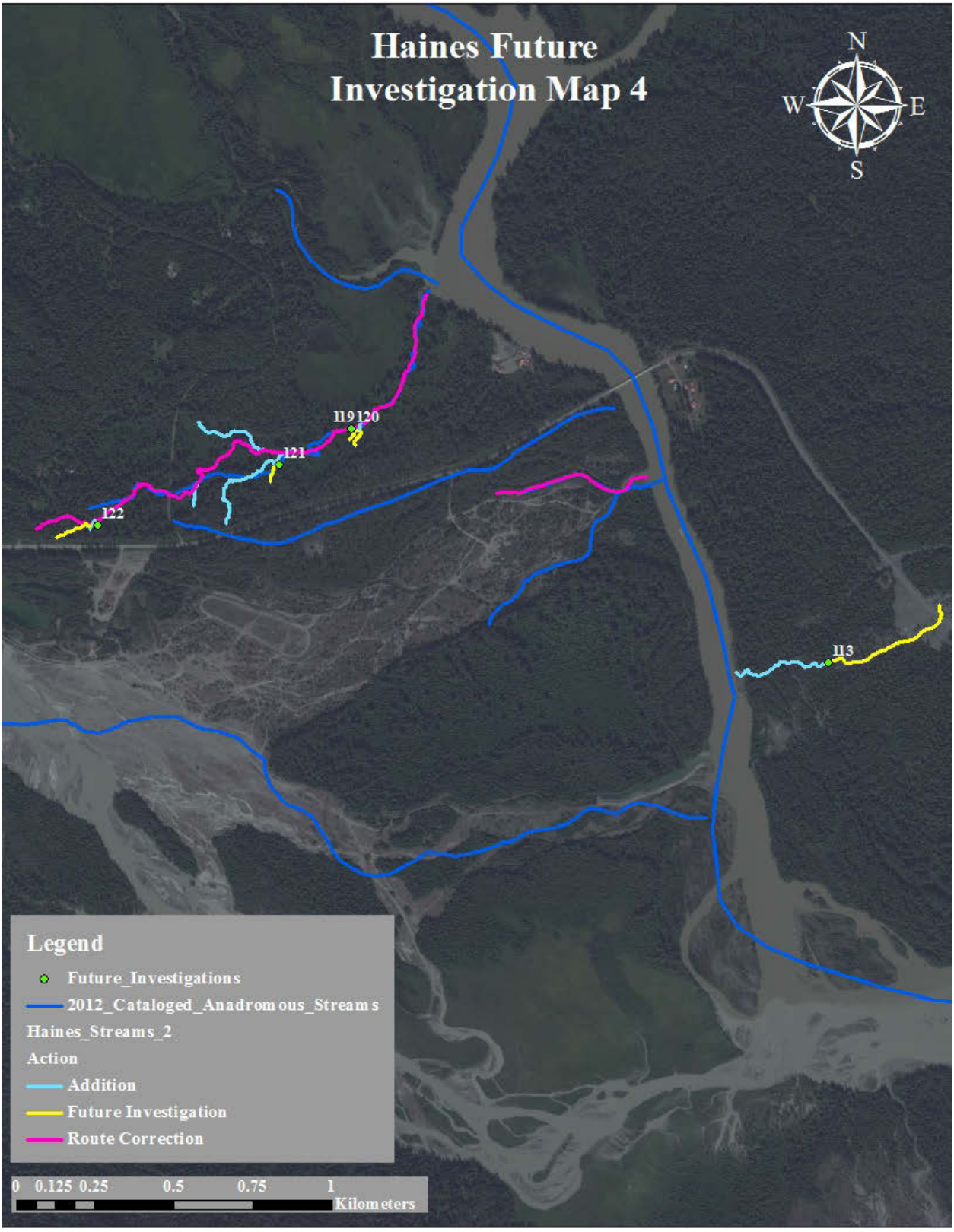

Figure 164.–Inset map 4 of Haines future investigations.

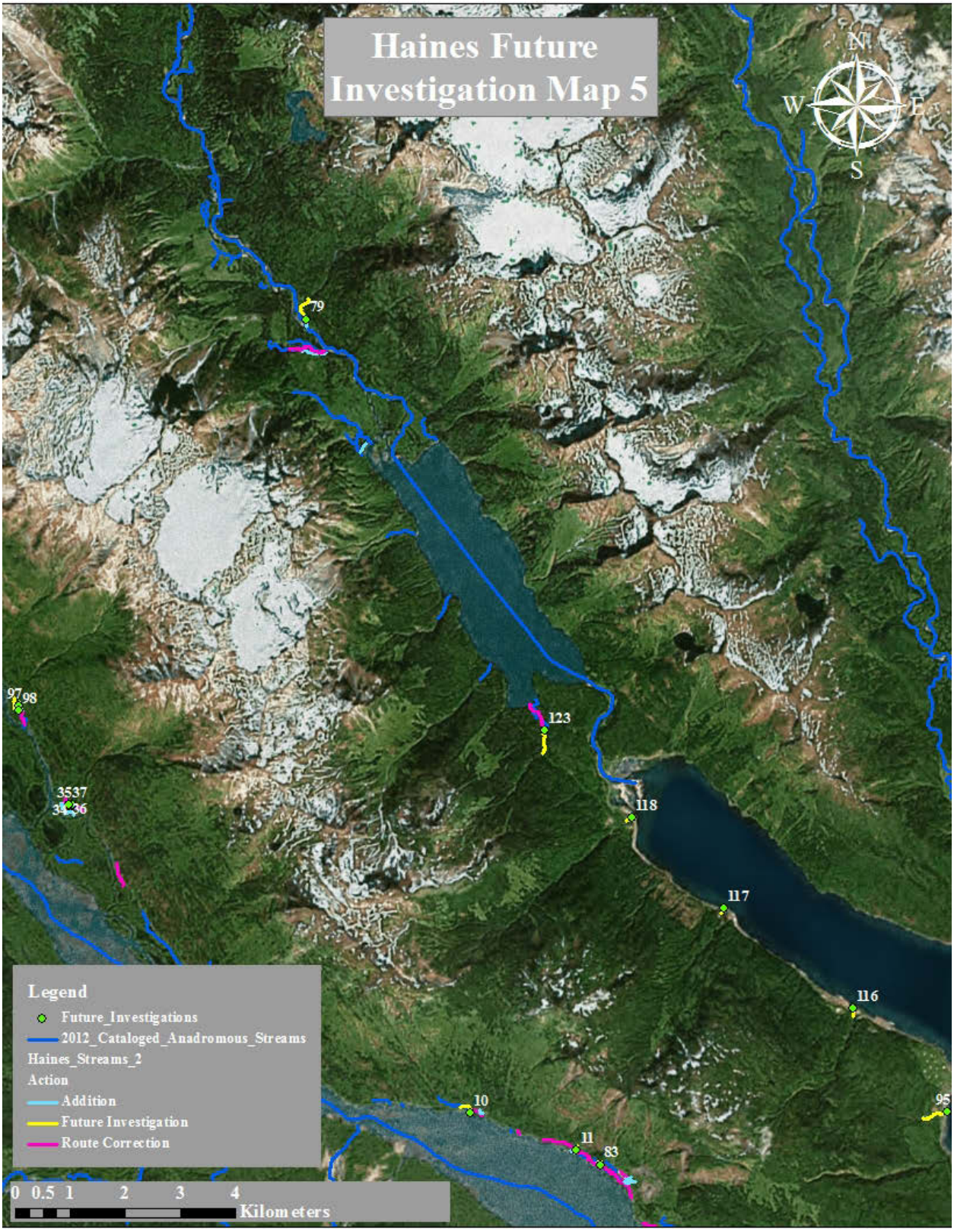

Figure 165.–Inset map 5 of Haines future investigations.

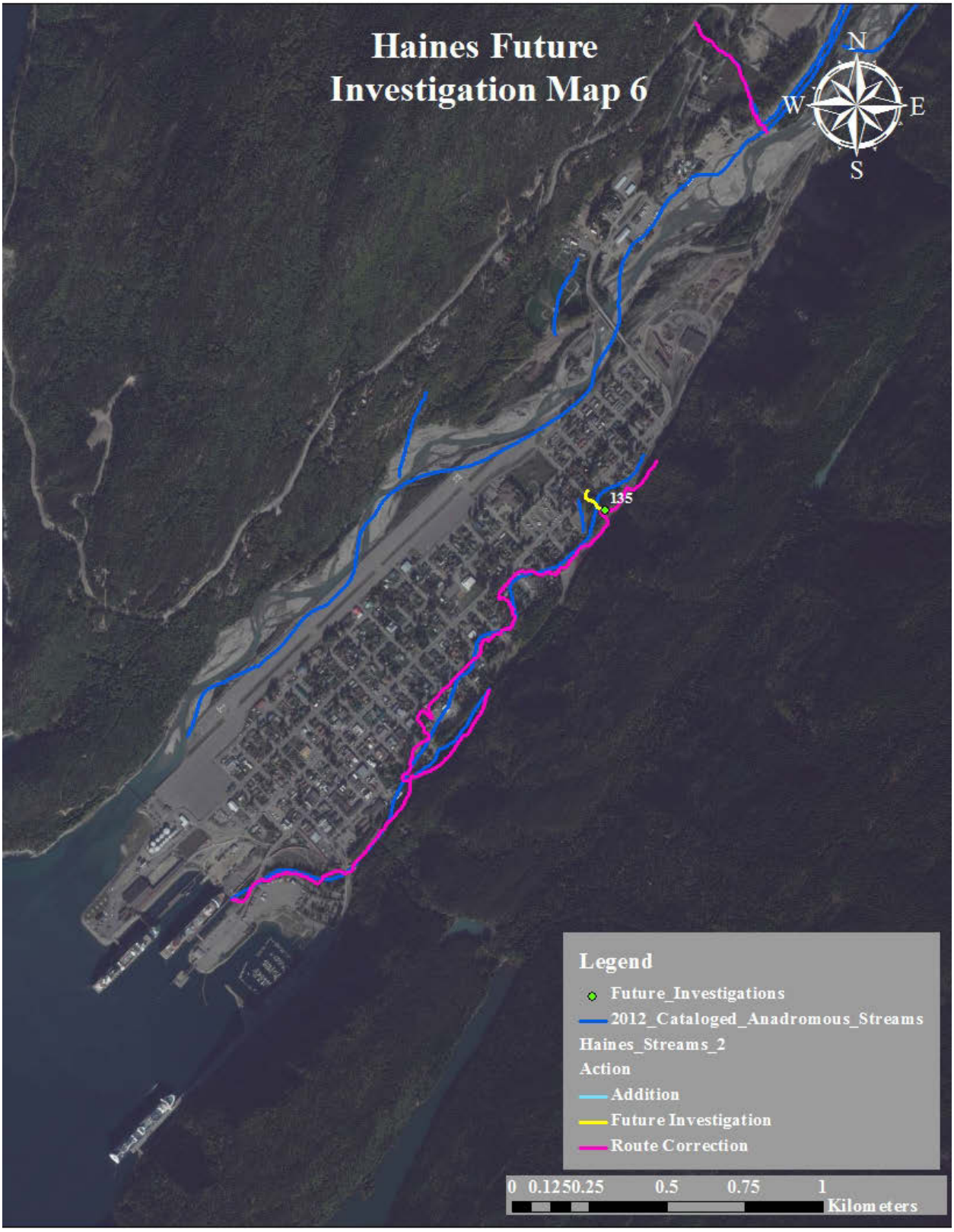

Figure 166.–Inset map 6 of Haines future investigations.

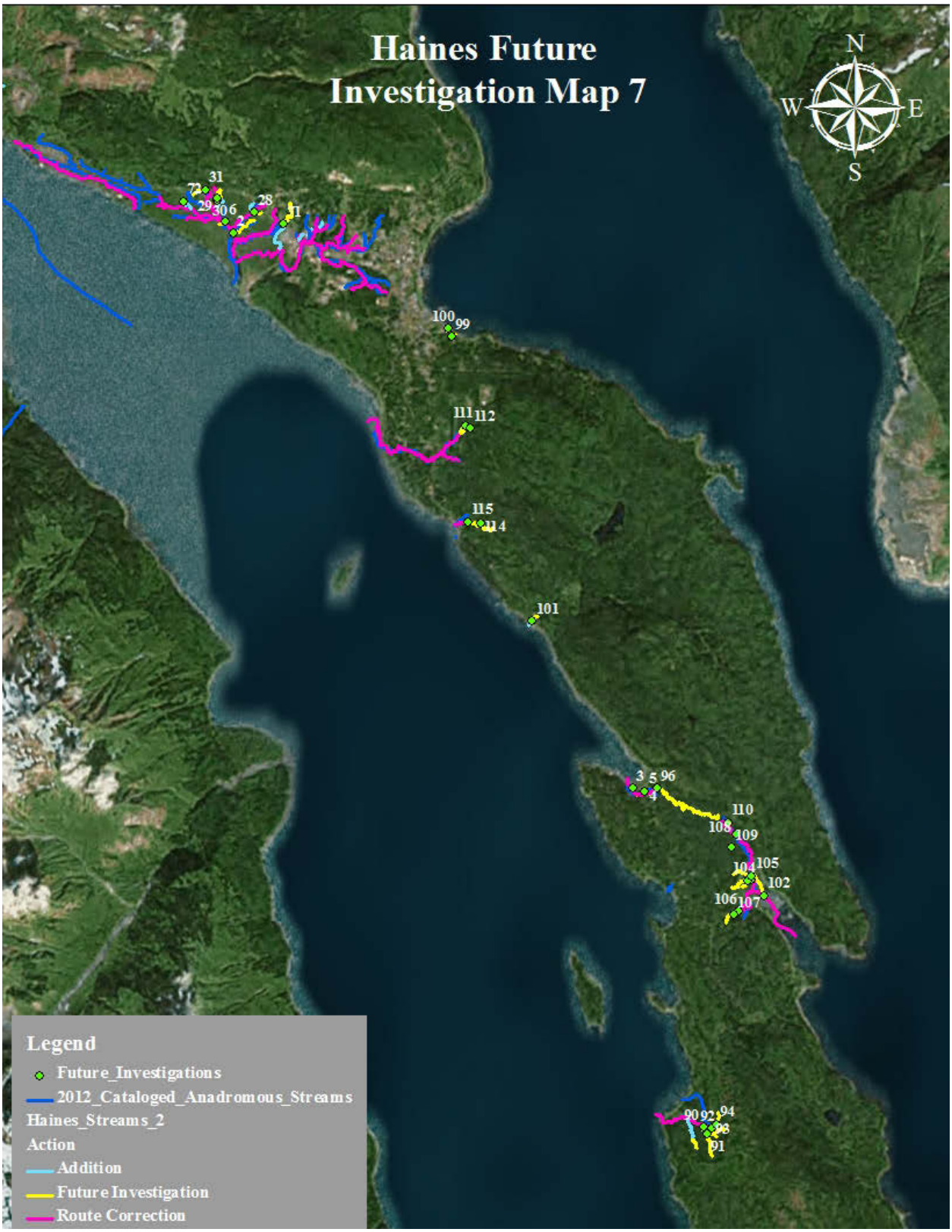

Figure 167.–Inset map 7 of Haines future investigations.

SITKA SURVEYS

The Sitka Borough is about 4812 square miles with the community of Sitka located on the west side of Baranof Island.[15] The 2010 census documents 8,881 people living in City and Borough of Sitka.[16] The Sitka Highway extends16.6 miles, generally along the coast, including Sawmill Creek Road.

Figure 168.–Sitka survey area.

[15] U.S. Census Bureau. 2010. Borough/Census area maps for Sitka City and Borough. 2010 Census: Alaska demographic profiles. Retrieved from: http://labor.alaska.gov/research/census/borcamaps/5_22_0map.pdf (Accessed August 26, 2013).
[16] U.S. Census Bureau. 2010. Demographic profile for Sitka City and Borough. 2010 Census: Alaska demographic profiles. Retrieved from: http://live.laborstats.alaska.gov/cen/dparea.cfm (Accessed August 15, 2013).

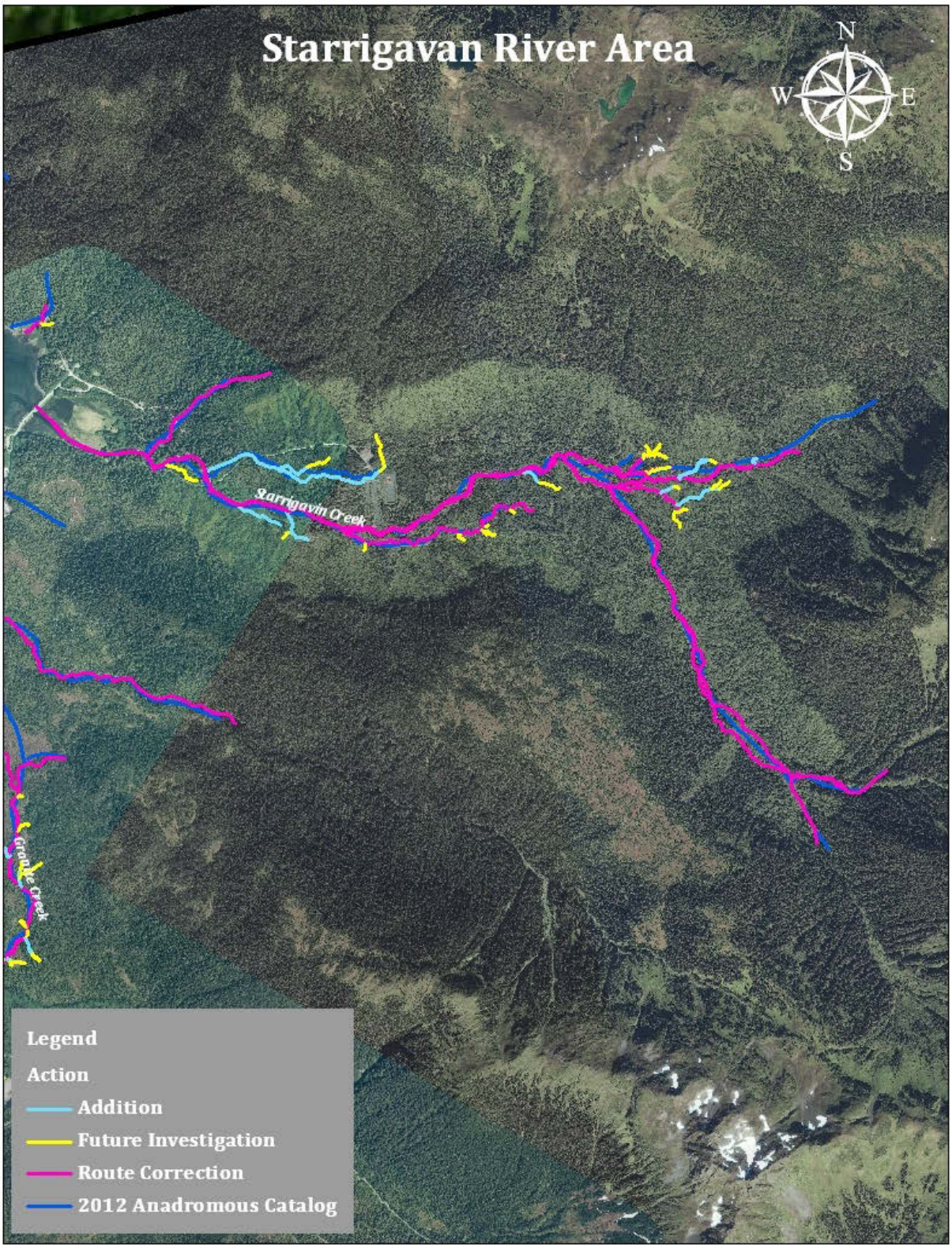

Figure 169.–Starrigavan River area

STARRIGAVAN CREEK MAINSTEM ROUTE CORRECTION

Stream: Starrigavan Creek (113-41-10150 cataloged for Chp, COp, Pp, DVp).
Watershed: Sitka Sound.
MTRS: Township 55S, Section 3, Range 63E, Sitka A-5.
Date Surveyed: June, 2012.
Findings: We walked this stream (Figure 2) over the course of several days and found it to be more sinuous and meandering than the catalog illustrates. Also, the upper limit needs to be shortened to the waypoint provided as there is a waterfall barrier that prevents fish passage at all flows. The lower limit can be maintained as per the catalog.
Recommendations: Update this stream's route and upper limit in the AWC.

Table 81.–Starrigavan Mainstem Survey Data.

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
38	57.1098	-135.3189	Begin tracking River Right fork of Starrigavan; alternating tribs with other crew.		
39	57.1092	-135.3156	Tributary enters on River Right. Begin tracking and fishing upstream. Large falls just upstream is a probable barrier on mainstem.		
40	57.1092	-135.3153	Small tributary gradient increases, incised, no resting pools, cascading waterfalls. Calling it the top-fishing on the way down.		
41	57.1092	-135.3154	2 DV 90-110 mm.	EF	2 DV 90-110 mm
42	57.10897	-135.3151	Arrived at potential barrier falls. Looks to be 12 feet with deep jump pool, no potential side channels to move around falls.		

Figure 170.–Gordon Willson-Naranjo and Tess Quinn surveying Starrigavan River.

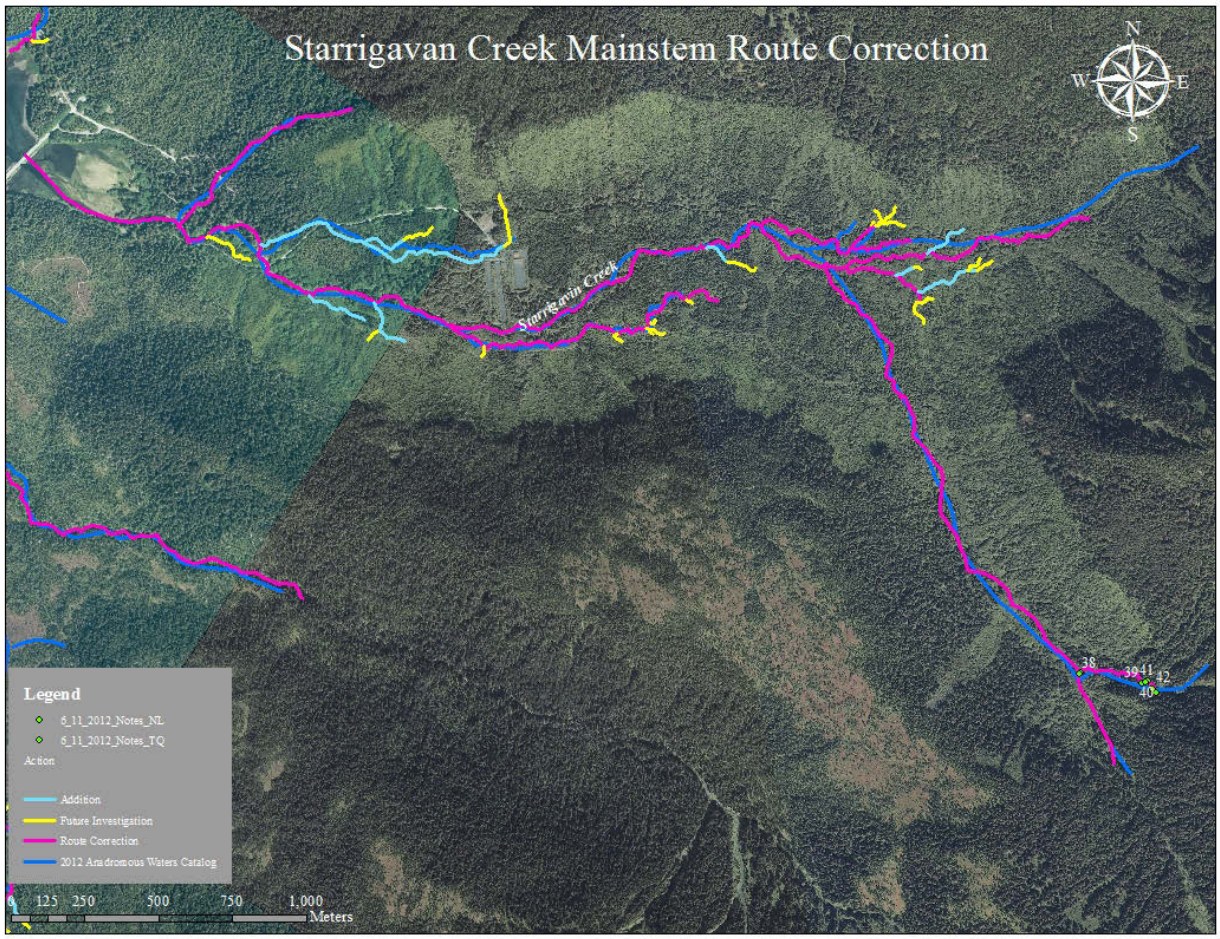

Figure 171.–Starrigavan Creek Mainstem Route Correction.

STARRIGAVAN TRIBUTARY 1

Stream: Tributary to Starrigavan Creek (113-41-10150, cataloged for COp, CHp, Pp, DVp).
Watershed: Sitka Sound.
MTRS: Township 55S, Section 6, Range 63E, Sitka A-5.
Date Surveyed: 5/21/2012.
Findings: This stream is a tributary to Starrigavan Creek in Sitka, AK. During sampling and tracking of the stream, coho salmon were captured at points along the entire length. Upper and lower limits of fish presence are from waypoint 98 to waypoint 105.
Recommendations: This stream should be included in the AWC.

Table 82.–Starrigavan Tributary 1 Survey Data.

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
98	57.1259	-135.3560	On Starrigavan tributary. Rick netted a Coho.	HN	1 CO
99	57.1258	-135.3558	Coho! About 95mm. Small tributary.	EF	1CO about 95mm
100	57.1258	-135.3557	Captured two Coho, one is about 100mm and other about 55mm.	EF	2 CO between 55-100mm
101	57.1257	-135.3553	Captured another Coho about 55mm.	EF	1 CO about 55mm
102	57.1254	-135.3548	Captured a Coho about 65mm, in rootwad. Still on same tributary.	EF	1 CO about 65mm
103	57.1250	-135.3533	Still in the same tributary, haven't captured anymore salmon… Upper reach seems pretty ephemeral.		
104	57.1248	-135.3532	Captured a Coho about 65mm, visual ID of another Coho, about 70mm.	EF/VI	2 CO between 65-70mm
105	57.1248	-135.3533	Another Coho about 70mm.	EF	1 CO about 70mm
106	57.1246	-135.3531	End of survey.		

Figure 172.–Starrigavan tributary 1.

STARRIGAVAN TRIBUTARY 2 ADDITION

Watershed: Sitka Sound.
MTRS: Township 55S, Section 6, Range 63E, Sitka A-5.
Date Surveyed*:* 5/21/2012.
Findings: This stream is a tributary to a Starrigavan Creek tributary in Sitka, AK. During sampling and tracking of the stream, coho salmon were captured at points along the entire length. Upper and lower limits of fish presence are from waypoint 204 to waypoint 208.
Recommendations: This stream should be included in the AWC.

Table 83.–Starrigavan Tributary 2 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
204	57.1272	-135.3524	Tributary entering river right, tracking and shocking up.		
205	57.1272	-135.3522	Handnetted 1 Coho about 70mm.	HN	1 CO about 70mm
206	57.1272	-135.3517	Electrofished and got three Coho about 45mm.	EF	3 CO about 45mm
207	57.1269	-135.3513	Electrofished and got one Coho about 60mm.	EF	1 CO about 60mm
208	57.1270	-135.3502	Electrofished and got one Coho about 55mm.	EF	1 CO about 55mm
209	57.1271	-135.3488	Top of tributary we think, the slash job is so bad that it is hard to tell where stream let alone ground is most of the time. But believe this to be the end, just coming up out of ground.		
210	57.1278	-135.3541	Bridge over stream, road to the gun range again. Heading down stream.		
211	57.1277	-135.3578	Stream dumps into larger stream, which we later determined was Starrigavan. Creek. Going to track downstream.		
212	57.1284	-135.3610	Starrigavan Creek.		

Figure 173.–Gordon Willson-Naranjo and Ben Brewster sampling Starrigavan tributary 2.

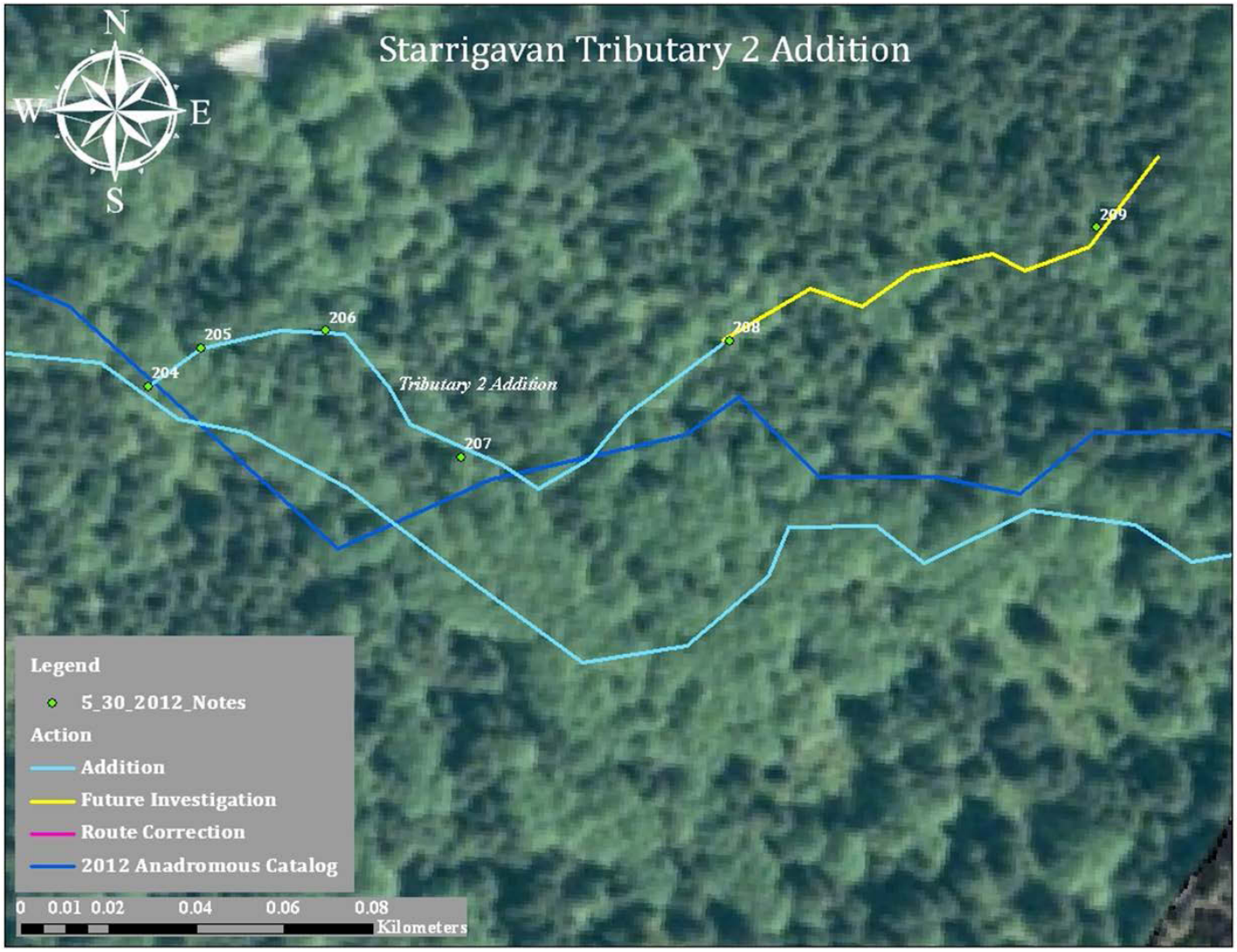

Figure 174.–Starrigavan Tributary 2 Addition map.

STARRIGAVAN TRIBUTARY 3

Stream: Tributary to Starrigavan tributary (#113-41-10150-2006, cataloged for COr).
Watershed: Sitka Sound.
MTRS: Township 55S, Section 1, Range 63E, Sitka A-5.
Date Surveyed: 5/22/2012.
Findings: This stream is a tributary to a Starrigavan Creek tributary in Sitka, AK. During sampling and tracking of the stream, coho salmon were captured and observed at points along the entire length. Upper and lower limits of fish presence are from waypoint 44 to waypoint 52.

Table 84.–Starrigavan Tributary 3 Survey Data.

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
42	57.1261	-135.3564	Began day at confluence of the tributary we ended at yesterday.		
43	57.1257	-135.3534	Confluence of tributary that has been cataloged already. Heading up to survey.		
44	57.1254	-135.3526	Visual ID of Chum fry and a Pink fry and Coho.	VI	CH, P, CO
45	57.1249	-135.3524	Visual ID of Coho fry… behaving as such.	VI	CO fry
46	57.1245	-135.3526	Shocking in large calm pool at 380v, 30 Hz and 25% duty cycle. One Dolly Varden about 75mm and another Dolly Varden about 60mm.	EF	2 DV between 60-75mm
47	57.1245	-135.3529	On a small tributary on river right. Sand and mud substrate.		
48	57.1243	-135.3534	Ending triblet survey. Steep hillside, no fish the whole way up.	EF	No fish
49	57.1245	-135.3527	Back on main tributary off of Starrigavan.		
50	57.1242	-135.3523	Shocking still pool under rootwad.. No fish, although a possible visual of Coho.	VI	CO
51	57.1242	-135.3521	Coho captured, about 70mm. Beautiful and smolty.	EF	1 CO about 70mm
52	57.1241	-135.3515	Coho captured, about 75mm.	EF	1 CO about 75mm
53	57.1241	-135.3513	Confluence of small tributary. Shocking up.		
54	57.1237	-135.3515	Top of tributary, splits into two equal sized streams here. Heading down.		
55	57.1240	-135.3514	Back at tributary. That splits at WPT 54, was the top of the main stem tributary.		

Figure 175.–Matt Kern and Gordon Willson-Naranjo sampling Starrigavan tributary 3.

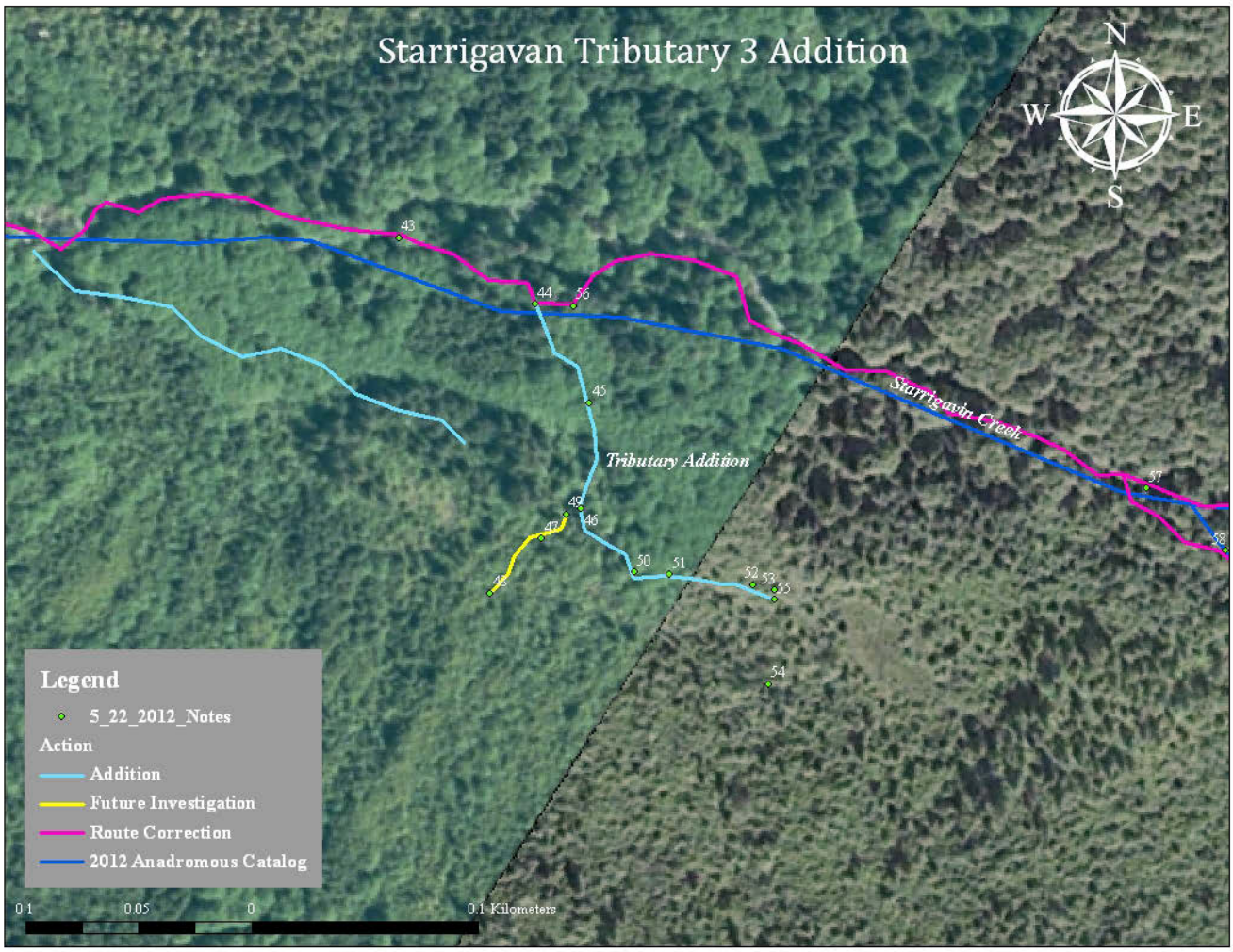

Figure 176.–Starrigavan River tributary 3.

STARRIGAVAN TRIBUTARY 6 ADDITION

Stream: Tributary to Starrigavan Creek (#113-41-10150, cataloged for COp, CHp, Pp, DVp).
Watershed: Sitka Sound.
MTRS: Township 55S, Section 1, Range 63E, Sitka A-5.
Date Surveyed*:* 5/31/2012.
Findings: This stream is a tributary of a tributary to Starrigavan Creek in Sitka, AK. During sampling and tracking of the stream, coho salmon were captured until waypoint 231, after which only Dolly Varden were captured.

Table 85.–Starrigavan Tributary 6 Survey Data.

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
228	57.1228	-135.3241	Tributary entering tributary on river right. Will track up tributary of a tributary.		
229	57.1228	-135.3240	Electrofished and got four Coho about 30-40mm. Turned the electrofisher down. Settings: 325v, 30Hz and 25% duty cycle.	EF	4 CO about 30-40mm
230	57.1228	-135.3236	Electrofished and got three Coho between 35-45mm and one Dolly Varden about 30mm.	EF	3 CO between 35-45mm and 1 DV about 30mm
231	57.1229	-135.323	Electrofished and got one Coho about 40mm and one Dolly Varden about 35mm. There is also a culvert here that goes under ATV trail. Have interesting rock like barrier in front of culvert. .	EF	1 CO about 40mm and 1 DV 35mm
232	57.1228	-135.3227	Calling the top because other rock like barrier. Electrofished above and only got one resident Dolly Varden about 55mm.	EF	1 DV about 55mm

Figure 177.–Tess Quinn, Gordon Willson-Naranjo, and Matt Kern surveying Starrigavan Tributary 6.

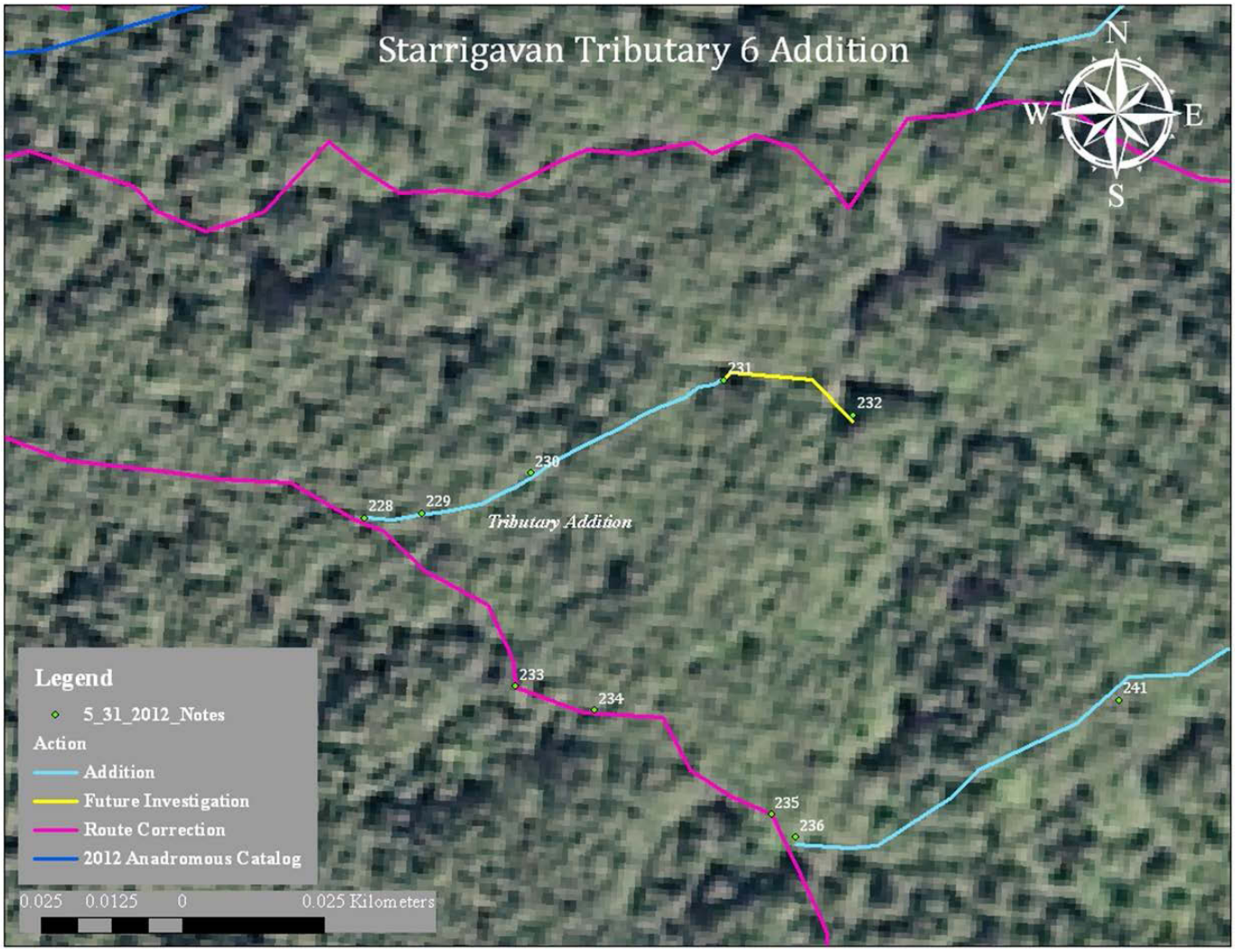

Figure 178.–Starrigavan Tributary 6 Addition map.

STARRIGAVAN TRIBUTARY 7

Stream: Tributary to Starrigavin Creek (#113-41-10150, cataloged for COp, CHp, Pp, DVp).
Watershed: Sitka Sound.
MTRS: Township 55S, Section 6, Range 63E, Sitka A-5.
Date Surveyed*:* 6/7/2012.
Findings: This stream is a tributary of a tributary to Starrigavan Creek in Sitka, AK. During sampling and tracking of the stream, coho salmon were captured until waypoint 14.

Table 86.–Starrigavan Tributary 7 Survey Data.

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
1	57.1238	-135.3239	Where RH and GW left off on 6/5/2012. Culvert under ATV trail. Stagnant low flow pond. Got one Dolly Varden and visual on several more but no ID.	VI	1 DV and more unknown
2	57.1237	-135.3230	End of this tributary creek goes dry above a large log jam. Caught and saw only Dolly Varden above the culvert, however there is no definitive barrier below.	EF	1 DV
3	57.1232	-135.3224	Road crosses large tributary to Starrigavin. Heading up.		
4	57.1233	-135.3220	Tributary river right small with large pool @ confluence. Tess spotted Coho in pool.	VI	1 CO
5	57.1233	-135.3217	Three Coho in pool.	EF	3 CO
6	57.1234	-135.3215	Tributary of tributary on river left. Caught three Coho and four Dolly Varden.	EF	3 CO and 4 DV
7	57.1234	-135.3213	RH and GW handnetted three Coho and one Dolly Varden in pool.	HN	3 CO and 1 DV
8	57.1234	-135.3209	RH handnetted four Coho in creek on river left. There is a ground fed pond that dumps into creek.	HN	4 CO
9	57.1235	-135.3209	ATV trail crosses creek, no bridge, culvert, any type of crossing. ATVs drive through creek.		
10	57.1237	-135.3208	RH and TQ handnetted six Coho.	HN	6 CO
11	57.1237	-135.3206	RH handnetted three Coho and one Dolly Varden in creek.	HN	3 CO and 1 DV
12	57.1237	-135.3200	RH handnetted seven Coho. Tributary river left, low flow but RH and TQ have visual on fish.	HN	7 CO
13	57.1235	-135.3194	End of survey on this tributary. Caught five Dolly Varden near the top.	EF	5 DV
14	57.1237	-135.3199	RH handnetted 2 Coho.	HN	2 CO

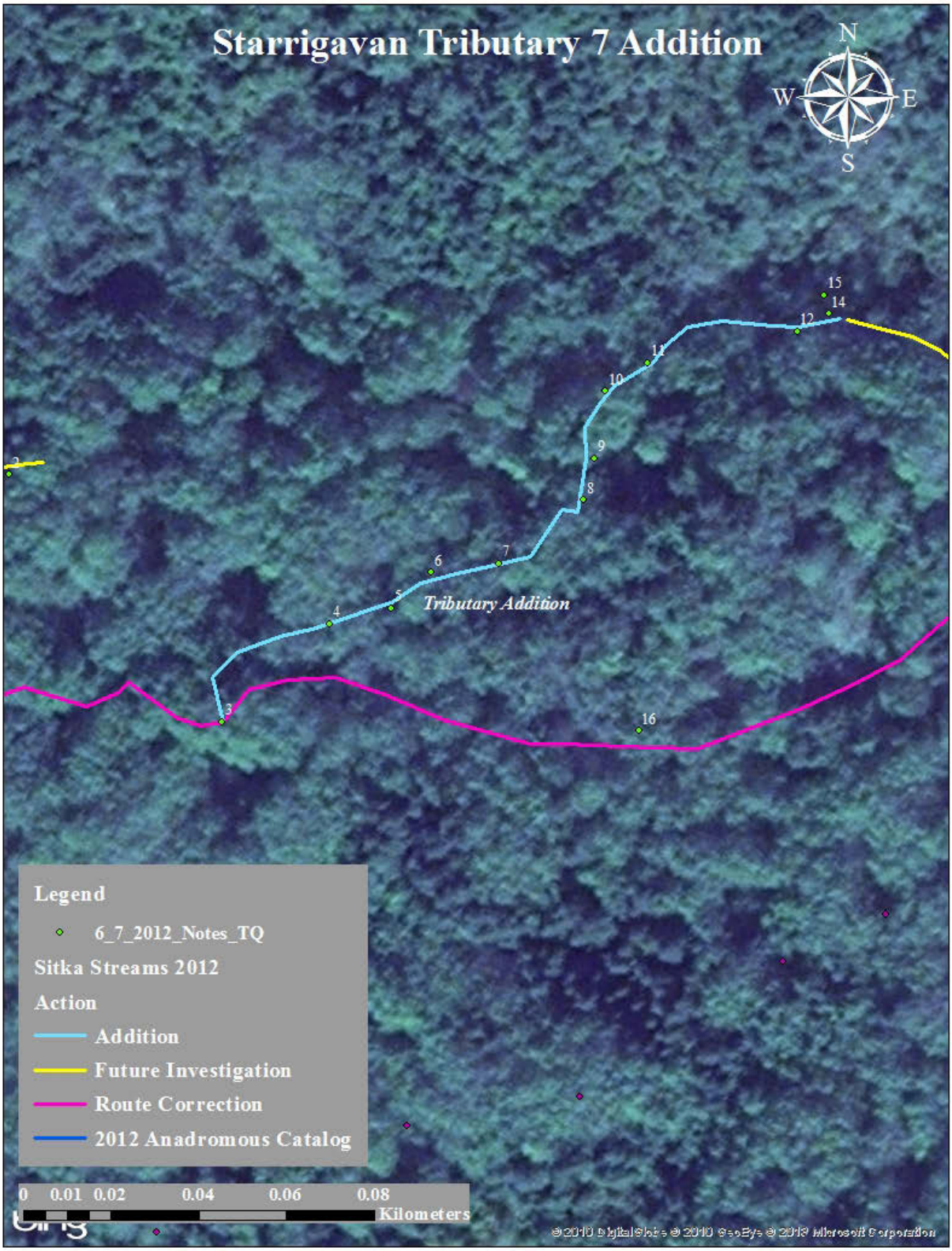

Figure 179.–Starrigavan Tributary 7 Addition map.

STARRIGAVAN TRIBUTARY 8

Stream: Tributary to Starrigavan Creek (#113-41-10150, cataloged for COp, CHp, Pp, DVp).
Watershed: Sitka Sound.
MTRS: Township 55S, Section 6, Range 63E, Sitka A-5.
Date Surveyed*:* 5/31/2012.
Findings: This stream is a tributary of a tributary to Starrigavan Creek in Sitka, AK. During sampling and tracking of the stream, coho salmon were captured until waypoint 237.

Table 87.–Starrigavan Tributary 8 Survey Data.

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
224	57.1234	-135.3267	Tributary entering on river left. Going to track up.		
225	57.1232	-135.3266	Electrofished and got many fish instantly, three Dolly Varden between 30-80mm and four Coho about 40mm.	EF	4 CO about 40mm and 3 DV between 30-80mm
226	57.1232	-135.3263	Electrofished: Three Coho about 35mm and one Dolly Varden between 10-15mm.	EF	3 CO about 35mm and 1 DV between 10-15mm
227	57.1232	-135.3257	Electrofished and Dolly Varden and Coho boiled up. Three Coho about 35mm and five Dolly Varden between 40-95mm.	EF	3 CO about 35mm and 5 DV between 40-95mm
228	57.1228	-135.3241	Tributary entering tributary on river right. Will track up tributary of a tributary.		
229	57.1228	-135.3239	Electrofished and got four Coho about 30-40mm. Turned the electrofisher down. Settings: 325v, 30Hz and 25% duty cycle.	EF	4 CO about 30-40mm
230	57.1228	-135.3236	Electrofished and got three Coho between 35-45mm and one Dolly Varden about 30mm.	EF	3 CO between 35-45mm and 1 DV about 30mm
231	57.1229	-135.3230	Electrofished and got one Coho about 40mm and one Dolly Varden about 35mm. There is also a culvert here that goes under ATV trail. Have interesting rock like barrier in front of culvert.	EF	1 CO about 40mm and 1 DV 35mm
232	57.1228	-135.3226	Calling the top because other rock like barrier. Electrofished above and only got one resident Dolly Varden about 55mm.	EF	1 DV about 55mm
233	57.1225	-135.3238	Bridge over the tributary. The bridge is for the ATV trail.		
234	57.1224	-135.3236	Electrofished three Dolly Varden between 40-100mm and three Coho about 25mm.	EF	3 CO about 25mm and 3 DV between 40-100mm

235	57.1222	-135.3231	Tributary entering tributary on river left. Tracking up.		
236	57.1222	-135.3231	Electrofished and got three Coho about 40mm.	EF	3 CO about 40mm
237	57.1218	-135.3231	Tributary entering tributary of a tributary on river left. Tracking up. Electrofished and got one Coho about 35mm.	EF	1 CO about 35mm

Figure 180.–Coho salmon captured in Starrigavan Tributary 8.

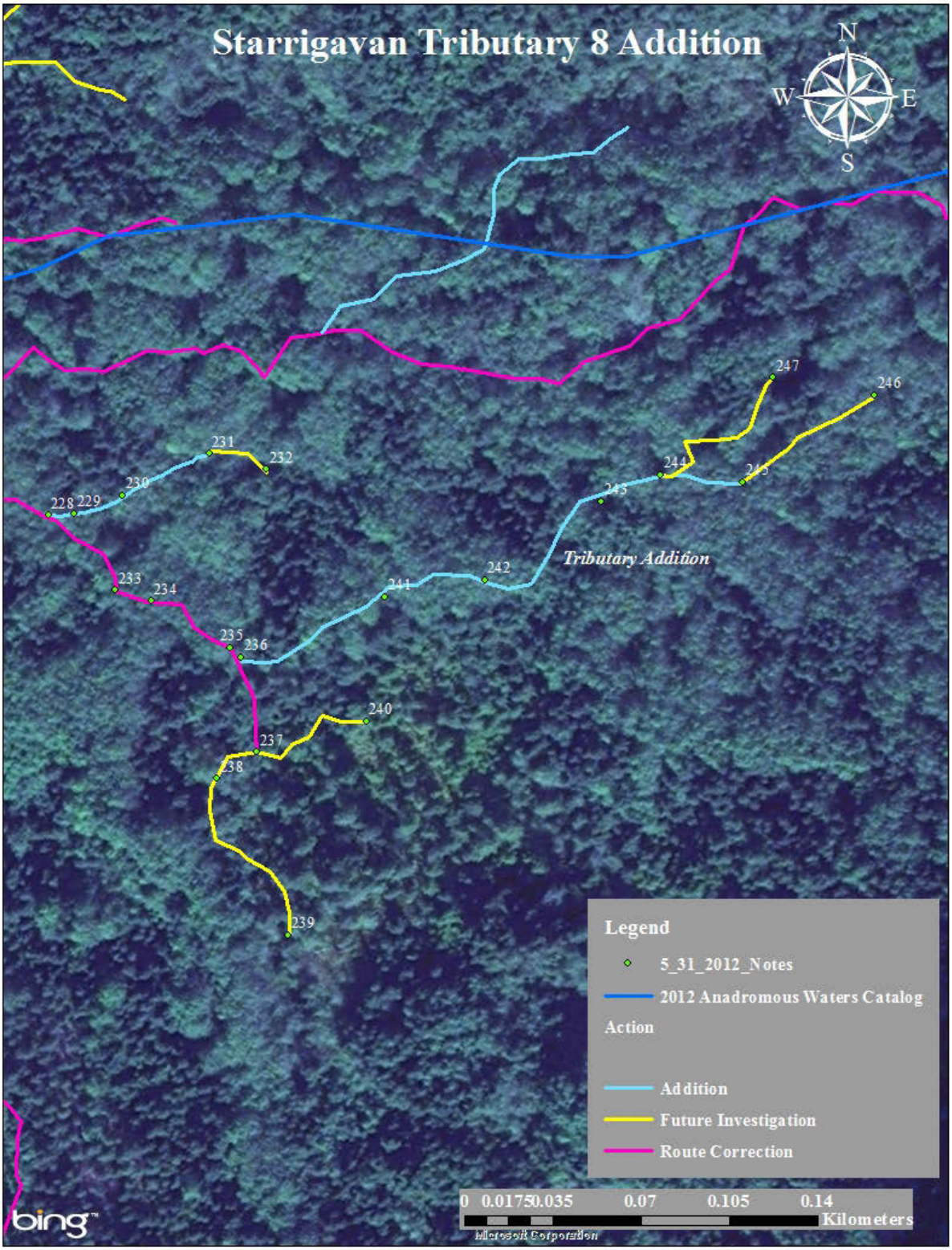

Figure 181.–Starrigavan Tributary 8 Addition map.

INDIAN RIVER TRIBUTARY ADDITION 1

Stream: Indian River: 113-41-10190.
Watershed: Billy Basin.
MTRS: Section: 30, 31 Township: 55S Range: 63E, Sitka A-4.
Date Surveyed*:* June 21-22, 2012.
Findings: This stream provides excellent coho salmon rearing habitat.
Recommendations: We recommend adding this stream course (WPT 84 – 139) to the Anadromous Waters Catalog. We found several piles of pink salmon bones on the banks (WPT 152) above our most upstream coho WPT which suggests that this habitat is anadromous and can be surveyed in the future to extend the top of anadromous habitat.

Table 88.–Indian River Tributary 1 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
84	57.0629	-135.3052	Trib entering Indian River on River right. Trail crosses trib about 150 m upstream, Continue to track and e-fish upstream.		
85	57.0629	-135.3052	Small trib enters on River right. Continue tracking.		
86	57.0629	-135.3054	Stopped electrofishing. Water continues in small pools. Appears water is influenced by high water and rain. Possible future investigation. Will continue on main trib.	EF	No fish
87	57.0633	-135.3053	Trail crossing. Tannic water. Continuing upstream.		
88	57.0639	-135.3052	Trib enters on River right. Higher gradient, cobble, small cascades and pools.		
89	57.0639	-135.3053	We measured most of the coho today and approximated (-) the length of DV. Caught 2 DV - 50 mm, 1 coho 78 mm.	EF	2 DV - 50 mm, 1 CO 78 mm
90	57.0639	-135.3053	Caught 1 DV 47 mm.	EF	1 DV 47 mm
91	57.0639	-135.3054	Caught 1 DV 50 mm.		1 DV 50 mm
92	57.0640	-135.3055	Caught 1 DV.		1 DV
93	57.0640	-135.3056	Higher gradient. Caught 1 DV - 40 mm.		1 DV -40 mm
94	57.0640	-135.3057	End of survey area. Site for possible future investigation.		
95	57.0640	-135.3054	Caught 1 DV - 55 mm, 1 coho 71 mm. Conclusion: two coho on steep trib!! Will continue to survey main tributary.	EF	1 DV - 55mm, 1 CO 71 mm
96	57.0642	-135.3051	Trib enters on river right. Will continue tracking upstream.		
97	57.0642	-135.3051	Caught 1 coho - 69 mm, 2 DV - 58 and - 52 mm.	EF	1 CO - 69 mm, 2 DV - 58 and 52 mm

98	57.0643	-135.3052	Caught 1 coho - 55 mm, 2 DV, DV - 28 mm.	EF	1 CO - 55 mm, 2 DV, 2 DV - 28 mm
99	57.0644	-135.3052	Caught 2 DV - 70 mm, 1 coho - 71 mm.	EF	2 DV - 70 mm, 1 CO - 71 mm
100	57.0645	-135.3053	Caught 1 DV.	EF	1 DV
101	57.0646	-135.3054	Caught 1 DV.	EF	1DV
102	57.0646	-135.3056	Trib becomes narrower, steeper gradient. Caught 1 DV. Will continue tracking and fishing upstream. Many small pools with small waterfalls between.	EF	1 DV
103	57.0647	-135.3059	Photo.		
104	57.0647	-135.3060	Caught 2 DV - 55-66 mm	EF	2 DV -55-66 mm
105	57.0647	-135.3061	Caught 1 DV.	EF	1 DV
106	57.0646	-135.3063	Gradient continues but pools are longer and less riffles. Caught 1 DV - 63 mm.	EF	1 DV - 63 mm
107	57.0646	-135.3070	Caught 1 DV.	EF	1 DV
108	57.0646	-135.3071	Caught 1 DV.	EF	1 DV
109	57.0646	-135.3072	Caught 1 DV.	EF	1 DV
110	57.0647	-135.3073	End of survey. Habitat is good but very unlikely coho will be present given due to the lack of coho fishing success. Future investigation.		
111	57.0643	-135.3052	Continue tracking upstream on main trib.		
112	57.0646	-135.3048	Trib enters on River right. Will track and fish upstream. Caught 1 coho 62 mm.	EF	1 CO - 62 mm
113	57.0646	-135.3045	Caught 1 Coho 33 mm.	EF	1 CO - 33 mm
114	57.0647	-135.3045	Caught 5 coho 32-48 mm.	EF	5 CO - 32-48 mm
115	57.0648	-135.3045	Caught 2 DV. Very low water movement.	EF	2 DV
116	57.0648	-135.3045	Caught 3 coho - 25 mm, 1 DV - 33 mm.	EF	3 CO - 25 mm, 1 DV - 33 mm
117	57.0649	-135.3044	Caught 1 coho 59 mm.	EF	1 CO - 59 mm

118	57.0650	-135.3044	Caught 1 coho 50 mm.	EF	1 CO - 50 mm
119	57.0654	-135.3050	End of survey section. Low water, vegetated channel, somewhat disconnected.		
120	57.0646	-135.3046	Resuming Indian River trib from confluence of small coho laden tributary. Tracking and fishing our way upstream		
121	57.0646	-135.3042	Tributary enters on River left-begin e-fishing and tracking upstream. Looks like good coho potential-moderate flow, low gradient.		
122	57.0648	-135.3036	E-fished 2 coho-36 mm.	EF	2 CO 36 mm
123	57.0654	-135.3032	E-fished 2 coho-40-76 mm. Continue upstream.	EF	2 CO 40-76 mm
124	57.0660	-135.3023	E-fished 1 coho-55 mm, 1 DV- 55 mm. Many other escaped.	EF	1 CO-55 mm, 1 DV -55 mm
125	57.0660	-135.3022	E-fished 1 coho-55 mm, 1 DV- 45 mm. Continuing upstream.	EF	1 CO-55 mm, 1 DV -45 mm
126	57.066192	-135.3021	E-fished 1 coho - 87 mm. Continuing upstream.	EF	1 CO- 87 mm
127	57.0662	-135.3020	E-fished 1 coho - 56 mm. Continuing upstream. Habiatat remains very good, little to no gradient, but flow and water level is dropping.	EF	1 CO - 56 mm
128	57.0663	-135.3016	Very small tributary enters on River left-little flow, but will try to shock pools if present.		
129	57.0663	-135.3016	pocket dial.		
130	57.0663	-135.3013	E-fished 1 DV- 38 mm. Continuing upstream.	EF	1 DV- 38 mm
131	57.0660	-135.3005	Calling it the top- vegetated channel - little to no flow - turns into a marsh except during high flows possible…back to mainstem of trib-of trib.		
132	57.0665	-135.3014	Stream becomes disconnected chain of pools. Discontinuing e-fishing. Track up a little further.		
133	57.0666	-135.3010	Calling it on this trib-very little flow-back to main trib.		
134	57.0651	-135.3037	Captured 4 DV's - 55-95 mm.	EF	4 DV - 55-95 mm
135	57.0652	-135.3038	2 Cohos- 40 mm E-fished-- continuing upstream.	EF	2 CO- 40 mm
136	57.0655	-135.3036	2 Cohos- e-fished, 38-45 mm. Photos 295-296- habitat remains beautiful, continuing upstream.	EF	2 CO - 38-45 mm

137	57.0657	-135.3040	3 DVs -50-70 mm, 2 cohos- 35-55 mm. Resuming upstream.	EF	3 DV- 50-70 mm, 2 CO- 35-55 mm
138	57.0660	-135.3048	E-fished 2 coho- 35-45 mm, 1 DV-45 mm. Resuming upstream.	EF	2 CO- 34-45 mm, 1 DV-45 mm
139	57.0661	-135.3050	Tributary enters on river left- low gradient, low flow- will track and e-fish our way upstream.		

Figure 182.–Gordon Willson-Naranjo and Rick Hoffman surveying Indian River Tributary 1.

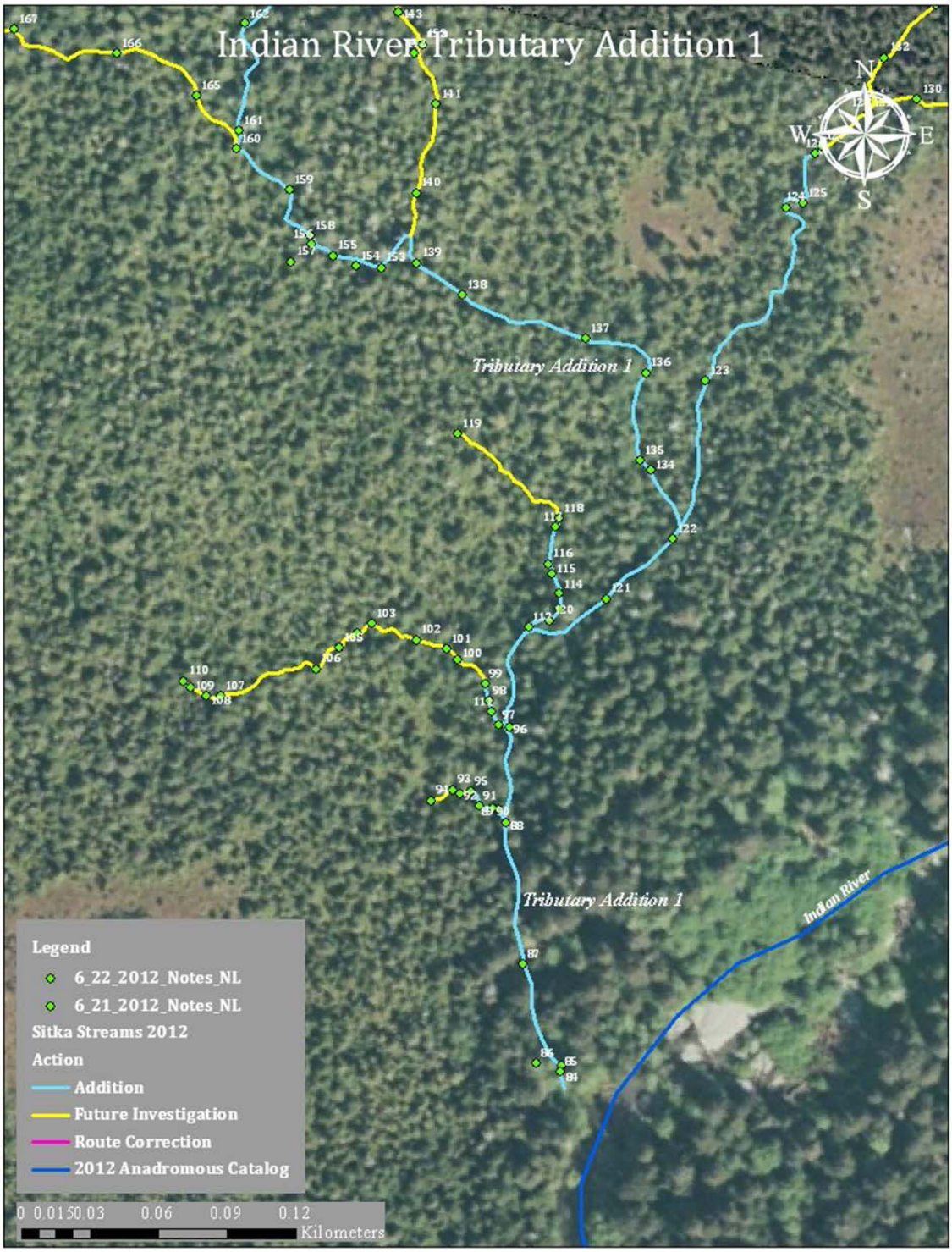

Figure 183.–Indian River Tributary Addition 1 map.

INDIAN RIVER TRIBUTARY ADDITION 2

Stream: Indian River: 113-41-10190.
Watershed: Billy Basin.
MTRS: Section: 30, 31 Township: 55S Range: 63E, Sitka A-4.
Date Surveyed*:* June 21-22, 2012.
Findings: This stream provides excellent coho salmon rearing habitat.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 89.–Indian River Tributary 2 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
139	57.0661	-135.3050	Tributary enters on river left- low gradient, low flow- will track and e-fish our way upstream.		
140	57.0663	-135.3049	E-fished 1 DV- 55 mm. Continuing upstream. Photos 299- 301.	EF	1 DV-55 mm
141	57.0667	-135.30466	E-fished 2 DV 30-35 mm. Increased voltage to 450 due to small fish seen.	EF	2 DV-30-35 mm
142	57.0669	-135.3047	7 DV- 30-75 mm captured, resume upstream.	EF	7 DV- 30-75 mm
143	57.0670	-135.3047	1 DV, 35 mm, large deep pool, many visually ID'd. Recovering well from settings. Resume upstream.	EF	1 DV 35 mm
144	57.0673	-135.3049	Still abundant DV, 5 DV- 30-45 mm--no barriers--resuming upstream.	EF	5 DV- 30-45 mm
145	57.0676	-135.3049	3 DV, 30-45 mm. great habitat, no coho yet.	EF	3 DV-30-45 mm
146	57.0680	-135.3046	2 DV's- 45-53 mm e-fished, continuing upstream.	EF	2 DV- 45-53 mm
147	57.0684	-135.3040	2 DV's- 30 mm, e-fished. Photo 303.	EF	2 DV 30 mm
148	57.0685	-135.3037	4 DV's- 28-40 mm. E-fished. Gradient begins to increase slightly, but still very good fish habitat.	EF	4 DV- 28-40 mm
149	57.0688	-135.3039	2 DV's captured- 35-45 mm. Continue tracking upstream.	EF	2 DV- 35-45 mm
150	57.0691	-135.3039	Steep, little tributary enters River right, continuing up mainstem of trib. Visual ID DV- 150 mm.	VI	1 DV 150 mm
151	57.0693	-135.3035	Top of watered habitat: stream channel continues as dry, steep, cascading, incised channel-probably only flow at flood stage waters. Pictures 304-306. Back to mainstem.		
152	57.0669	-135.3046	Fish vertebrae. Due to size maybe pink vertebrae. This is the upper extent of vertebrae found from here down. Quite a few vertebrae. Likely area where pink salmon spawn.		
153	57.0661	-135.3053	Electrofished and got 3 DV between 45-55 mm.	EF	3 DV- 45-55 mm

154	57.0661	-135.3054	Electrofished and got 2 coho between 45-55 mm and 1 DV about 35 mm.	EF	2 CO - 45-55 mm, 1 DV - 35 mm
155	57.0662	-135.3056	Trib entering from river right will track up. Also here at confluence. Electrofished 1 coho - 50 mm.	EF	1 CO - 50 mm
156	57.0662	-135.3057	Electrofished and got 1 DV - 40 mm.	EF	1 DV - 40 mm
157	57.0662	-135.3059	Top of the trib. We electrofished in all the places that were deep and big enough for e-fished. Got nothing after that 1 DV.		
158	57.0663	-135.3057	Photo 309. Electrofished and got 2 coho about 55 mm.	EF	2 CO - 55 mm
159	57.0664	-135.3058	Electrofished and got 3 coho between 40-50 mm and 1 DV about 40 mm. Changed settings to 12% duty and 420 V.	EF	3 CO - 40-50 mm, 1 DV - 40 mm
160	57.0666	-135.3061	Trib entering river left tracking and shocking up.	EF	
161	57.0667	-135.3060	Electrofished and got 1 DV about 45 mm.	EF	1 DV - 45 mm
162	57.0671	-135.3058	Electrofished and got 2 DV about 45 mm.	EF	2 DV - 45 mm
163	57.0674	-135.3058	Electrofished and got 2 coho about 45 mm.	EF	2 CO - 45mm

Figure 184.–Gordon Willson-Naranjo and Rick Hoffman sampling Indian River tributary 2.

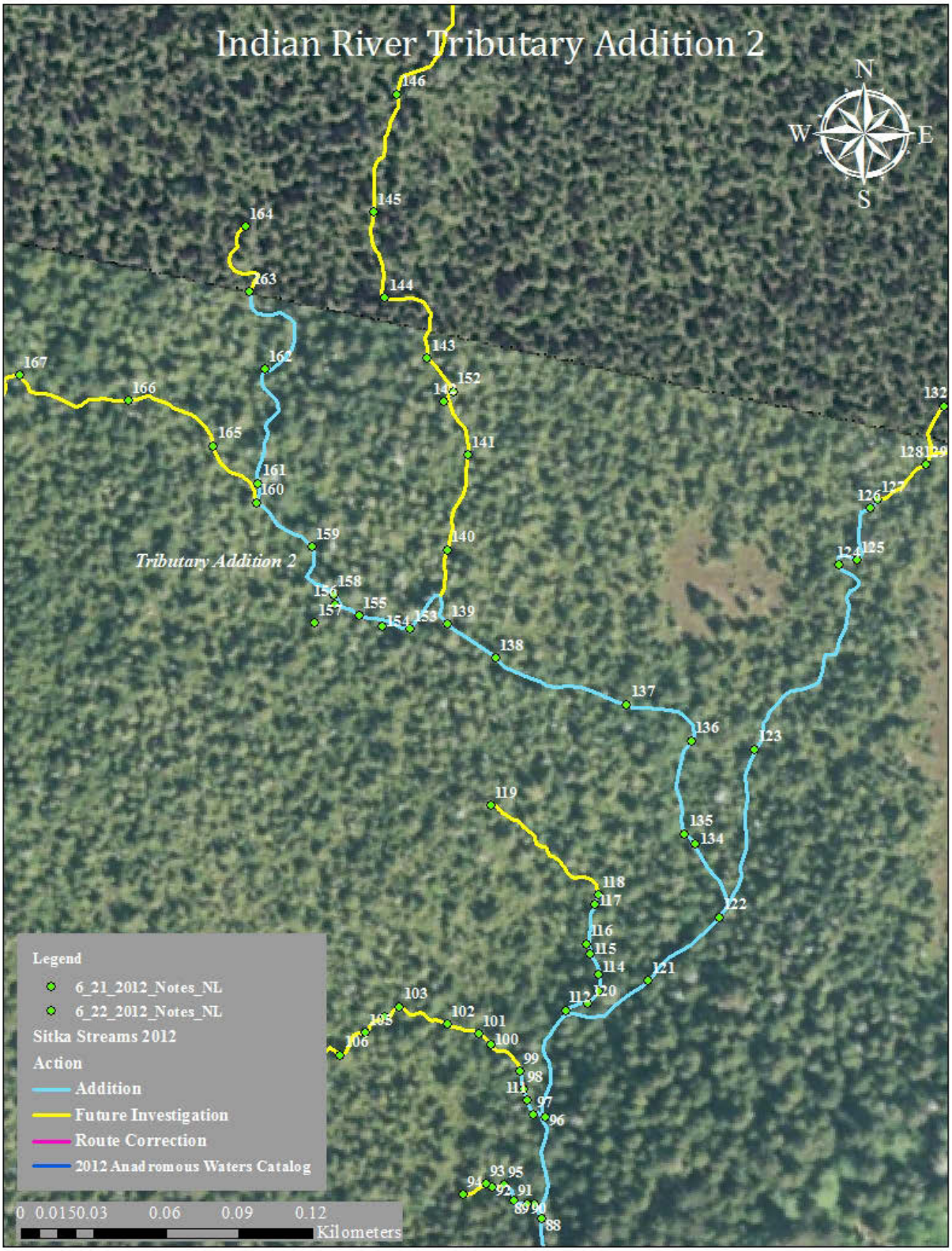

Figure 185.–Indian River Tributary Addition 2 map.

INDIAN RIVER TRIBUTARY ADDITION 3

Stream: Indian River: 113-41-10190
Watershed: Billy Basin
MTRS: Section: 30, 31 Township: 55S Range: 63E, Sitka A-4
Date Surveyed: June 21-22, 2012
Findings: This stream provides excellent coho salmon rearing habitat.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog. Indian River Tributary Addition 3 begins at WPT 122, and ends at WPT 127.

Table 90.–Indian River Tributary 3 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
120	57.064	-135.3046	Resuming Indian River trib from confluence of small coho-laden tributary. Tracking and fishing our way upstream.		
121	57.0646	-135.3042	Tributary enters on River left-begin e-fishing and tracking upstream. Looks like good coho potential-moderate flow, low gradient.		
122	57.0648	-135.3036	E-fished 2 coho-36 mm.	EF	2 CO 36 mm
123	57.0654	-135.3032	E-fished 2 coho-40-76 mm. Continue upstream.	EF	2 CO 40-76 mm
124	57.0660	-135.3023	E-fished 1 coho-55 mm, 1 DV- 55 mm. Many other escaped.	EF	1 CO-55 mm, 1 DV -55 mm
125	57.0660	-135.3022	E-fished 1 coho-55 mm, 1 DV- 45 mm. Continuing upstream.	EF	1 CO-55 mm, 1 DV -45 mm
126	57.0661	-135.3021	E-fished 1 coho - 87 mm. Continuing upstream.	EF	1 CO- 87 mm
127	57.0662	-135.3020	E-fished 1 coho - 56 mm. Continuing upstream. Habitat remains very good, little to no gradient, but flow and water level is dropping.	EF	1 CO- 56 mm

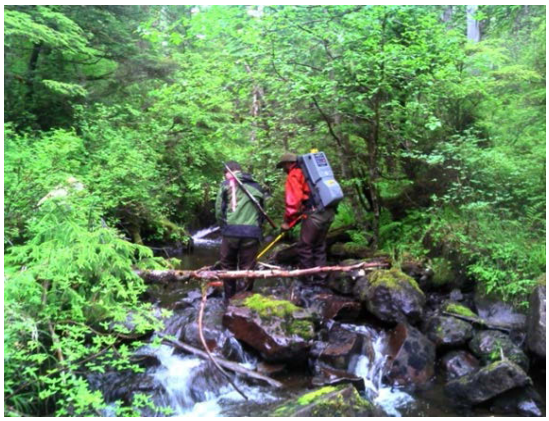

Figure 186.–Rick Hoffman and Gordon Willson-Naranjo sampling Indian River tributary 3

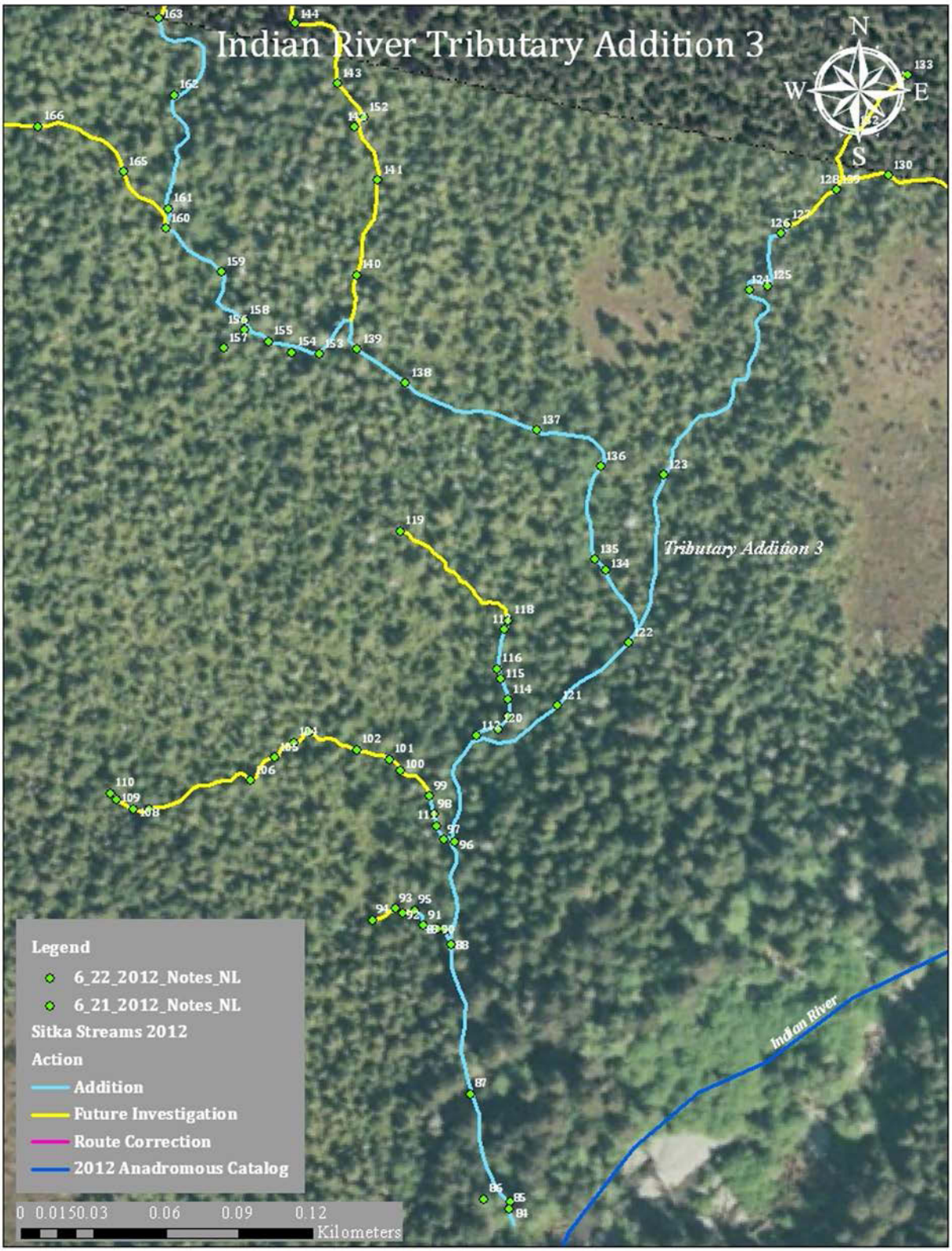

Figure 187.–Indian River tributary 3

INDIAN RIVER TRIBUTARY ADDITION 4

Stream: Indian River: 113-41-10190
Watershed: Billy Basin
MTRS: Section: 30, 31 Township: 55S Range: 63E, Sitka A-4
Date Surveyed*:* June 21-22, 2012
Findings: This small stream provides excellent coho salmon rearing habitat.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog. This anadromous section extends from WPT 112 to WPT 118.

Table 91.–Indian River Tributary 4 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
112	57.0646	-135.3048	Trib enters on River right. Will track and fish upstream. Caught 1 coho 62 mm.	EF	1 CO - 62 mm
113	57.0646	-135.3045	Caught 1 coho 33 mm.	EF	1 CO - 33 mm
114	57.0647	-135.3045	Caught 5 coho 32-48 mm.	EF	5 CO - 32-48 mm
115	57.0648	-135.3045	Caught 2 DV. Very low water movement.	EF	2 DV
116	57.0648	-135.3045	Caught 3 coho - 25 mm, 1 DV - 33 mm.	EF	3 CO - 25 mm, 1 DV - 33 mm
117	57.0649	-135.3044	Caught 1 coho 59 mm.	EF	1 CO - 59 mm
118	57.0650	-135.3044	Caught 1 coho 50 mm.	EF	1 CO - 50 mm

Figure 188.–Gordon Willson-Naranjo and Rick Hoffman sampling Indian River tributary 4.

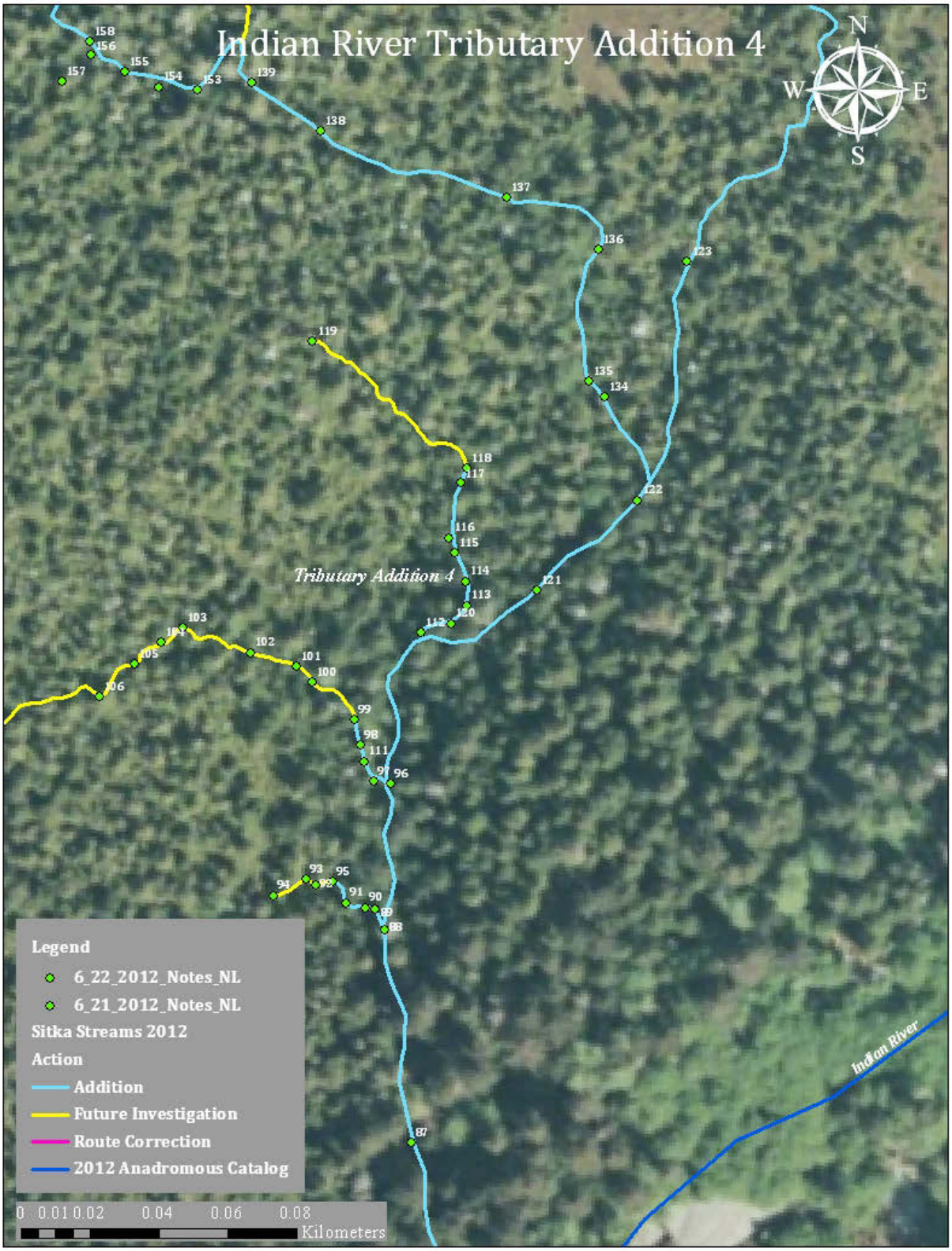

Figure 189.–Indian River Tributary Addition 4 map.

INDIAN RIVER TRIBUTARY ADDITION 5

Stream: Indian River: 113-41-10190.
Watershed: Billy Basin.
MTRS: Section: 30, 31 Township: 55S Range: 63 E, Sitka A-4.
Date Surveyed*:* June 21, 2012.
Findings: This stream provides good habitat near its confluence with the main Indian River Tributary 1, then quickly picks up gradient and becomes a narrow incised channel. We caught many Dolly Varden char above the steep section where it flattens out again, but no coho were found.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog. The anadromous portion extends from WPT 96 to WPT 99.

Table 92.–Indian River Tributary 5 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
96	57.0642	-135.3051	Trib enters on river right. Will continue tracking upstream.		
97	57.0642	-135.3051	Caught 1 coho - 69 mm, 2 DV - 58 and - 52 mm.	EF	1 CO, 69mm; 2 DV, 52-58mm
98	57.0643	-135.3052	Caught 1 coho - 55 mm, 2 DV, DV - 28 mm.	EF	1 CO, 55mm; 2 DV, 28mm
99	57.0644	-135.3052	Caught 2 DV - 70 mm, 1 coho - 71 mm.	EF	1 CO, 71mm; 2 DV, 70mm

Figure 190.–Indian River tributary 5 gradient increase.

Figure 191.–Indian River Tributary Addition 5 map.

INDIAN RIVER TRIBUTARY ADDITION 6

Stream: Indian River: 113-41-10190.
Watershed: Billy Basin.
MTRS: Section: 30, 31 Township: 55S Range: 63E, Sitka A-4.
Date Surveyed: June 21-22, 2012.
Findings: This short stream provides some coho rearing habitat near its confluence with Indian River Tributary 1. Upstream habitat becomes steep with many small cascading waterfalls.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog. The anadromous portion extends from WPT 88 to WPT 94.

Table 93.–Indian River Tributary 6 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
88	57.0639	-135.3052	Trib enters on River right. Higher gradient, cobble, small cascades and pools.		
89	57.0639	-135.3053	Caught 2 DV - 50 mm, 1 coho 78 mm.	EF	2 DV - 50 mm, 1 CO-78 mm
90	57.0639	-135.3053	Caught 1 DV 47 mm.	EF	1 DV - 47 mm
91	57.0639	-135.3054	Caught 1 DV 50 mm.		1 DV - 50 mm
92	57.0640	-135.3055	Caught 1 DV.		1 DV
93	57.0640	-135.3056	Begins higher gradient. Caught 1 DV- 40 mm.		1 DV - 40 mm
94	57.0640	-135.3057	End of survey area. Site for possible investigation.	EF	1 DV 55mm, 1 CO 70mm

Figure 192.–Coho captured in Indian River Tributary 6.

Figure 193.–Indian River Tributary Addition 6 map.

INDIAN RIVER TRIBUTARY ADDITION 7

Stream: Indian River: 113-41-10190.
Watershed: Billy Basin.
MTRS: Section: 20 Township: 55 S Range: 64 E, Sitka A-4.
Date Surveyed*:* June 26, 2012.
Findings: This low gradient tributary to the Indian River provides excellent coho and Dolly Varden char rearing habitat.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 94.- Indian River Tributary 7 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Result
1	57.0786	-135.2888	Confluence of two major streams in the mainstem, about half the water comes from this side.		
2	57.0788	-135.2882	Start tracking trib on River Right.		
3	57.0791	-135.2879	End of trib, ends in groundwater.		
4	57.0790	-135.2880	Electrofished 400V 30Hz 12% duty cycle, caught 1 coho -30mm, 2DV.	EF	1 CO-30mm, 2 DV
5	57.0790	-135.2879	Efished, caught 1 coho -40mm.	EF	1 CO -40mm
6	57.0790	-135.2872	Start tracking trib on River Right.		
7	57.0791	-135.2871	End of trib, ends in large pool (-6ft diameter), electrofished the pool, caught 3 DV.	EF	3DV
8	57.0795	-135.2860	Sidepool off mainstem, very calm, good rearing coho habitat, electrofished, caught 3 coho.	EF	3 CO
9	57.0797	-135.2857	Start tracking trib on River Right.		
10	57.0801	-135.2856	Electrofished , caught 2 coho.	EF	2 CO
11	57.0804	-135.2851	End of trib, disconnected pools, electrofished large pool, good rearing habitat, caught 1 DV.	EF	1DV
12	57.0800	-135.2843	Electrofished rootwad in middle of mainstem, 2 coho.	EF	2 CO

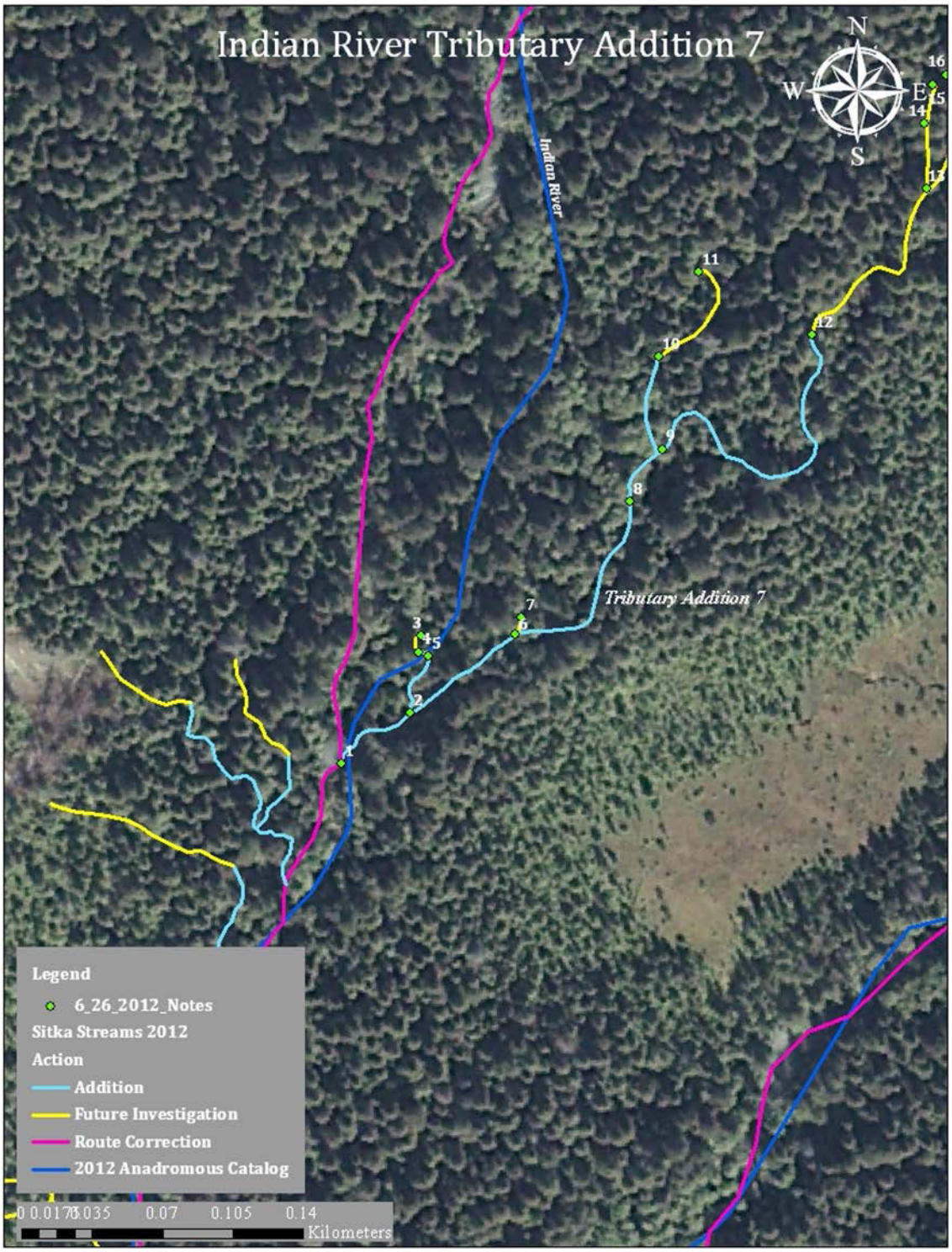

Figure 194.–Indian River Tributary Addition 7 map.

INDIAN RIVER TRIBUTARY ADDITION 8

Stream: Indian River: 113-41-10190 (COp).
Watershed: Billy Basin.
MTRS: Section: 20 Township: 55 S Range: 64 E, Sitka A-4.
Date Surveyed*:* June 26, 2012.
Findings: This short stream provides excellent rearing habitat for coho salmon and Dolly Varden char.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 95.–Indian River Tributary 8 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Result
1	57.0786	-135.2888	Confluence of two major streams in the mainstem, about half the water comes from this side.		
2	57.0788	-135.2882	Start tracking trib on river right.		
3	57.0791	-135.2879	End of trib, ends in groundwater		
4	57.0790	-135.2880	Efished 400V 30Hz 12% duty cycle, caught 1 coho -30mm, 2DV.	EF	1 CO-30mm, 2 DV
5	57.0790	-135.2879	Electrofished, caught 1 coho -40mm.	EF	1 CO -40mm
6	57.0790	-135.2872	Start tracking trib on river right.		
7	57.0791	-135.2871	End of trib, ends in large pool (-6ft diameter), efished the pool, caught 3 DV.	EF	3DV
8	57.0795	-135.2860	Sidepool off mainstem, very calm, good rearing coho habitat, electrofished, caught 3 coho.	EF	3 CO
9	57.0797	-135.2857	Start tracking trib on river.		
10	57.0801	-135.2856	Electrofished , caught 2 coho.	EF	2 CO
11	57.0804	-135.2851	End of trib, disconnected pools, electrofished large pool, good rearing habitat, caught 1 DV.	EF	1DV
12	57.0800	-135.2843	Electrofished rootwad in middle of mainstem, 2 coho.	EF	2 CO

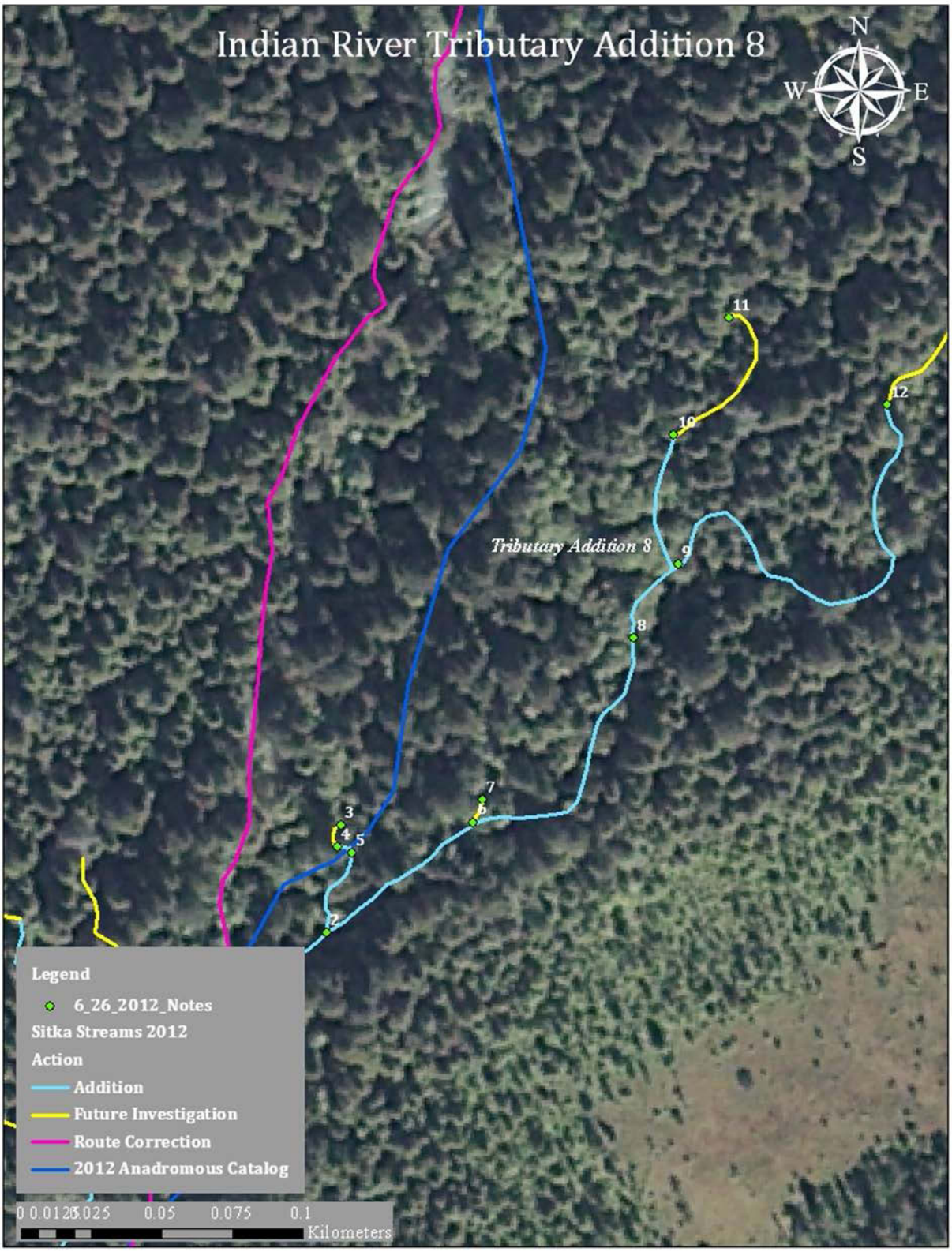

Figure 195.–Indian River tributary 8.

INDIAN RIVER TRIBUTARY ADDITION 9

Stream: Indian River: 113-41-10190 – Addition 9.
Watershed: Billy Basin.
MTRS: Section: 31 Township: 55 S Range: 64 E, Sitka A-4.
Date Surveyed*:* June 20, 2012.
Findings: This short stream provides excellent rearing habitat for coho salmon and Dolly Varden char.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 96.–Indian River Tributary 9 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
62	57.0654	-135.2963	Tributary enters on River left. Begin fishing and tracking upstream.		
63	57.0657	-135.2964	400 V, 30 Hz, 16% duty cycle. Continuing upstream. Habitat looks good, low gradient, many pools. Caught 3 coho - 35-45 mm, 1 DV.	EF	3 coho -35-45 mm, 1 DV
64	57.0658	-135.2963	Caught 2 DV - 35-45 mm and 1 DV - 60 mm. Continuing upstream.	EF	2 DV - 35-45 mm, 1 DV - mm
65	57.0659	-135.2961		EF	1 coho, 1 DV

Figure 196.–Coho salmon captured in Indian river tributary 9.

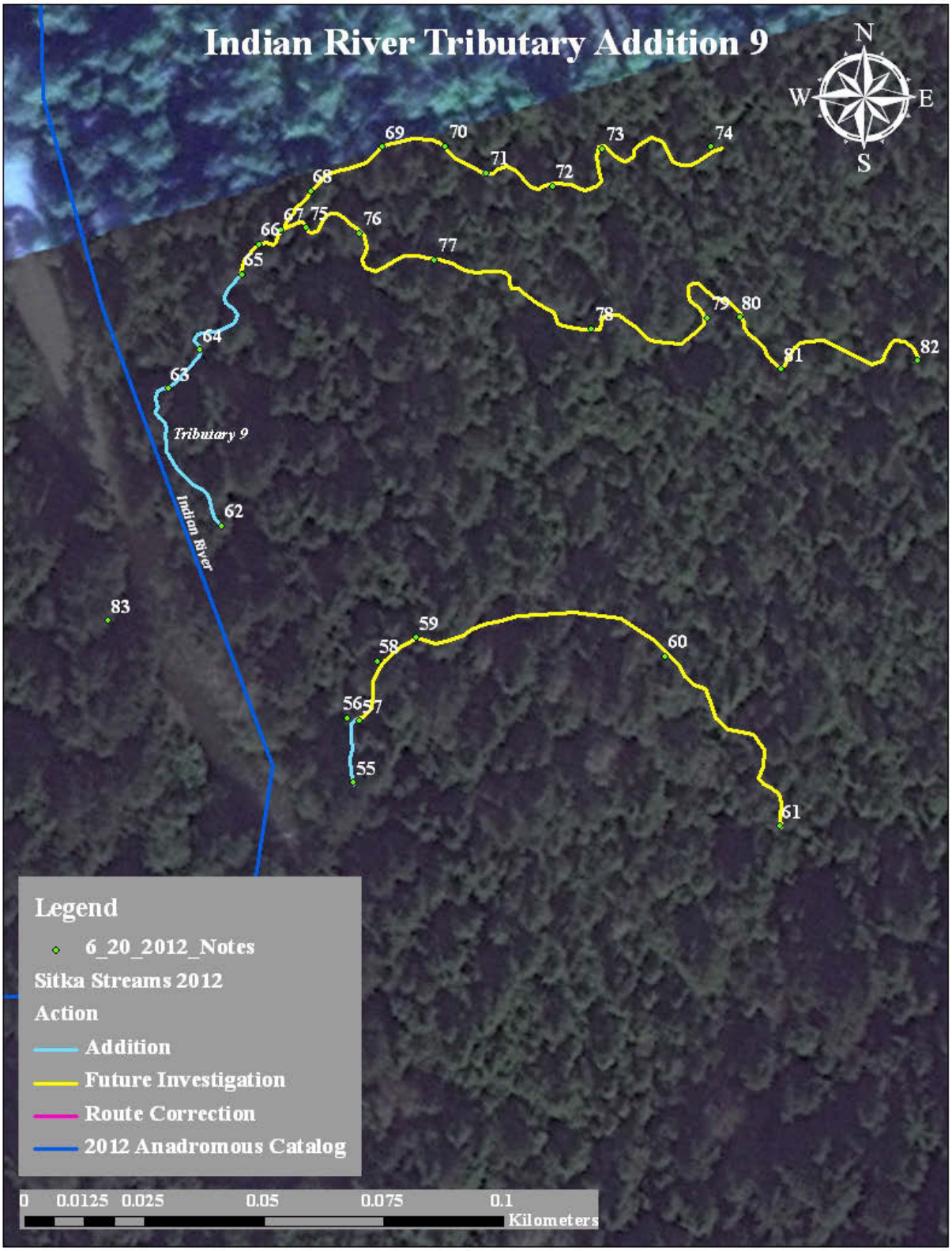

Figure 197.–Indian River Tributary Addition 9 map.

INDIAN RIVER TRIBUTARY ADDITION 10

Stream: Indian River: 113-41-10190 (COp).
Watershed: Billy Basin.
MTRS: Section: 31 Township: 55 S Range: 64 E.
Date Surveyed: June 20, 2012.
Findings: This short stream provides excellent rearing habitat for coho salmon and Dolly Varden char.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 97.–Indian River Tributary 10 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
54	57.0595	-135.3066	Beginning survey-tracking up river left side looking for tribs		
55	57.0649	-135.2961	Tributary enters on River left-begin fishing and tracking upstream. Small tributary with more tannic water-low gradient at confluence but looks steeper upstream. Captured 1 coho - 45 mm, 1 DV - 50 mm, 2 DV - 45-55 mm. Continuing upstream.	EF	1 coho- 45mm, 1 DV - 50 mm, 2 DV - 45-55 mm
56	57.0650	-135.2961	Continuing upstream. Caught 1 coho - 45 mm.	EF	1 coho- 45mm
57	57.0650	-135.2960	Pocket?		
58	57.0651	-135.2959	Caught 2 DV - 75 mm.	EF	2 DV - 75mm
59	57.0652	-135.2958	Caught 2 DV - 45-65 mm. Continue upstream.	EF	2 DV -45-65 mm
60	57.0650	-135.2950	Caught 2 DV - 60-80 mm. Continue upstream.	EF	2 DV - 60-80 mm
61	57.0647	-135.2947	Calling it the top- gradient steadily increases and many narrow incised bedrock waterfalls with few resting holes appears to block anadromy.		
62	57.0654	-135.2963	Tributary enters on River left. Begin fishing and tracking upstream.		
63	57.0657	-135.2964	400 V, 30 Hz, 16% duty cycle. Continuing upstream. Habitat looks good, low gradient, many pools.	EF	3 CO -35-45 mm, 1 DV
64	57.06582	-135.2963	Caught 2 DV - 35-45 mm and 1 DV - 60 mm. Continuing upstream.	EF	2 DV - 35-45 mm, 1 DV - mm

65	57.0659	-135.2961	See photos (belly to belly photo)	EF	1 CO, 1 DV
66	57.0659	-135.2960	Tributary enters on River Right-begin tracking and e-fishing upstream.		
67	57.0660	-135.2959	Captured 2 DV, 30-40mm, continue upstream.	EF	2 DV -30-40
68	57.0660	-135.2958	Captured 2 DV, 50-60mm, continue upstream.	EF	2 DV -50-60
69	57.0661	-135.2955	Electrofished 1 DV -40mm, continuing upstream, habitat quality decreasing, more gradient, less water flow.	EF	1 DV -40mm
70	57.0660	-135.2953	2 DV captured -35-55mm, continuing upstream.	EF	2 DV -35-55mm
71	57.0660	-135.2952	2 DV captured with electrofishing, both 35mm, 1 DV 40mm, continuing upstream.	EF	2 DV -35mm, 1 DV -40mm
72	57.0659	-135.2950	2 DV captured, 45mm, continue upstream, gradient has leveled out, but no cohos since it branched off.	EF	2 DV -45mm
73	57.0660	-135.2948	2 DV captured -35-50mm.	EF	2 DV -35-50
74	57.0659	-135.2944	Calling it the top-steeper gradient, channelized, no coho since trib forked from main tributary, returning to mainsteam of tributary.		
75	57.0659	-135.2958	2 DV efished, 60-65mm, continuing upstream.	EF	2 DV -60-65mm
76	57.0659	-135.2957	1 DV captured -40mm, beautiful habitat, many large undercut banks, not very much flow through.	EF	1 DV -40mm
77	57.0658	-135.2954	Captured 2 DV 35-45mm, continuing upstream.	EF	2 DV -35-45mm
78	57.0657	-135.2950	2 DV captured 70-100mm, stream becoming narrower, still no barrier, resuming tracking upstream.	EF	2 DV -70-100mm
79	57.0656	-135.2943	2 DV 50-60mm e-fished, resuming upstream, near top of upper extent of fishable habitat.	EF	2 DV -50-60mm
80	57.0656	-135.2945	1 DV 45mm, continue upstream.	EF	1 DV -45mm
81	57.0655	-135.2944	1 DV 39mm, continue upstream.	EF	1 DV -39mm
82	57.0655	-135.2939	Calling it the top of our survey, flow goes underground, no sight or sound of salmonids other than dollies for a long time. Very low flow. Returning to mainstem.		
83	57.0653	-135.2968	Point on trail to return to tomorrow!		

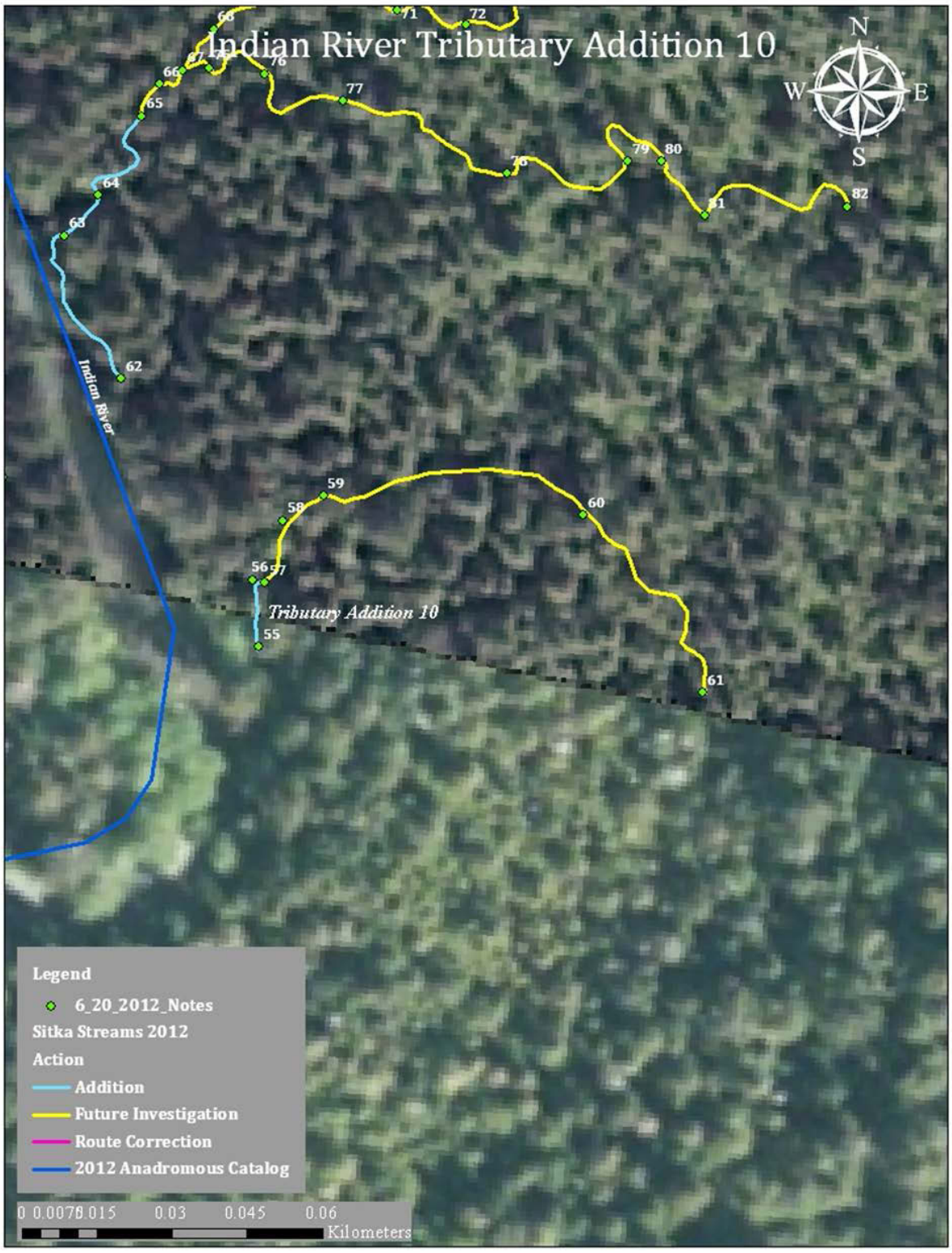

Figure 198.–Indian River Tributary Addition 10 map.

STREAM NO. 113-41-10190-2030 TRIBUTARY ADDITION

Stream: Indian River Tributary: 113-41-10190-2030 (COp).
Watershed: Billy Basin.
MTRS: Section: 21 Township: 55 S Range: 64 E.
Date Surveyed: June 27-28, 2012.
Findings: This stream provides excellent rearing habitat for coho salmon and Dolly Varden char.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 98.–113-41-10190-2030 Tributary 1 Survey Data.

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
28	57.0738	-135.2916	Tracking up mainstem of branch.		
29	57.0770	-135.283	Trib entering river left. Has pretty good flow and we will be tracking and shocking up.		
30	57.0769	-135.2832	Electrofish and got 2 DV about 45 mm.	EF	2 DV - 45 mm
31	57.0768	-135.2831	Foot trail bridge crosses stream.		
32	57.0765	-135.2827	Electrofish and got 2 DV about 40 mm.	EF	2 DV - 40 mm
33	57.0761	-135.2829	Girls found an old gold pan.		
34	57.0754	-135.2825	Trib entering river left. Will come back and track. Electrofished and got 1 DV about 35 mm. Turned out to be where side channel reconnects with mainstem.	EF	1 DV - 35 mm
35	57.0745	-135.2810	Calling it the top of trib. It becomes cascade like for a while with minimal rest areas. We also have not been able to get anything for a while now so here is the top!		
36	57.0783	-135.2765	Possible trib entering river left. Going to head up this and see.		
37	57.0784	-135.2757	Electrofished and got 2 DV between 30-35 mm.	EF	2 DV between 30-35 mm
38	57.0784	-135.2752	Electrofished and got 3 coho about 35 mm and 1 DV about 35 mm.	EF	3 CO - 25 mm, 1 DV - 35 mm

39	57.0790	-135.2738	Trib entering river left, tracking and shocking up.		
40	57.0790	-135.2736	Trib entering river left, tracking and shocking up.		
41	57.0790	-135.2733	Electrofished and got 1 DV about 50 mm.	EF	1 DV - 50 mm
42	57.0790	-135.2731	Foot trail crosses stream.		
43	57.0790	-135.2728	Electrofished and got 1 DV about 30 mm.	EF	1 DV - 30 mm
44	57.0788	-135.2720	Trib entering river left, track and shock.		
45	57.0785	-135.2721	Calling the top of trib. It goes subterranean for 15 yds then resurfaces the back underground again. Repeats for as far as I can see. Electrofished nothing. Future investigation.		
46	57.0783	-135.2717	We are calling this the top of this trib. We have been electrofishing but have not gotten even a DV. Trib has decent flow and would recommend investigating before any future development.		
47	57.0792	-135.2729	Electrofished and got 1 DV about 35 mm and 2 coho about 45 mm.	EF	1 DV - 35 mm, 2 CO - 45 mm
48	57.0796	-135.2722	Electrofished and got 1 coho about 35 mm and 1 DV about 35 mm.	EF	1 CO - 35 mm, 1 DV - 35 mm
49	57.0796	-135.2718	Trib entering river right, track/shock.		
50	57.0797	-135.2715	Electrofished and got 2 DV about 40 mm.	EF	2 DV - 40 mm
51	57.0799	-135.2712	Top of the trib. Just bubbling up out of ground. Likely upwell from river since it is not far away.		
52	57.0796	-135.2713	Electrofish and got 2 DV about 35 mm.	EF	2 DV - 35 mm
53	57.0797	-135.2705	Foot trail crosses trib		
54	57.0797	-135.2705	Trib entering river left, tracking and shocking. Electrofished confluence and got 2 DV about 45 mm. Bit of haul for rearing fish to make.	EF	2 DV - 45 mm
55	57.0795	-135.2695	Calling it the top of trib. We electrofished the whole way to this WPT and got nothing. Further investigation.		
56	57.0797	-135.2701	Electrofished and got 1 DV about 55 mm.	EF	1 DV - 55 mm
57	57.0798	-135.2693	Electrofished and got 1 DV about 55 mm. Also where trib crosses the foot trail once more.	EF	1 DV - 55 mm

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
58	57.0799	-135.2691	Where tracking ended on 6/27. Will be finishing this tributary and then head back to main Indian river branch.		
59	57.0800	-135.2689	Electrofisher settings: 410v, 30Hz and 12% duty cycle. Got two Dolly Varden about 35mm.	EF	2 DV about 35mm
60	57.0800	-135.2687	Tributary crosses the foot trail once more.		
61	57.0801	-135.2679	Electrofished and got two Dolly Varden about 40mm and visual ID on four other Dolly Varden.	EF/VI	2 DV about 40mm and visual on 4 other DV
62	57.0800	-135.2652	Electrofished and got three Dolly Varden between 40-70mm.	EF	3 DV between 40-70mm
63	57.0801	-135.2649	Calling the top of tributary. It is in a swampy/muskeg like area and water is just coming out slowly and collecting to make tributary.		
64	57.0795	-135.2736	Electrofished and got two Coho about 30mm and changed the electrofisher volts to 425.	EF	2 CO about 30mm
65	57.0797	-135.2735	Top of side channel which started at WPT# 36 on 6/27.		
66	57.0805	-135.2706	Electrofished in pool on side of Indian River branch. Got two Coho about 30mm and visual on half dozen more.	EF/VI	2 CO about 30mm and saw half dozen more
67	57.0810	-135.2648	Tributary entering river left going to track and shock up. Billy Basin branch.		
68	57.0807	-135.2647	Foot trail crosses stream.		
69	57.0767	-135.2605	Site of old building not sure if it was used for gold mining or logging operations. Have found random pieces up to this point in the stream. This is way cool! Would be interesting to find out more about what went on in this area. Also electrofished some Dolly Varden but was unable to net because water washed them away too quickly.		
70	57.0747	-135.2593	Top of the Billy Basin tributary. Has multiple falls with no pools and we have not picked up a Dolly Varden in a while. So calling it good.		

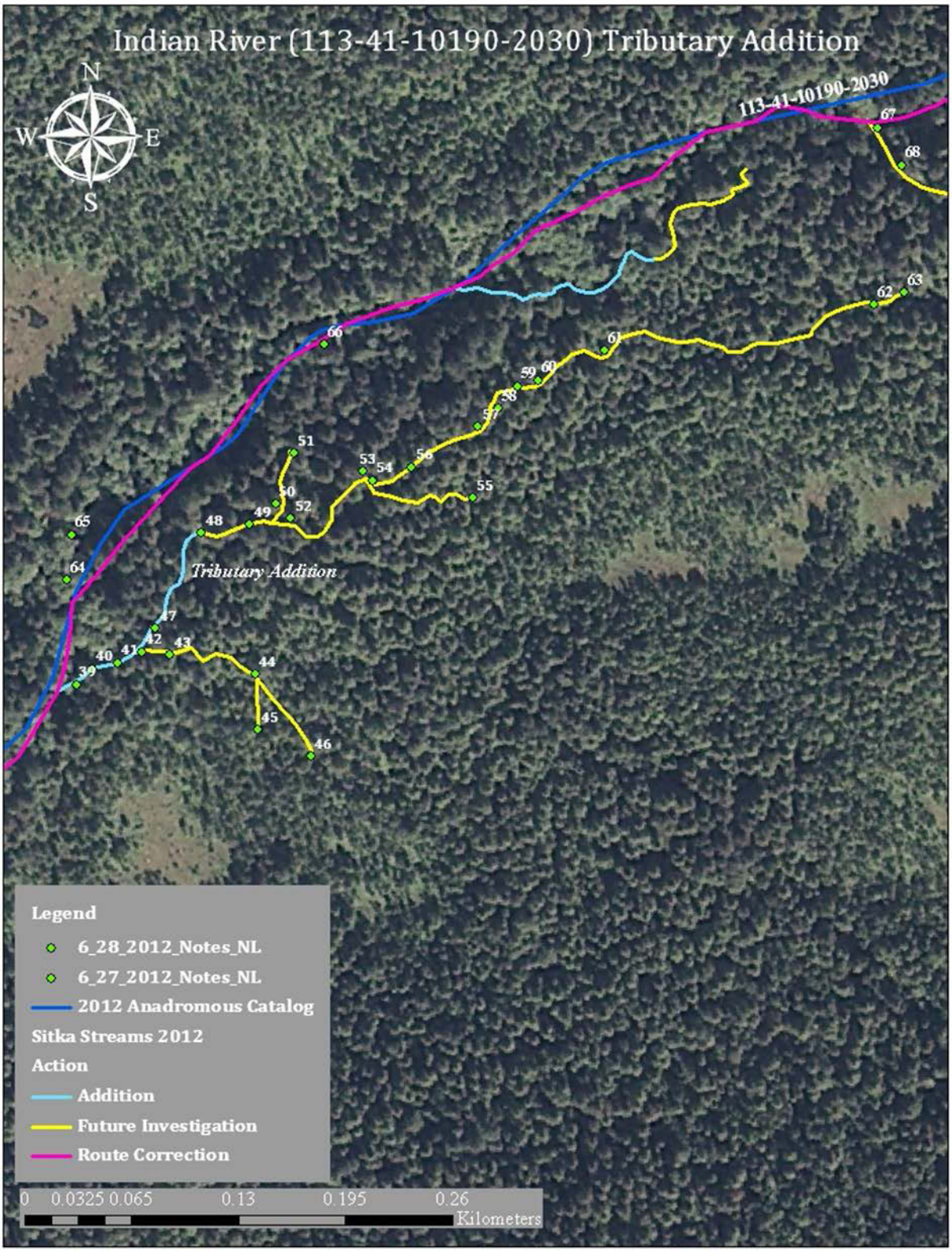

Figure 199.–Indian River tributary addition map.

STREAM 113-41-10190-2013 TRIBUTARY ROUTE CORRECTION

Stream: 113-41-10190-2013 (COr).
Watershed: Billy Basin.
MTRS: Section: 36 Township: 55 S Range: 63 E, Sitka A-4.
Date Surveyed*:* June 4, 2012.
Findings: This stream provides excellent coho salmon rearing habitat, and we were able to find coho nearly all the way to the stream's source.
Recommendations: We recommend updating the stream course and extending the anadromous portion of this stream to the point of our last two coho captured.

Table 99.–113-41-10190-2013 Survey Data.

Waypoints	Latitude	Latitude	Notes	Sample Effort	Sample Results
53	57.0559	-135.312	Gordon and Rick captured a Coho on the margins of Kaelke pond.		
54	57.0568	-135.3119	Outlet of stream into pond. So far just Dolly Varden in the mouth. Captured a Coho at the mouth, finally!	EF	1 CO and couple of DV
55	57.0569	-135.3120	Rick and Gordon caught two Coho in log weir pool above pond.	EF	2 CO
56	57.0569	-135.3123	Gordon handnetted two Coho, similar habitat.	HN	2 CO
57	57.0570	-135.3123	Captured another Coho.	EF	1 CO
58	57.0570	-135.3124	Gordon netted a Coho in large still pool with gravel substrate.	EF	1 CO
59	57.0574	-135.3128	Gordon captured two Coho and one Dolly Varden.	EF	2 CO and 1 DV
60	57.0575	-135.3127	Coho captured two Coho above woody, twisty section in shallow riffle.	EF	2 CO
61	57.0575	-135.3133	Coho captured two Coho in large still pool amongst mossy logs.	EF	2 CO
62	57.0577	-135.3134	Coho captured by Gordon.	EF	1 CO
63	57.0580	-135.3136	Coho captured in calm pool.	EF	1 CO
64	57.0584	-135.3143	Coho captured two in slow run.	EF	2 CO
65	57.0588	-135.3148	Two Coho captured in shallow pool.	EF	2 CO
66	57.0592	-135.3149	Pool below small foot bridge, saw schooling Coho.	VI	CO

67	57.0592	-135.3150	Coho captured just below foot bridge.	EF	1 CO
68	57.0599	-135.3157	Two Coho captured in still pool.	EF	2 CO
69	57.0601	-135.3159	Coho captured above subsurface flow section in shallow riffle.	EF	1 CO
70	57.0602	-135.3160	Two Coho captured by Rick and Gordon in large corner pool.	EF	2 CO
71	57.0604	-135.3163	Pocket dial.		
72	57.0611	-135.3163	E-battery died went back retrieved and started again. Two Coho and one Dolly Varden.	EF	2 CO and 1 DV
73	57.0613	-135.3161	Tributary river left. Might be washed out. Fishing up.		
74	57.0614	-135.3161	One Dolly Varden and one Coho in above mentioned tributary on river left.		
75	57.0616	-135.3158	Flow from tributary ends here. There is a defined channel, but no H2O. Also no barrier to spot fish. Worth further investigation @ higher H2O.		
76	57.0617	-135.3167	One Coho about 65mm in small pool flow has diminished a bit. Also got one Dolly Varden about 50mm.	EF	1 CO about 65mm and 1 DV about 50mm
77	57.0617	-135.3171	One Coho.	EF	1 CO
78	57.0616	-135.3176	Gradient change. Creek becomes series of deep semi-stagnant pools. Caught one Dolly Varden in deep pool about 100mm.	EF	1 DV about 100mm
79	57.0617	-135.3177	Pools end here goes subsurface around base of small hill. End survey.		

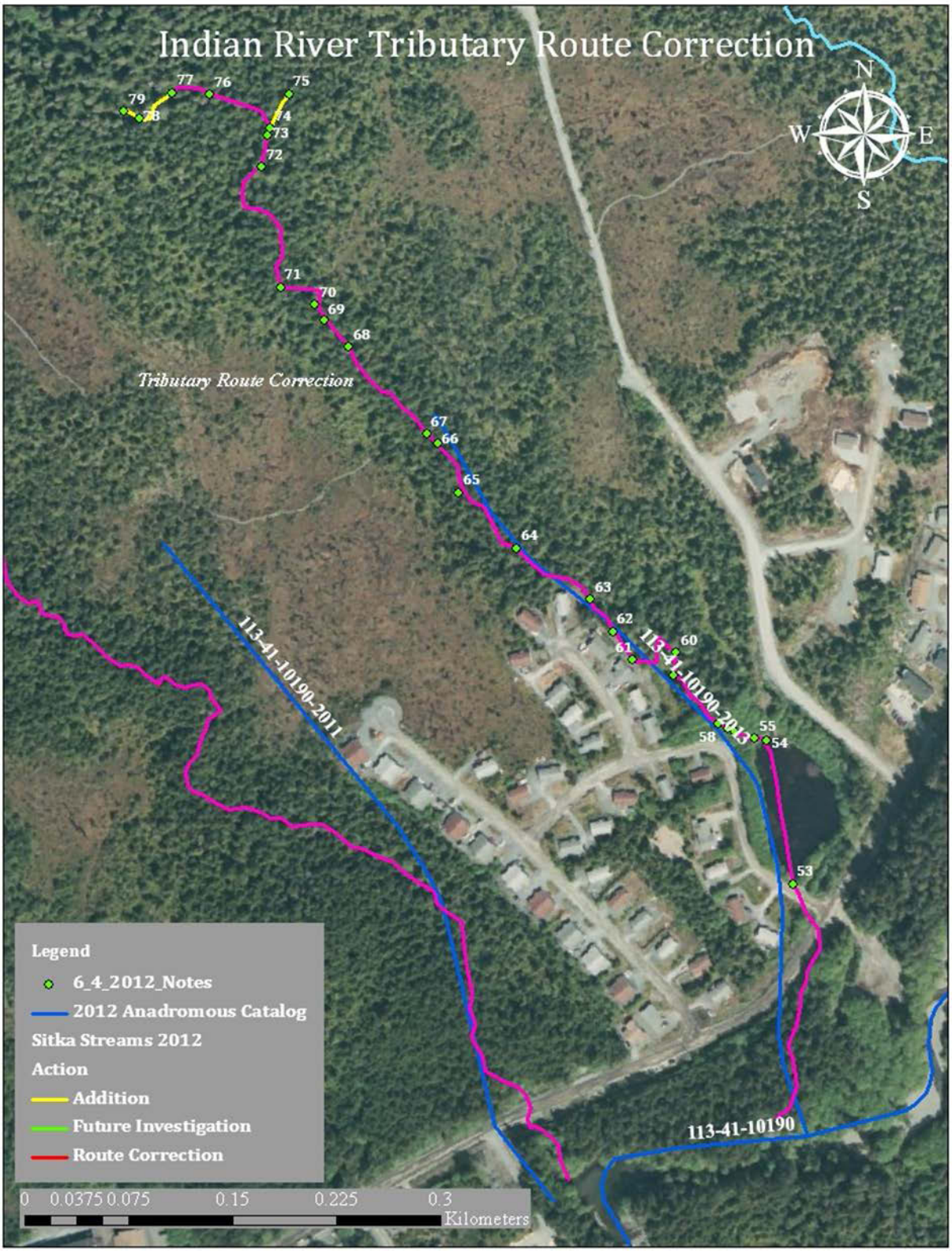

Figure 200: Indian River Tributary route correction map.

STREAM: 113-41-10190-2011 ROUTE CORRECTION

Watershed: Billy Basin
MTRS: Section 36, Township 55 S, Range 63 E, Sitka A-4
Date Surveyed*:* June 2, 2012
Findings: This stream provides good rearing habitat for Juvenile coho salmon. We captured coho nearly all the way to the top of this stream.
Recommendations: We recommend updating the stream route and extending the top of the anadromous portion to the point of our last coho.

Table 100.–113-41-10190-2011 Survey Data

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
16	57.0579	-135.3182	Coho about 65mm.	HN	1 CO
17	57.0580	-135.3185	Two Coho and Rick only gets one.	EF	2 CO
18	57.0580	-135.3188	One Coho about 65mm by Rick.	EF	1 CO
19	57.0582	-135.3190	Two Coho by Rick and one Dolly Varden by Gordon.	EF	2 CO and DV
20	57.0584	-135.3195	One Coho by Gordon and one Dolly Varden by Rick.	EF	1 CO and DV
21	57.0586	-135.3199	Two Coho with one caught by Gordon and other by Rick.	EF	2 CO
22	57.0589	-135.3202	One Coho by Gordon.	EF	1 CO
23	57.0590	-135.3202	Two Coho.	EF	2CO
24	57.0595	-135.3204	Tributary river left, large pond with lots of skunk cabbage, dies quickly no need to track. Got two Coho in main stem @ confluence.	EF	2 CO
25	57.0596	-135.3209	Two Coho and one Dolly Varden. H2O is losing flow, much more stagnant.	EF	2 CO and DV
26	57.0598	-135.3213	Tributary river right, not worth fishing runs about 12'. One Coho in main stem.	EF	1 CO
27	57.0600	-135.3217	One Coho.	EF	1 CO
28	57.0601	-135.3217	Two Coho.	EF	2 CO
29	57.0607	-135.3225	One Coho.	EF	1 CO
30	57.0611	-135.3228	Two Coho in pool with deep undercut banks and lots of security.	EF	2 CO
31	57.0614	-135.3230	Possible end. H2O goes subsurface. It reappears 35'.		

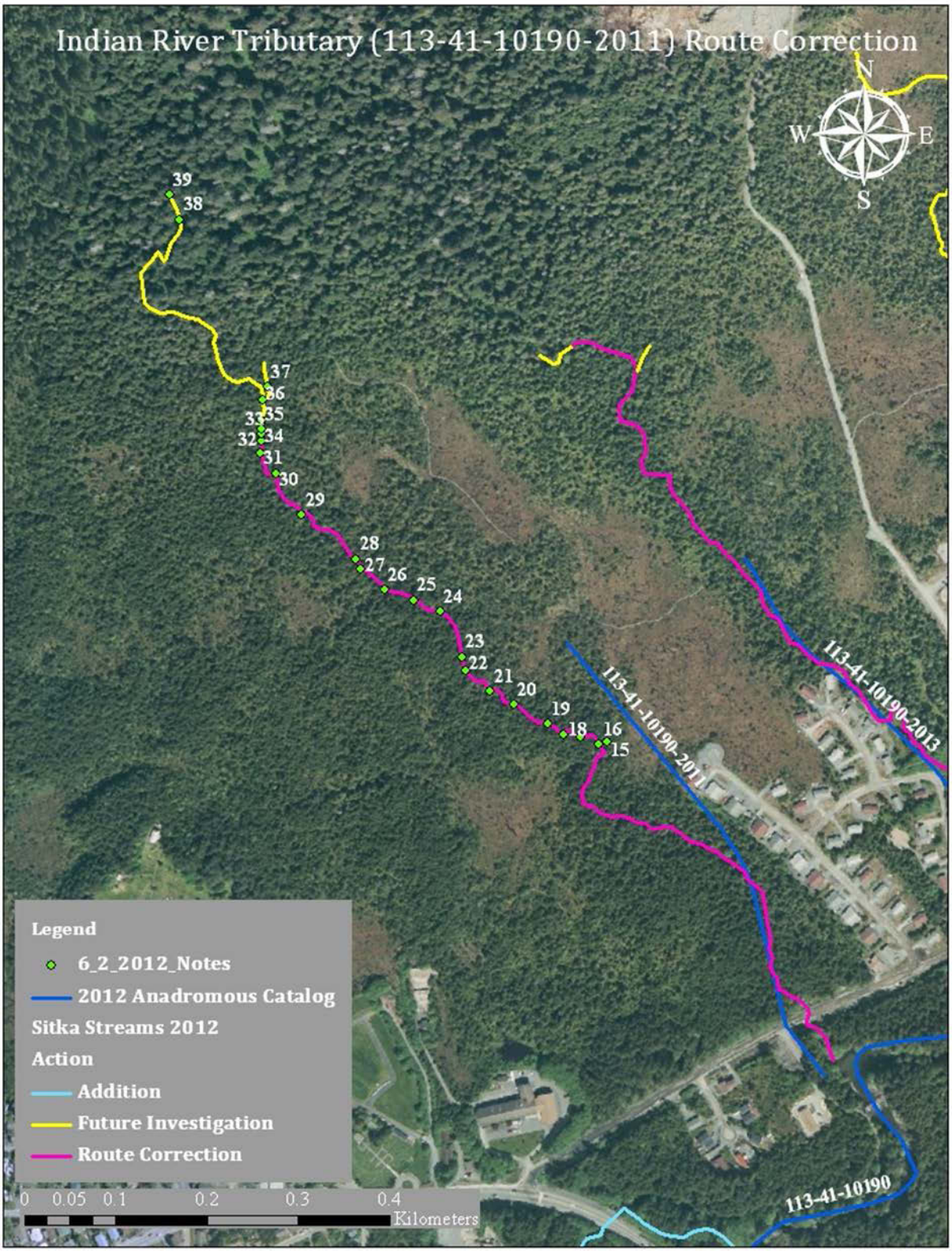

Figure 201. – 113-41-10190-2011 route correction map.

INDIAN RIVER TRIBUTARY ADDITION 15

Stream: Indian River Tributary: 113-41-10190-2030 Tributary Addition 15
Watershed: Billy Basin
MTRS: Section: 21 Township: 55 S Range: 64 E, Sitka A-4
Date Surveyed: June 27-28, 2012
Findings: This stream provides excellent rearing habitat for coho salmon and Dolly Varden char.
Recommendations: We recommend adding this stream course to the Anadromous Waters Catalog.

Table 101.–Indian River Tributary 15 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
39	57.0790	-135.2738	Trib entering river left, tracking and shocking up.		
40	57.0790	-135.2736	Trib entering river left, tracking and shocking up.		
41	57.0790	-135.2733	Electrofished and got 1 DV about 50 mm.	EF	1 DV - 50mm
47	57.0792	-135.2729	Electrofished and got 1 DV about 35 mm and 2 coho about 25 mm.	EF	1 DV - 35 mm, 2 CO - 25 mm
48	57.0796	-135.2722	Electrofished and got 1 coho about 30 mm and 1 DV about 25 mm.	EF	1 CO- 20 mm, 1 DV - 25 mm

Figure 202.–Looking upstream on Indian River tributary 15.

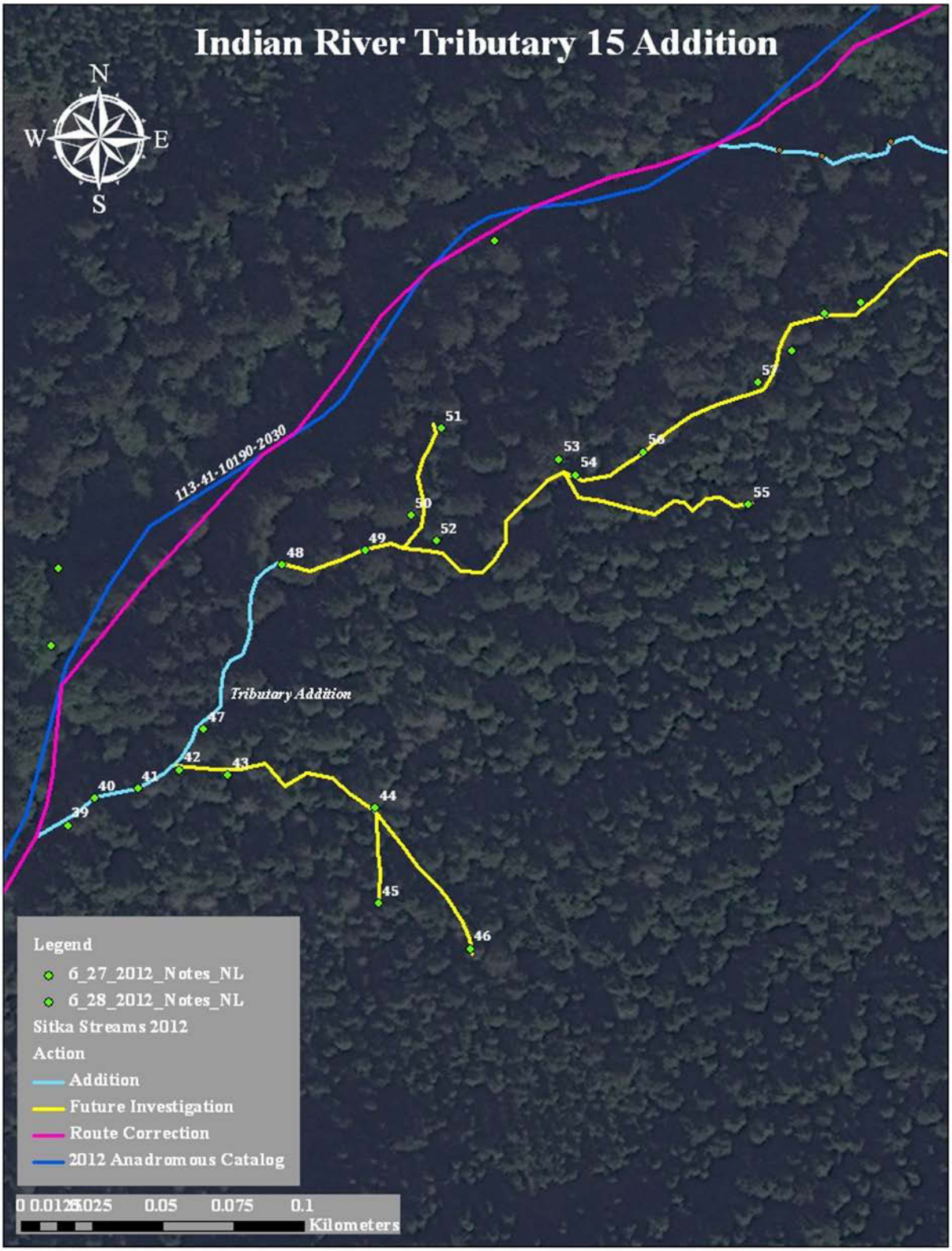

Figure 203.–Indian River tributary addition 15 map.

GRANITE CREEK MAINSTEM ROUTE CORRECTION

Stream: Granite Creek Tributary: 113-41-10170-2008
Watershed: Sitka Sound – Frontal Pacific Ocean
MTRS: Section: 10, 15 Township: 55 S Range: 63 E, Sitka A-5
Date Surveyed*:* May 15-17 & June 7, 2012
Findings: This stream provides excellent rearing habitat for coho salmon and Dolly Varden char.
Recommendations: We recommend correcting this stream course in the Anadromous Waters Catalog.

Table 102.–Granite Creek Mainstem Survey Data

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
001	57.1016	-135.4014	Mouth of the creek braided at the end.		
002	57.1014	-135.4004	Tributary river right with high turbidity and heavy iron concentrations. Very orange color.		
003	57.1012	-135.3996	200v, 30Hz and 25% duty cycle. Coho in tributary and it rolled hard, changed volts to 150v. Tributary becomes braided here. Volt back to 175v.	EF	1 CO
004	57.1012	-135.3993	Coho about 65mm and about 70 DS of HPR and about 30 US one Dolly Varden about 90mm.	EF	1 CO about 65mm and 1 DV about 90mm
005	57.1014	-135.3990	Two Coho with one being 65mm and other 95mm. This is where creek comes from under HPR	EF	2 CO between 65mm and 95mm
006	57.1014	-135.3986	One Coho about 80mm	EF	1 CO about 80mm
007	57.1031	-135.3974	Upper extent of tributary. Comes as drainage from the golf course.		
008	57.1029	-135.3980	Drainage from golf course runs into culvert, see photos (1). Small creek enters on river right, drainage from wetlands.		
009	57.1009	-135.3984	Creek crosses under HPR.		
010	57.1034	-135.3897	Tributary on river right, comes from 2 perched culverts under the road about 50ft from creek.		
011	57.1034	-135.3888	Fork in creek river right is catalonged river left is not. We are headed up river left. Main fork see photo (1). Up to 300v.		
012	57.1033	-135.3883	Possible velocity barrier.		
013	57.1047	-135.3832	End of potential anadromous waters on Granite Creek. Huge waterfall! This stretch would be awesome habitat if fish could get up here mitigation opportunity!		

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
014	57.1042	-135.3881	Inlet of huge culvert under quarry road. This is the cataloged tributary on Granite Creek. Heading up.		
015	57.1047	-135.3880	Nasty little feeder stream, lots of milky solids in the water.		
016	57.1049	-135.3876	Excavated pond on river right, lots of vegatation.		
017	57.1053	-135.3868	Muddy little ditch cataloged to settling ponds, between river.		
018	57.1050	-135.3874	Pocket dial		
019	57.1052	-135.3870	Little feeder creek meets Granite Creek tributary.		
020	57.1055	-135.3868	Two Coho at dogleg in little leech creek.	EF	2 CO
021	57.1079	-135.3851	Top of little leech creek. No more Coho.		
022	57.1080	-135.3851	Small tributary on river right. See book photo.		
023	57.1087	-135.3838	Outlet of stream (tributary) into Granite Creek, big tributary leading up to shock.		
024	57.1087	-135.3836	Captured two tiny Dolly Varden in this tributary. Turned volts down to 325v. Just captured one Coho.	EF	1 CO and 2 tiny DV
025	57.1085	-135.3828	Old logging road crossing the stream. We haven't caught any Coho, just Dolly Varden.	EF	DV
026	57.1084	-135.3825	Ending tributary survey.		
027	57.1056	-135.3858	Outlet of 2 pipes in quarry. 2 big smolt Coho!! This stream leads to two settling ponds that are connected by a battery of 3 plastic pipes. Drawing in notes.	EF	2 big CO smolts
029	57.1041	-135.3882	Back on main quarry road Heading back down the Granite Creek tributary.		
030	57.1035	-135.3887	Back at confluence of Granite.		

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
031	57.1088	-135.3834	Resuming E-fishing on river left tributary to Granite Creek. Settings: 310v, 30Hz and 25% duty cycle.		
032	57.1088	-135.3839	Very small inlet stream on river right. No fish habitat.		
033	57.1094	-135.3815	Tributary enters river right. Begin tracking and shocking upstream.		
034	57.1094	-135.3815	Captured one Coho about 40mm, continuing upstream.	EF	1 CO about 40mm
035	57.1095	-135.3814	Captured one Coho about 45mm in small pool. Continuing upstream.	EF	1 CO about 45mm
036	57.1098	-135.3815	Upper extent of potential fish habitat. Gradient increases with very low flows.		
037	57.1095	-135.3811	Tributary enters on river left. Begin shocking and tracking upstream.		
038	57.1095	-135.3810	Two Coho captured between 45-55mm.	EF	2 COo between 45-55mm
039	57.1095	-135.3810	Pocket dial.		
040	57.1094	-135.3808	One Coho about 38mm captured.	EF	1 CO about 38mm
041	57.1093	-135.3809	Small tributary enter on river left. One Dolly Varden about 35mm captured. Shocking and tracking up smaller side first.	EF	1 DV about 35mm
042	57.1093	-135.3808	Top of smaller tributary - disconnected pools above. Back to main tributary (notice WPT order got messed up)		
043	57.1093	-135.3805	One Coho captured and about 50mm. Continuing up tributary.	EF	1 CO about 50mm
044	57.1092	-135.3798	Gradient barrier.		
045	57.1102	-135.3795	Tributary with moderate flow enters on river left. Tracking and e-fishing up.		
046	57.1102	-135.3793	One Dolly Varden about 50mm captured.	EF	1 DV about 50mm
047	57.1101	-135.3793	One Pink salmon about 30mm captured. See photo and one Coho about 50mm.	EF	1 CO about 50mm and 1 P about 30mm
048	57.1097	-135.3792	One pink salmon fry about 30mm, two Dolly Varden between 50-80mm.	EF	1 P about 30mm and 2 DV between 50-80mm
049	57.1095	-135.3791	Two Dolly Varden about 50mm.	EF	2 DV about 50mm
050	57.1092	-135.3787	Upper extent of potential fish passage. Very steep, bedrock channel above with cascading falls.		

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
51	57.1102	-135.3793	Confluence of tributary we finished on yesterday. Heading up mainstem.		
52	57.1103	-135.3793	Tributary on river left. Shocking 310v.		
53	57.1105	-135.3790	This tributary ends in wetlands area.		
54	57.1106	-135.3791	Small tributary river right.		
55	57.1110	-135.3794	Tributary ends at gradient with lack of flow barrier.		
56	57.1116	-135.3780	Tributary river left.		
57	57.1118	-135.3779	Coho in tributary about 70mm. See photo (1). Also one Dolly Varden about 35mm.	EF	1 CO about 70mm and 1 DV about 35mm
58	57.1118	-135.3778	Gradient barrier from tributary, 57 Wp. Caught two Dolly Varden in this tributary and one Coho.	EF	1 CO and 2 DV
59	57.1118	-135.3781	Tributary on river left. Visual ID on Dolly Varden at head waters. Lack of flow is the barrier.	VI	1 DV
60	57.1122	-135.3784	Tributary river left. No fish.		
61	57.1123	-135.3788	Fork in the creek with equal flow fished the confluence, found nothing. Headed up the river left fork. Salmon vertebrae on bank.		
62	57.1127	-135.3788	Two Coho in fork.	EF	2 CO
63	57.1128	-135.3788	Tributary on river right		
64	57.1131	-135.3786	Coho about 70mm. Visual on another Coho not netted. On 2nd go around was netted!	EF	2 CO and one was 70mm
65	57.1134	-135.3784	End of tributary, ended in wetland/forest mosaic.		
66	57.1131	-135.3771	Gradient barrier,		
67	57.1134	-135.3794	Two Coho netted, and many salmon eggs, old,	EF	2 CO
68	57.1138	-135.3791	Tributary river right		
69	57.1141	-135.3794	Coho about 65mm and another visual, but unable to net.	EF/VI	2 CO with one being 65mm and other unknown
70	57.1141	-135.3796	Coho about 65mm, netted.	EF	1 CO about 65mm
71	57.1145	-135.3796	End of tributary. H2O becomes stagnant.		
72	57.1147	-135.3782	Tributary river right.		
73	57.1149	-135.3773	Gradient barrier for previous tributary.		

74	57.1161	-135.3776	Caught a Dolly Varden here. This is a ways up the creek, have not seen any fish in a while. There was no barrier, however no Coho.	EF	1 DV
75	57.1168	-135.3778	End of the survey.		
76	57.1141	-135.3787	Hiking out saw numerous salmon bones on side of creek.		

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Result
001	57.1157	-135.3780	Beginning new area-not previously tracked. Low water, subterranean flow present-still connected flow. Continue tracking upstream.		
002	57.1160	-135.3781	Attempted e-fishing (300V, 30Hx, 12% duty cycle), no fish caught or seen. Very small, disconnected pools, tributary enters on river right. Continue up mainstem.	EF	no fish caught
003	57.1161	-135.3774	Attempted e-fishing, caught 2 unknown salmonids visually identified-30mm. Continuing upstream.	EF	2 unknown salmonids, -30mm
004	57.1162	-135.3775	Tributary enters on river left, begin tracking upstream.		
005	57.1161	-135.3772	Upper extent of watered habitat-ends in dry marsh, no channel, little to no fish habitat present.		
006	57.1161	-135.3774	Attempted e-fishing deep pool at confluence (350V, 30Hz, 12% duty cycle).		
007	57.1162	-135.3775	Captured 1 unknown salmonid -25mm, orange tinted fins.		
008	57.1167	-135.3778	Very small tributary enters on river right, attemped e-fishing at confluence and at pool just above, cpatured 1 unknown salmonid -25mm, took several pictures looked more dv-like than last small salmonids	EF	1 unknown salmonid, -25mm
009	57.1168	-135.3778	Tributary enters on river left, begin tracking tributary.		
010	57.1172	-135.3771	Attempting e-fishing, small pool, habitat looks good, very low gradient-but difficult to fish due to many subterranean portions (350V, 30Hz, 12%duty cycle), no fish seen or caught…continue upstream.	EF	no fish caught
011	57.1172	-135.3756	Electrofished nice pool-captured 1 dv -55mm, medium waterfall -4.5ft, continuing upstream. New settings (450V, 30Hz, 12%duty cycle).	EF	1 DV -55mm
012	57.1173	-135.3751	Calling it the top-stream continues but gradient begins to increase and flow is very minimal.		

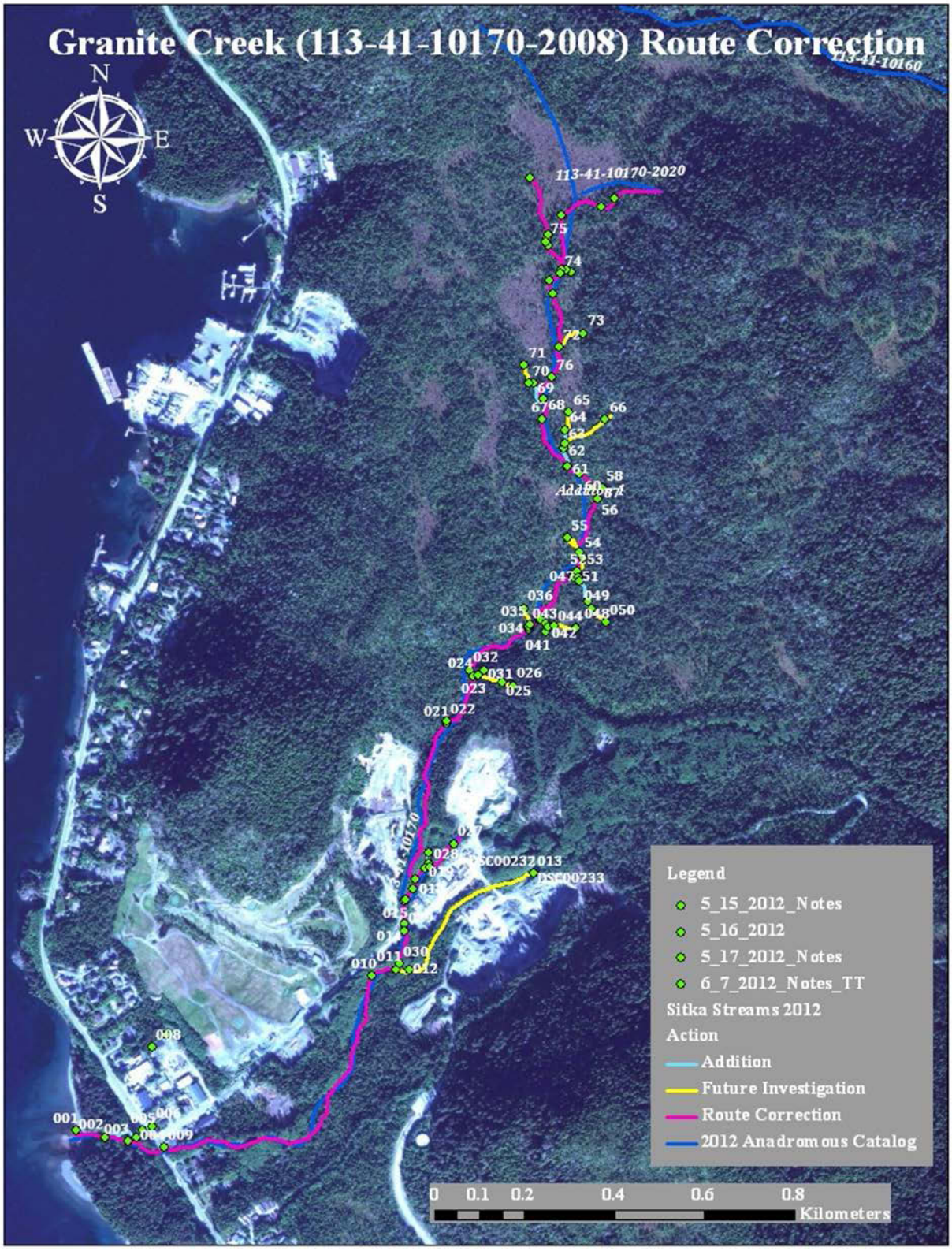

Figure 204.–Granite Creek mainstem route correction map.

GRANITE CREEK TRIBUTARY ADDITION 1

Stream: Stream No 113-41-10170-2008 Tributary Addition 1.
Watershed: Sitka Sound – Frontal Pacific Ocean
USGS Quadrangle: Sitka-A-5
MTRS: Section: 10 Township: 55 S Range: 63 E
Date Surveyed: May 16, 2012
Findings: This stream provides good coho salmon and Dolly Varden char rearing habitat.
Recommendations: We recommend adding this stream course in the Anadromous Waters Catalog.

Table 103.–Granite Creek Tributary 1 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Result
045	57.1102	-135.3795	Tributary with moderate flow enters on river left. Tracking and e-fishing up.		
046	57.1102	-135.3793	One Dolly Varden about 50mm captured.	EF	1 DV about 50mm
047	57.1101	-135.3793	One Pink salmon about 30mm captured. See photo and one Coho about 50mm.	EF	1 CO about 50mm and 1 Pink about 30mm
048	57.1097	-135.3792	One pink salmon fry about 30mm, two Dolly Varden between 50-80mm.	EF	1 Pink about 30mm and 2 DV between 50-80mm
049	57.1095	-135.3791	Two Dolly Varden about 50mm.	EF	2 DV about 50mm
050	57.1092	-135.3787	Upper extent of potential fish passage. Very steep, bedrock channel above with cascading falls.		

Figure 205.–Granite Creek tributary 1 waterfall barrier.

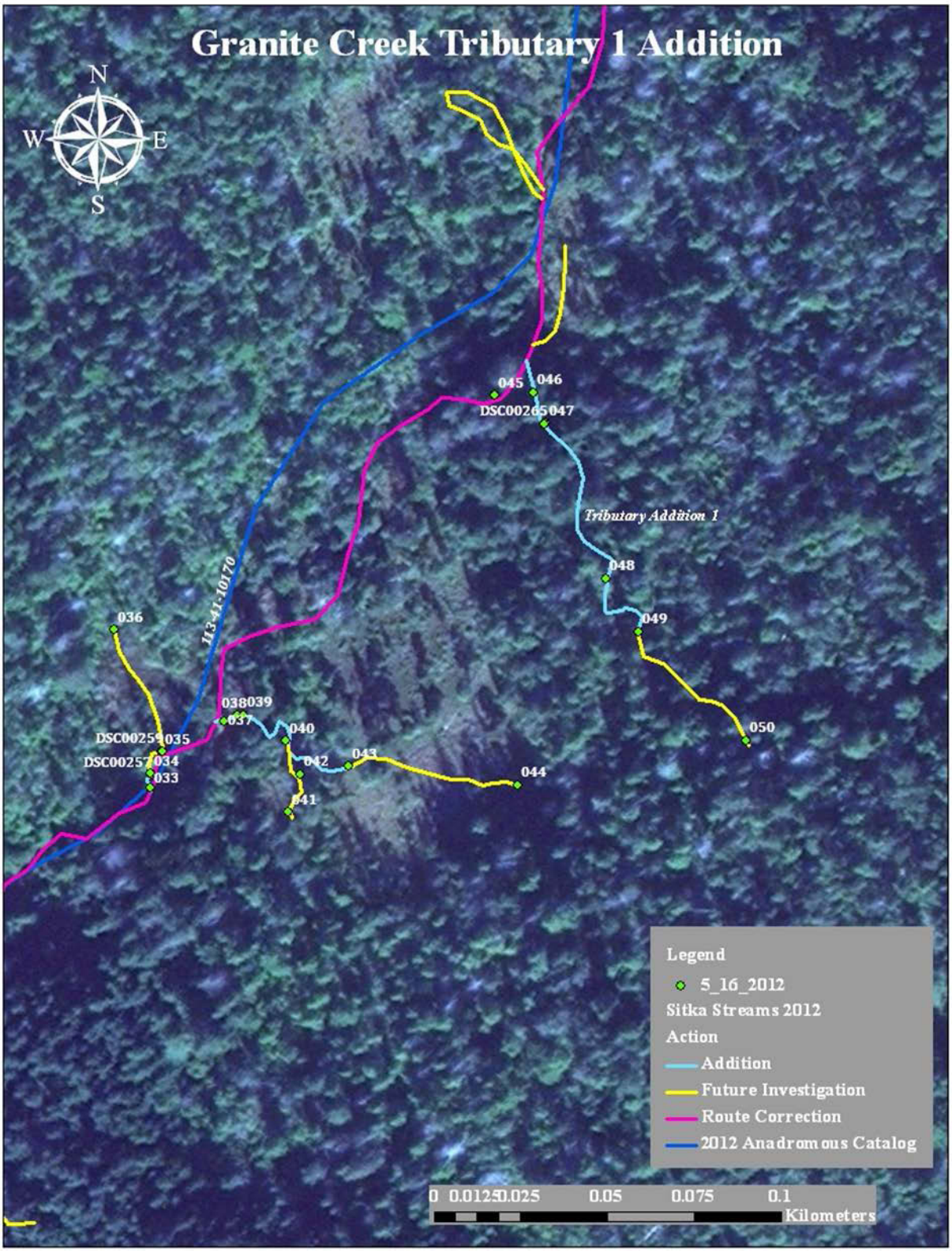

Figure 206.–Granite Creek tributary addition 1 map.

GRANITE CREEK TRIBUTARY 2 ADDITION

Stream: Stream No 113-41-10170-2008 Tributary Addition 2
Watershed: Sitka Sound – Frontal Pacific Ocean
MTRS: Section: 15 Township: 55 S Range: 63 E, Sitka A-5
Date Surveyed*:* May 15, 2012
Findings: This small stream provides some good coho rearing habitat. Although it is a short stream, it contains deep pools and good undercut banks which provide good protection for juvenile coho.
Recommendations: We recommend adding this stream course in the Anadromous Waters Catalog.

Table 104.–Granite Creek Tributary 2 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Result
032	57.1088	-135.3839	Very small inlet stream on river right. No fish habitat.		
033	57.1094	-135.3815	Tributary enters river right. Begin tracking and shocking upstream.		
034	57.1094	-135.3815	Captured one Coho about 40mm, continuing upstream.	EF	1 CO 40mm
035	57.1095	-135.3814	Captured one Coho about 45mm in small pool. Continuing upstream.	EF	1 CO 45mm
036	57.1098	-135.3815	Upper extent of potential fish habitat. Gradient increases with very low flows.		

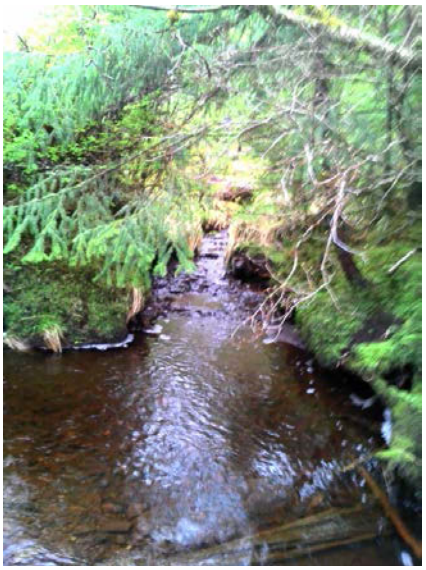

Figure 207.–Looking downstream on Granite Creek tributary 2.

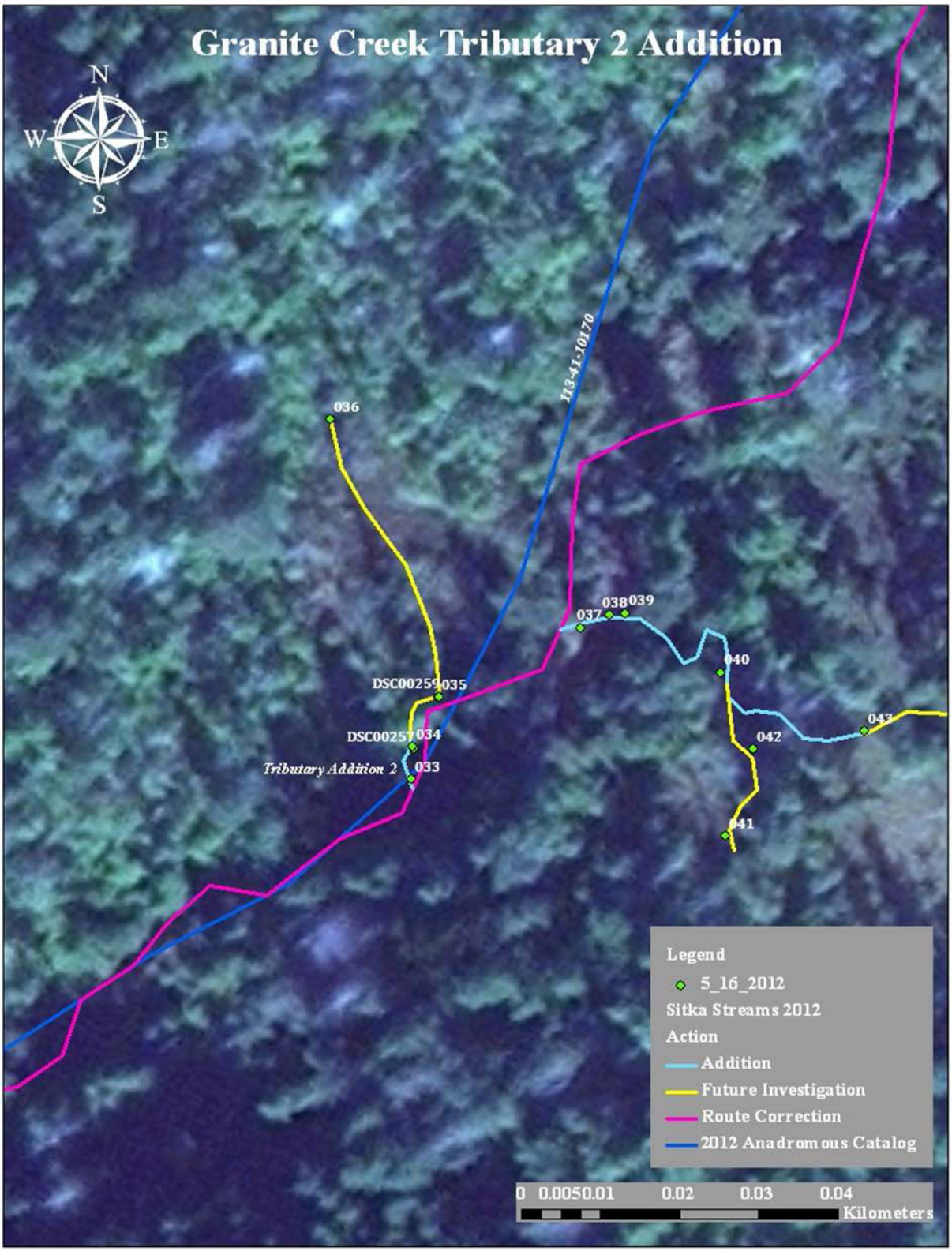

Figure 208.–Granite Creek tributary addition 2 map.

GRANITE CREEK TRIBUTARY ADDITION 3

Stream: Stream No 113-41-10170-2008 Tributary Addition 3
Watershed: Sitka Sound – Frontal Pacific Ocean
MTRS: Section: 15 Township: 55 S Range: 63 E, Sitka A-5
Date Surveyed: May 16, 2012
Findings: This small stream provides good coho salmon and Dolly Varden char rearing habitat.
Recommendations: We recommend adding this stream course in the Anadromous Waters Catalog.

Table 105.–Granite Creek Tributary 3 Survey Data

Waypoints	Latitude	Longitude	Notes	Sample Effort	Sample Results
037	57.1095	-135.3811	Tributary enters on river left. Begin shocking and tracking upstream.		
038	57.1095	-135.3810	Two Coho captured between 45-55mm.	EF	2 CO between 45-55mm
039	57.1095	-135.3810	Pocket dial.		
040	57.1094	-135.3808	One Coho about 38mm captured.	EF	1 CO about 38mm
041	57.1093	-135.3809	Small tributary enter on river left. One Dolly Varden about 35mm captured. Shocking and tracking up smaller side first.	EF	1 DV about 35mm
042	57.1093	-135.3808	Top of smaller tributary - disconnected pools above. Back to main tributary (notice WPT order got messed up).		
043	57.1093	-135.3805	One Coho captured and about 50mm. Continuing up tributary.	EF	1 CO about 50mm
044	57.1092	-135.3798	Gradient barrier.		
045	57.1102	-135.3795	Tributary with moderate flow enters on river left. Tracking and e-fishing up.		

Figure 209.–Coho salmon captured in Granite Creek tributary 3.

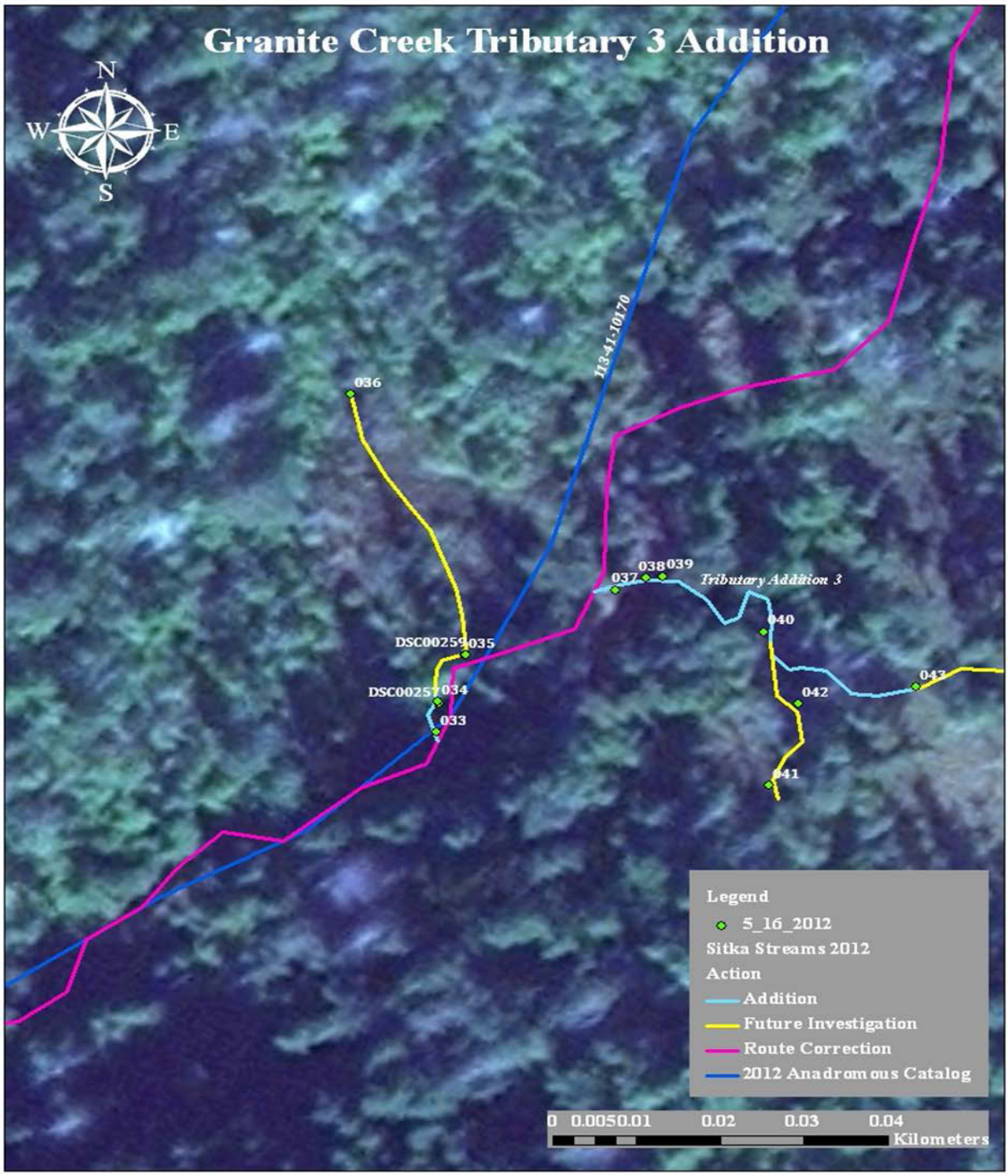

Figure 210.–Granite Creek tributary addition 3 map.

GRANITE CREEK TRIBUTARY ADDITION 4

Stream: Stream No 113-41-10170-2008 Tributary Addition 4.
Watershed: Sitka Sound – Frontal Pacific Ocean
MTRS: Section: 10 Township: 55 S Range: 63 E, Sitka A-5
Date Surveyed*:* May 17, 2012
Findings: This small stream provides good coho salmon and Dolly Varden char rearing habitat.
Recommendations: We recommend adding this stream course in the Anadromous Waters Catalog.

Table 106.–Granite Creek Tributary 4 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Result
61	57.1123	-135.3788	Fork in the creek with equal flow fished the confluence, found nothing. Headed up the river left fork. Salmon vertebrae on bank.		
62	57.1127	-135.3788	Two Coho in fork. .	EF	2 Coho
63	57.1128	-135.3788	Tributary on river right		
64	57.1131	-135.3786	Coho about 70mm. Visual on another Coho not netted. On 2nd go around was netted!	EF	2 Coho and one was 70mm
65	57.1134	-135.3784	End of tributary, ended in wetland/forest mosaic.		
66	57.1131	-135.3771	Gradient barrier		
67	57.1134	-135.3794	Two Coho netted,) and many salmon eggs, old.	EF	2 Coho
68	57.1138	-135.3791	Tributary river right		
69	57.1141	-135.3794	Coho about 65mm and another visual, but unable to net.	EF/VI	2 Coho with one being 65mm and other unknown
70	57.1141	-135.3796	Coho about 65mm, netted.	EF	1 Coho about 65mm
71	57.1145	-135.3796	End of tributary. H2O becomes stagnant.		
72	57.1147	-135.3782	Tributary river right.		
73	57.1149	-135.3772	Gradient barrier for previous tributary.		

Figure 211.–Nicole Legere and Matt Kern surveying Granite Creek tributary 4.

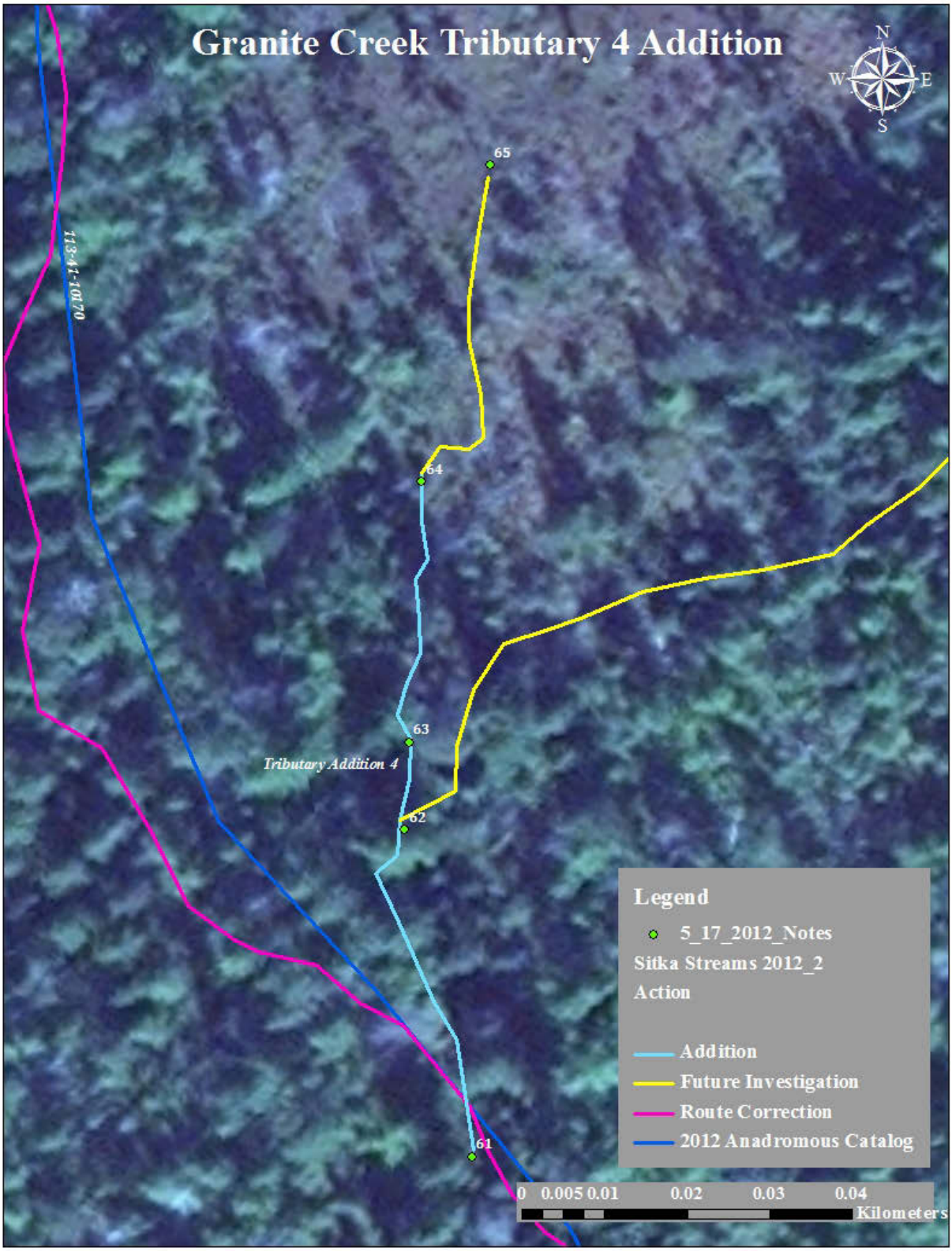

Figure 212.–Granite Creek tributary 4 addition map.

GRANITE CREEK TRIBUTARY ADDITION 5

Stream: Stream No 113-41-10170-2008 Tributary Addition 5
Watershed: Sitka Sound – Frontal Pacific Ocean
MTRS: Section: 10 Township: 55 S Range: 63 E, Sitka A-5
Date Surveyed*:* May 17, 2012
Findings: This small stream provides good coho salmon and Dolly Varden char rearing habitat.
Recommendations: We recommend adding this stream course in the Anadromous Waters Catalog.

Table 107.–Granite Creek Tributary 5 Survey Data

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
66	57.1131	-135.3771	Gradient barrier.		
67	57.1134	-135.3794	Two Coho netted, and many salmon eggs, old.	EF	2 CO
68	57.1138	-135.3791	Tributary river right		
69	57.1141	-135.3794	Coho about 65mm and another visual, but unable to net.	EF/VI	2 CO -65mm and other unknown
70	57.1141	-135.3796	Coho about 65mm, netted.	EF	1 CO 65mm
71	57.1145	-135.3796	End of tributary. Water becomes stagnant.		
72	57.1147	-135.3782	Tributary river right.		
73	57.1149	-135.3772	Gradient barrier for previous tributary.		

Figure 213.–Looking upstream on Granite Creek tributary addition 5.

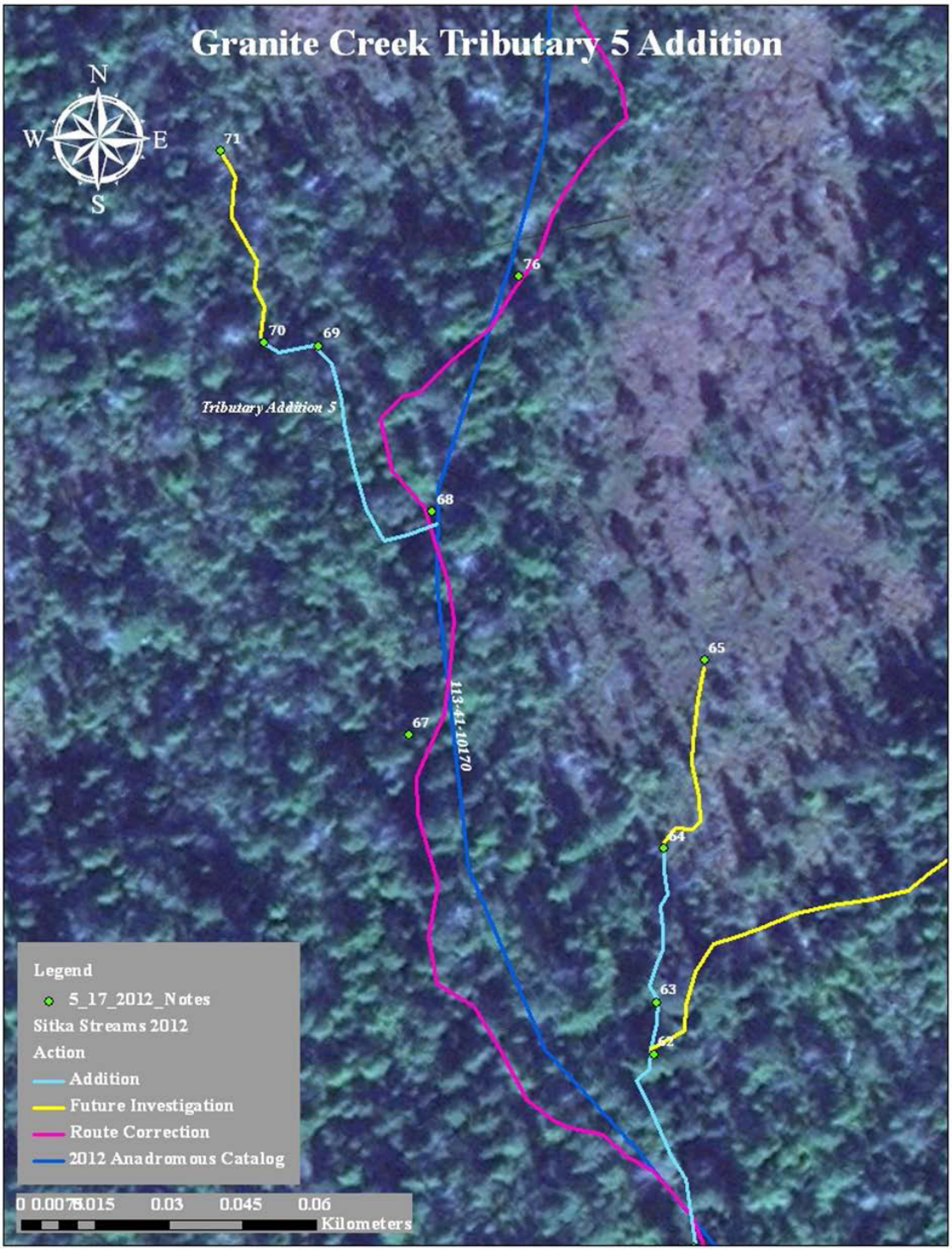

Figure 214.–Granite Creek tributary addition 5 map.

Table 108.– Start points of Sitka streams requiring future investigation.

Waypoint	Latitude	Longitude
1	57.0404	-135.2640
2	57.0369	-135.2570
3	57.0630	-135.3419
4	57.1034	-135.3890
5	57.1096	-135.3789
6	57.1094	-135.3809
7	57.1095	-135.3809
8	57.1142	-135.3800
9	57.1130	-135.3789
10	57.1128	-135.3789
11	57.1262	-135.3450
12	57.1271	-135.3500
13	57.1246	-135.3529
14	57.1234	-135.3470
15	57.1230	-135.3379
16	57.1235	-135.3359
17	57.0108	-135.1560
18	57.0149	-135.1470
19	57.0140	-135.1499
20	57.1225	-135.3200
21	57.1218	-135.3229
22	57.1223	-135.3200
23	57.1218	-135.3229
24	57.1228	-135.3379
25	57.1228	-135.3379
26	57.1228	-135.3399
27	57.1283	-135.3609
28	57.1244	-135.3249
29	57.1244	-135.3240
30	57.1244	-135.3240

31	57.1244	-135.3240
32	57.1242	-135.3329
33	57.1228	-135.3229
34	57.1353	-135.3679
35	57.0616	-135.3229
36	57.0619	-135.3227
37	57.0617	-135.3171
38	57.0613	-135.3161
39	57.0618	-135.3101
40	57.0640	-135.3054
41	57.0644	-135.3052
42	57.0650	-135.3044
43	57.0662	-135.3020
44	57.0663	-135.3016
45	57.0662	-135.3050
46	57.0666	-135.3061
47	57.0674	-135.3058
48	57.0650	-135.2960
49	57.0659	-135.2961
50	57.0660	-135.2959
51	57.0766	-135.2913
52	57.0767	-135.2915
53	57.0770	-135.2919
54	57.0783	-135.2898
55	57.0790	-135.2899
56	57.0787	-135.2892
57	57.0790	-135.2880
58	57.0790	-135.2872
59	57.0801	-135.2856
60	57.0805	-135.2831

61	57.0800	-135.2843
62	57.0807	-135.2823
63	57.0812	-135.2822
64	57.0821	-135.2821
65	57.0836	-135.2796
66	57.0770	-135.2837
67	57.0791	-135.2731
68	57.0788	-135.2720
69	57.0796	-135.2723
70	57.0796	-135.2715
71	57.0797	-135.2706
72	57.0805	-135.2672
73	57.0810	-135.2649
74	57.0809	-135.2590
75	57.0810	-135.2572
76	57.0809	-135.2596
77	57.0806	-135.2590

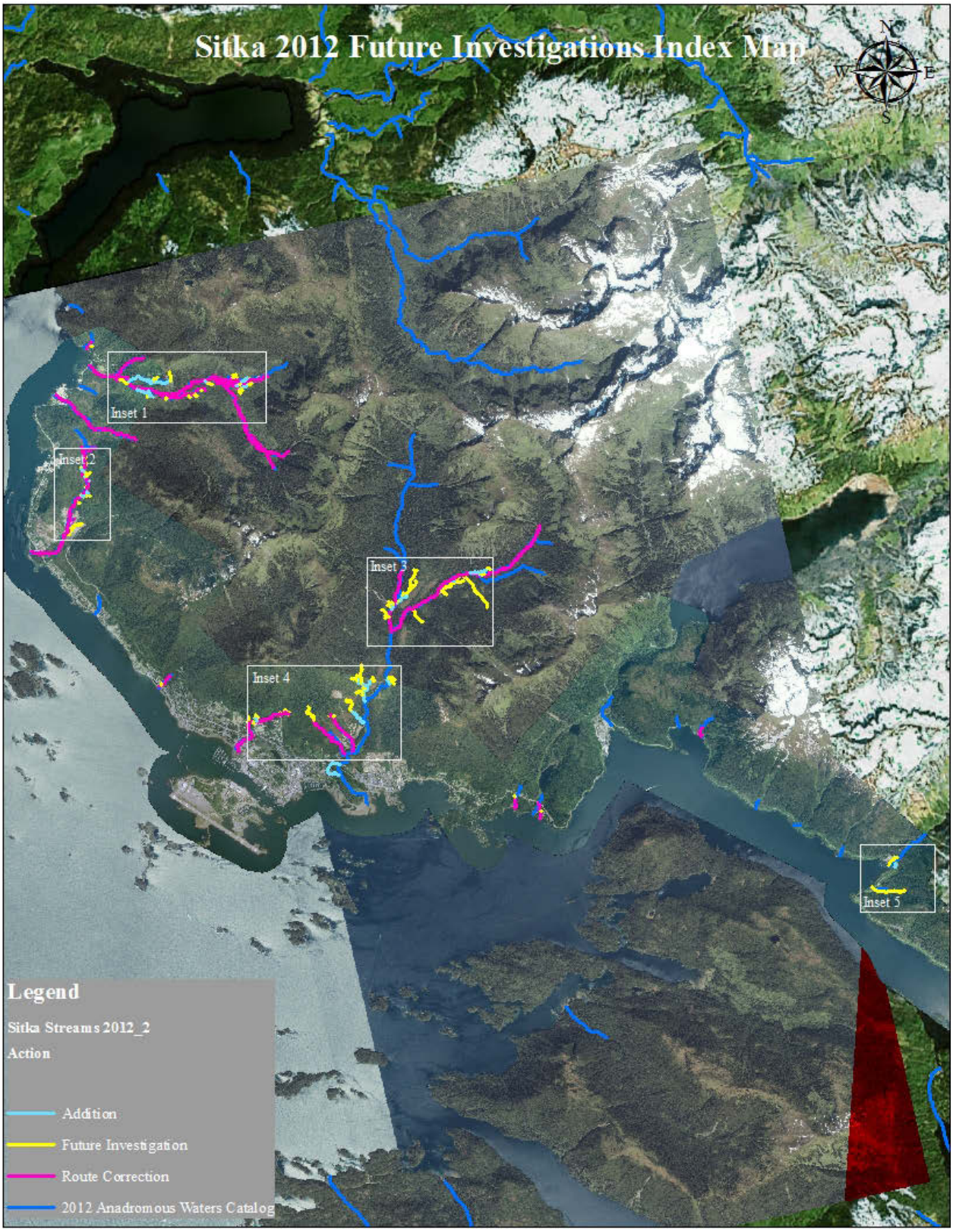

Figure 215.–Sitka 2012 Future Investigation Index Map

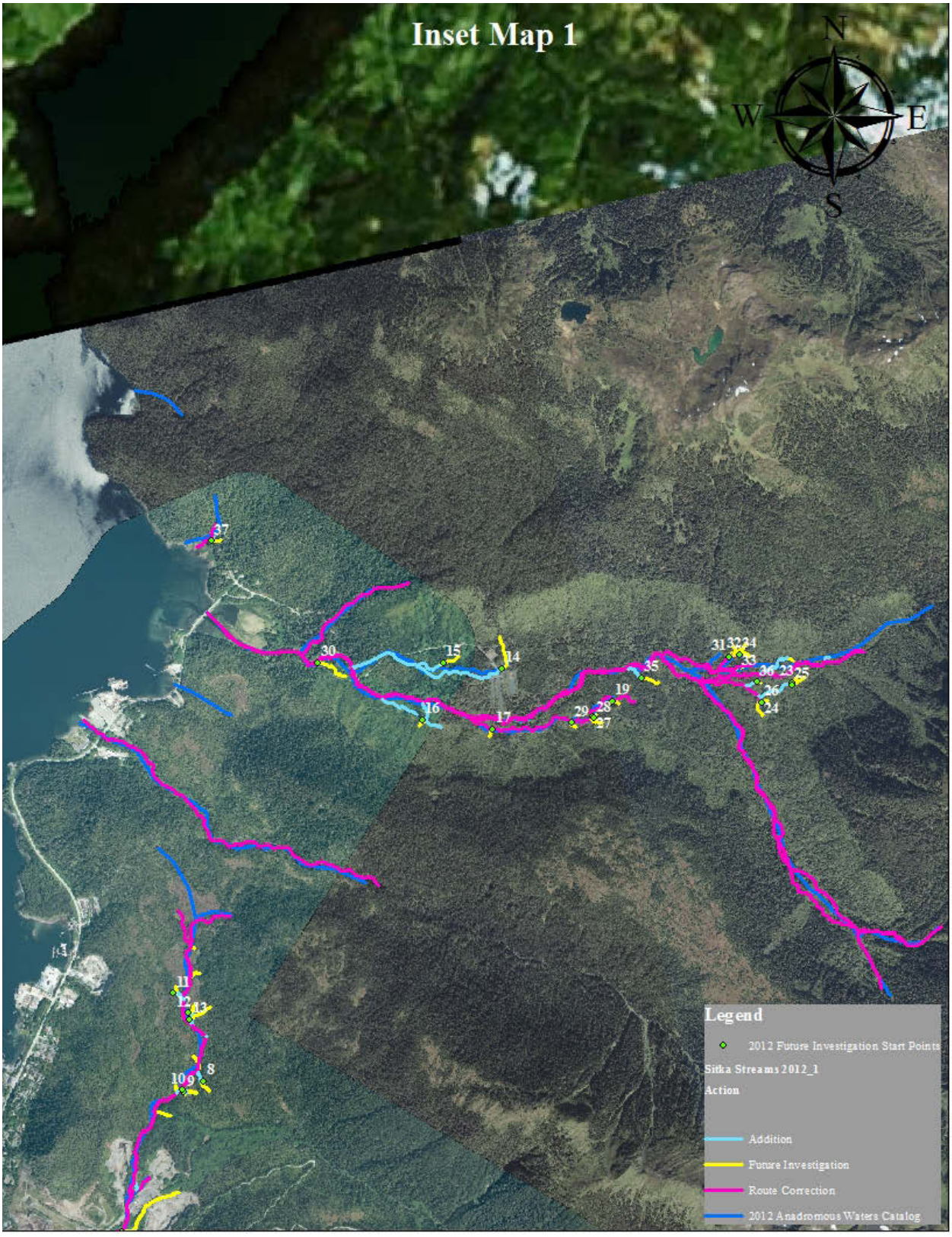

Figure 216.–2012 Sitka Future Investigation Inset 1 Map

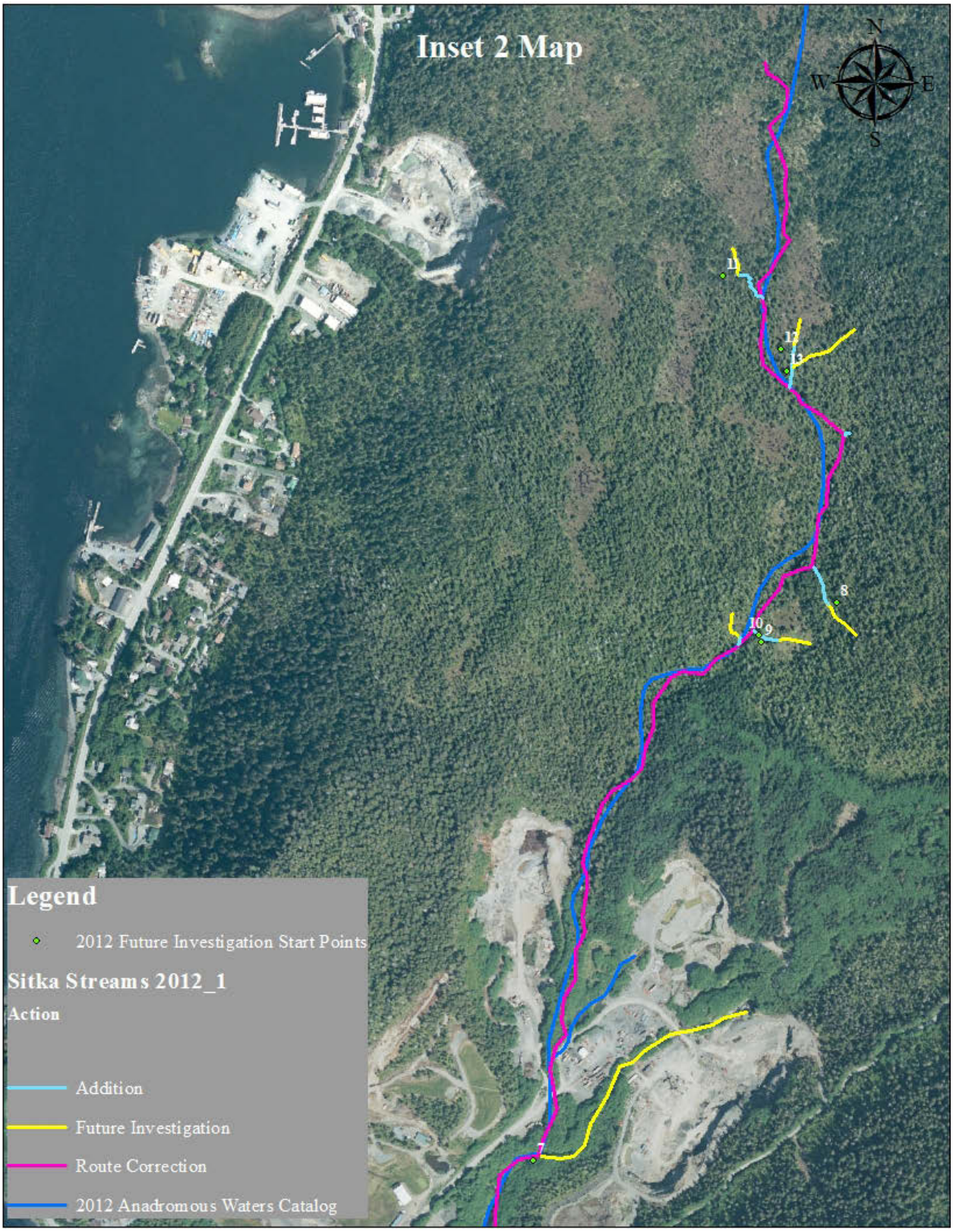

Figure 217.–2012 Sitka Future Investigation Inset 2 Map

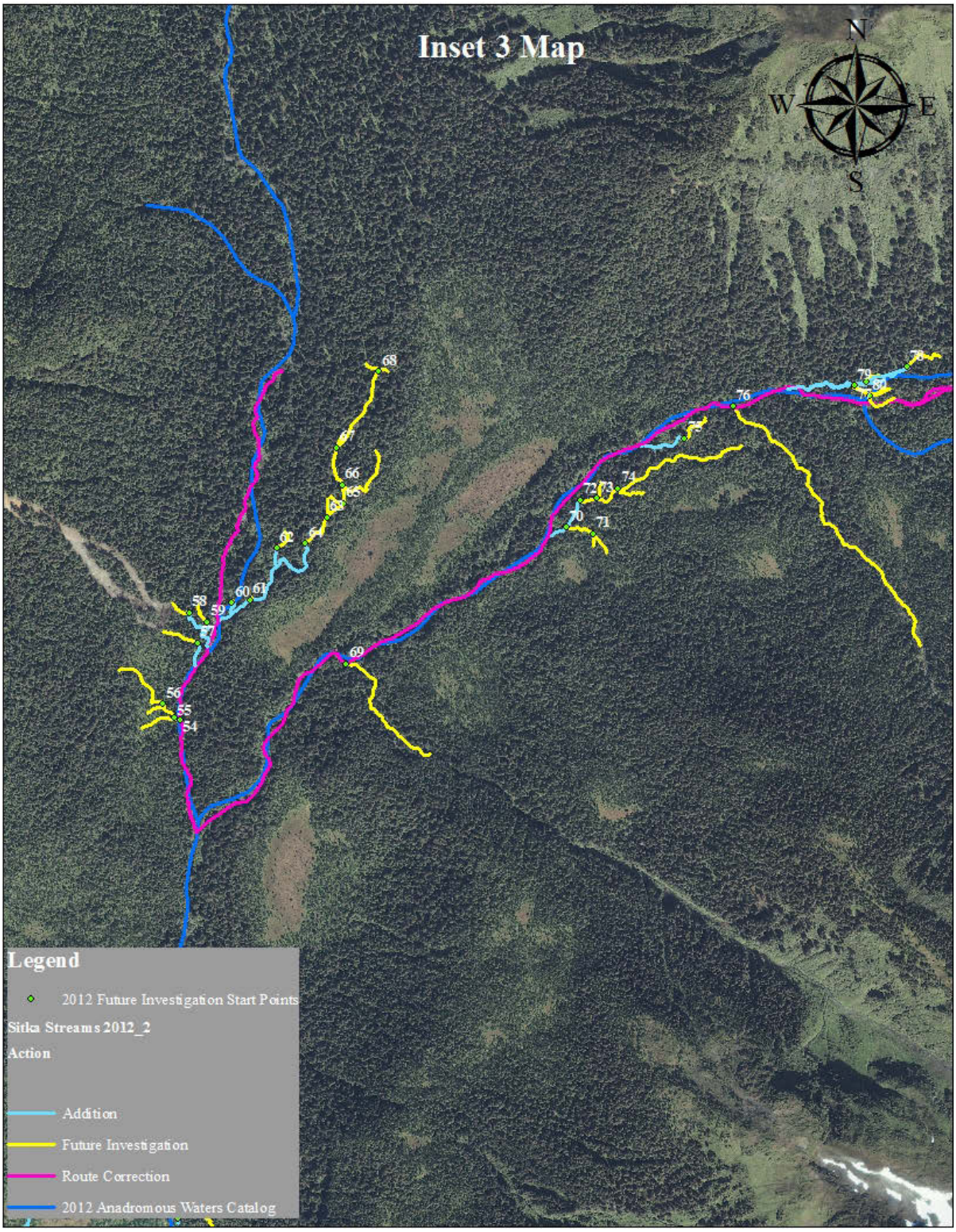

Figure 218.–2012 Sitka Future Investigation Inset 3 Map

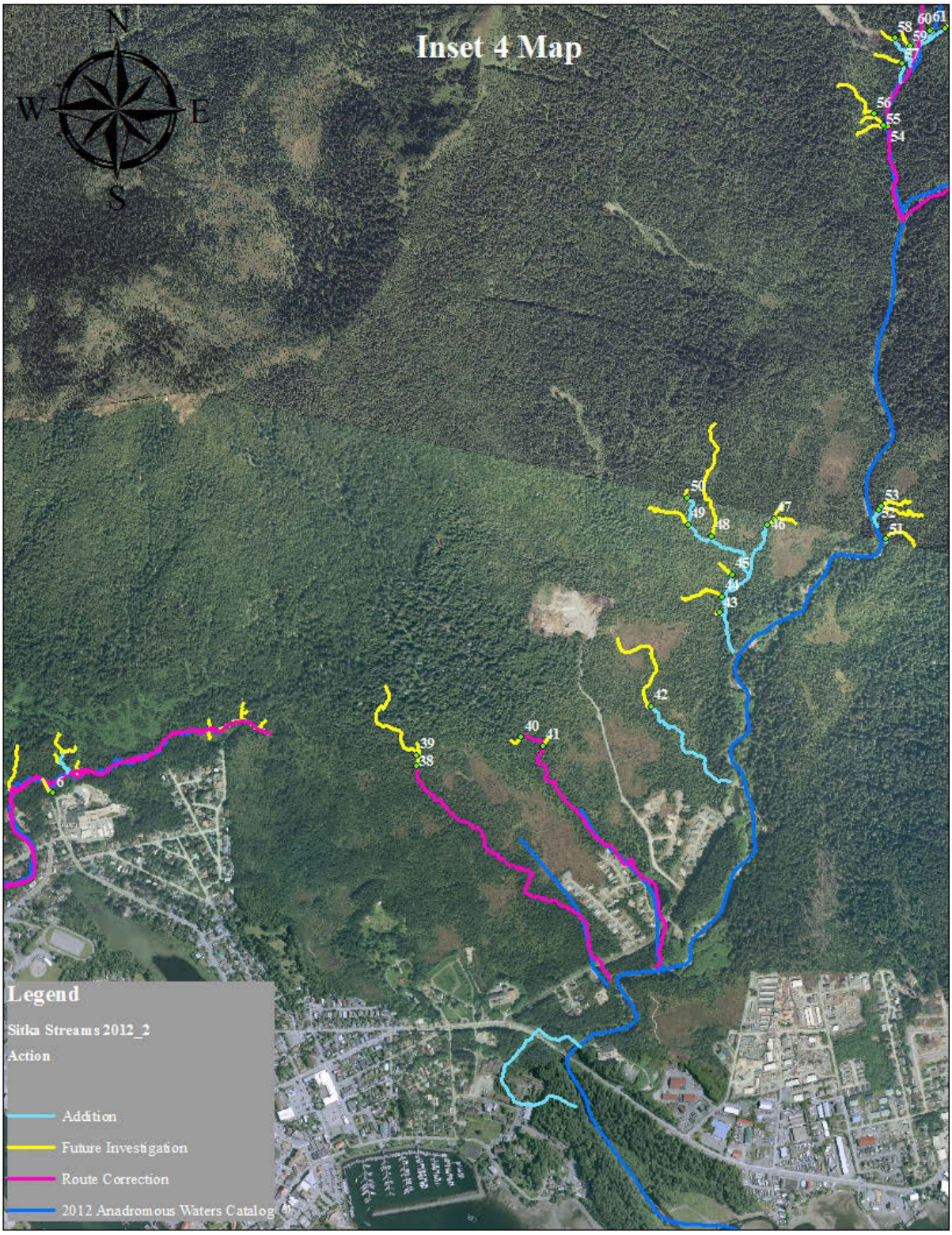

Figure 219.–2012 Sitka Future Investigation Inset 4 Map

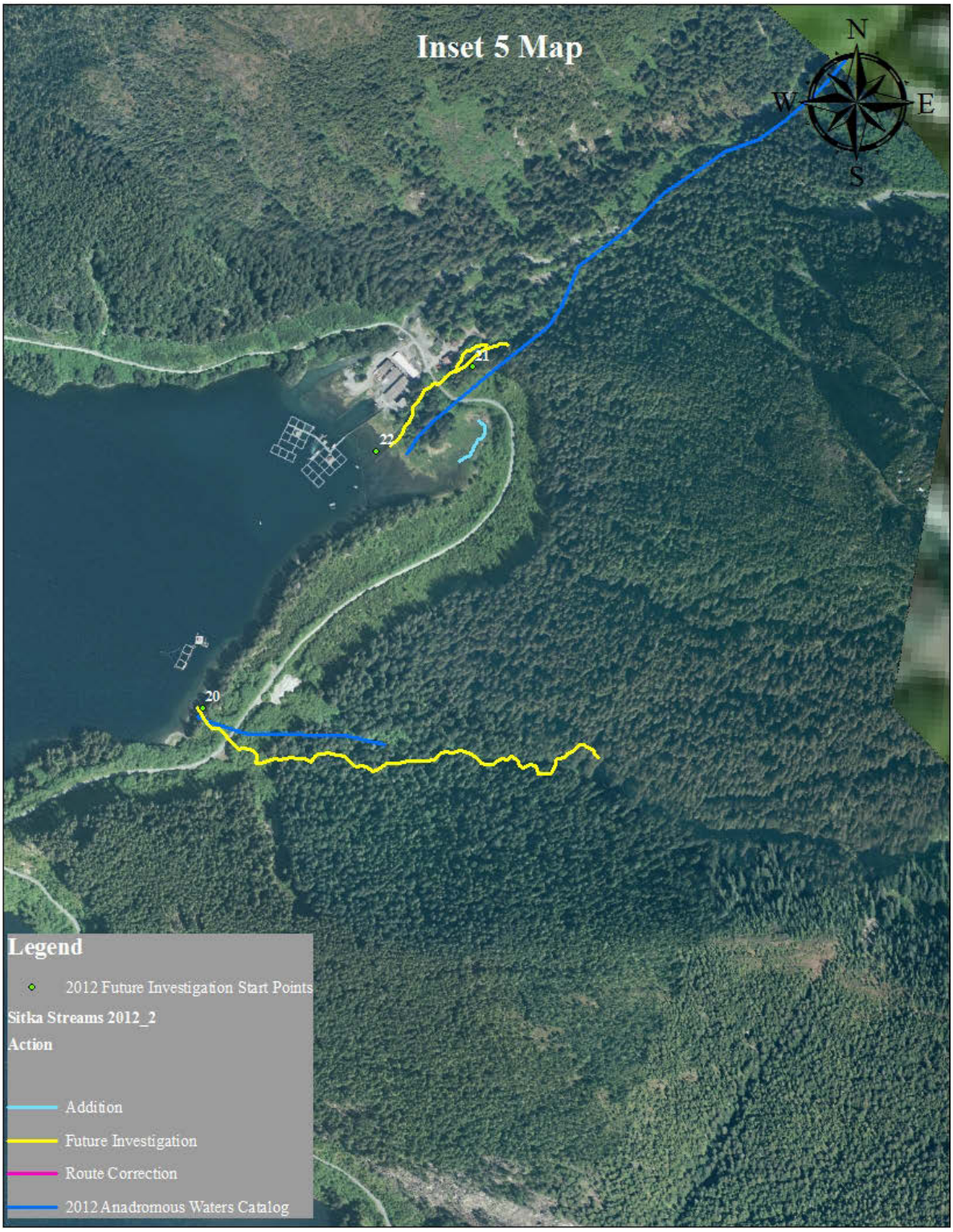

Figure 220.–2012 Sitka Future Investigation Inset 5 Map