Fishery Management Report No. 10-35

Pillar Creek Hatchery Annual Management Plan, 2010

by

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and

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October 2010

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

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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

FISHERY MANAGEMENT REPORT NO. 10-35

PILLAR CREEK HATCHERY ANNUAL MANAGEMENT PLAN, 2010

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October 2010

The Kodiak Regional Aquaculture Association (KRAA) funds the general operation of the Pillar Creek Hatchery and the facility's stocking and evaluation programs. The Alaska Department of Fish and Game, Division of Sport Fish, provides funding for the Chinook and coho salmon projects. Past funding for the Chinook project was also provided by the Kodiak King Salmon Sportfishing Tournament, the Kodiak Sport Fish Association and the Kodiak Association of Charter Boat Operators. The Division of Commercial Fisheries provides material and financial support for the management of returning adult runs enhanced or rehabilitated by hatchery stocking projects.

The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm. This publication has undergone regional peer review.

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This document should be cited as:
Finkle, H. and G. Byrne. 2010. Pillar Creek Hatchery annual management plan, 2010. Alaska Department of Fish and Game, Fishery Management Report No. 10-35, Anchorage.

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ABSTRACT

Pillar Creek Hatchery (PCH) was constructed in 1990 as a cooperative project between the Alaska Department of Fish and Game and the Kodiak Regional Aquaculture Association. The purpose of this annual management plan is to describe the activities to be undertaken by PCH in 2010.

An approximate total of 3,356,500 juvenile sockeye salmon will be released into 6 Kodiak Archipelago lakes in 2010. Roughly 510,000 early-run juvenile sockeye salmon (Afognak Lake broodstock) will be released into Hidden, Big Waterfall, and Crescent lakes. Approximately 2,846,500 late-run juvenile sockeye salmon (Saltery Lake broodstock) will be released into Spiridon Lake. An additional 193,500 late-run juvenile Little Kitoi broodstock sockeye salmon (stock of origin Saltery Lake) will be released into Spiridon Lake and 40,000 into Ruth Lake. Preliminary plans are to collect 1,418,000 early-run and 5,300,000 late-run sockeye salmon eggs in 2010.

Approximately 129,000 juvenile coho salmon will be released into 11 Kodiak Archipelago lakes and streams in 2010. Prior juvenile releases are expected to produce adult returns of approximately 5,300 coho salmon in 2010. The current 2010 egg-take goal for coho salmon is to collect 144,700 eggs.

An estimated 159,250 juvenile Chinook salmon will be released into Kodiak road system streams in 2010. About 500 adult Chinook salmon are anticipated to return to these same streams. Approximately 450,000 Chinook salmon eggs will be collected in 2010.

Approximately 90,000 rainbow trout eggs will be taken in 2010 from captive broodstock (stock of origin Swanson River) at ADF&G's Ft. Richardson Hatchery in Anchorage and will be transferred to PCH at the eyed egg stage. Approximately 67,500 resultant all-female 3N triploid rainbow trout fingerlings will be stocked into 18 landlocked lakes on the Kodiak road system in 2010.

Key words: Pillar Creek Hatchery, Kodiak Regional Aquaculture Association, sockeye salmon, coho salmon, Chinook salmon, rainbow trout, egg take, broodstock, stocking, fry, fingerling, presmolt, smolt, harvest, return, cost recovery, management plan, Kodiak management area, annual management plan.

INTRODUCTION

The purpose of this report is to provide historical background on the Pillar Creek Hatchery (PCH) and summarize the hatchery's management guidelines and anticipated stocking, rearing, and egg take goals for sockeye salmon *Oncorhynchus nerka*, coho salmon *O. kisutch,* Chinook salmon *O. tshawytscha*, and rainbow trout *O. mykiss* in 2010 (Tables 1 and 2; Appendix A1). This plan remains in effect until superseded by the next year's Annual Management Plan (AMP). Any departures from the AMP should be communicated and addressed as soon as possible to the appropriate Alaska Department of Fish & Game (ADF&G) staff for further guidance.

Pillar Creek Hatchery is located on the Kodiak road system about 7 miles north of the city of Kodiak (Figures 1 through 3). The hatchery was constructed in 1990 as a cooperative project between ADF&G and the Kodiak Regional Aquaculture Association (KRAA; Honnold and Byrne 2004; Honnold and Clevenger 2003; McCullough and Clevenger 2002). PCH has the capacity to incubate up to 20 million salmon eggs and rear 16 million juveniles to a variety of life stages (fry, fingerlings, presmolts, and smolts). The facility is operated primarily by funds provided by KRAA and, to a lesser extent, through a cooperative agreement with ADF&G, Division of Sport Fish. PCH was originally designed to produce juvenile sockeye salmon for 1) stocking barren-lake systems to enhance adult production, and 2) stocking anadromous lakes to supplement wild sockeye salmon stocks in attempts to rehabilitate diminished runs (KRAA 1998). These stocking projects were developed to improve sockeye salmon harvest opportunities in the Kodiak Management Area (KMA) for commercial seine and gillnet, subsistence, and recreational fishermen.

Malina and Laura lakes (Figure 1) were the first anadromous lake stocking projects initiated by PCH, which were conducted in 1992 (Malina Lake) and 1993 (Laura Lake). Lake fertilization (1991–2001) and sockeye salmon stocking (1992–1999) projects were conducted at the Malina Lake system to restore adult production levels to adequately achieve escapement goals. Juveniles (Malina Lake broodstock) were "backstocked" (taking eggs from a system, hatching the eggs at the hatchery, and releasing the juveniles back into the same system) into the Malina system, which increased ensuing adult returns (Schrof and Honnold 2003; Figure 1). Sockeye salmon escapement goals were achieved or exceeded from 1999 through 2002 (Wadle 2004). Stocking and egg takes were planned for the 2000–2002 seasons, but escapement levels were sufficient to forego egg takes: stocking and egg takes were discontinued because the Malina Lake stock was considered rehabilitated in 2002 (McCullough and Clevenger 2002). Laura Lake was also fertilized (1993–2001) and supplemented with sockeye fry (1994–1996 and 1999) of Laura Lake origin (Figure 1). In 1996, 1997, and 1999 through 2002, sockeye salmon eggs were not collected at Laura Lake because escapement goals were met. As a result of reaching the escapement goals from 1999 to 2002, lake fertilization and egg takes were discontinued after 2002 and the stock was considered rehabilitated (McCullough and Clevenger 2002).

Spiridon Lake was selected as the primary barren-lake sockeye salmon stocking project for PCH and has been stocked annually since 1991 (Figure 1). Late-run Upper Station sockeye salmon were initially used to stock Spiridon Lake and Little Kitoi Lake, located near the Kitoi Bay Hatchery (KBH; Figure 1). Releases into Little Kitoi Lake were intended to develop a late-run brood source for the Spiridon Lake project (Honnold and Aro 2004).

Limnology and stocking density studies began in 1992 and continue today to assess salmonid rearing conditions in Little Kitoi Lake. Additionally, from 1995 through 1997, reservoirs of anoxic hydrogen sulfide, that resulted from saltwater intrusion during the 1964 earthquake, were siphoned out of Little Kitoi Lake in an effort to improve rearing conditions for juvenile sockeye salmon. Regardless of these efforts, Little Kitoi Lake was unable to support the required number of juveniles to make the broodstock development project successful.

Investigations by ADF&G and the U.S. Fish and Wildlife Service (USFWS) indicated that the Saltery Lake stock would be preferred for Spiridon Lake stocking (Figure 1; Honnold 1997; Honnold et al. 1999). The run timing of Saltery Lake sockeye salmon (about three weeks earlier than the late-run Upper Station sockeye salmon stock) was expected to reduce the incidental harvest of Spiridon River pink *O. gorbuscha* and chum *O. keta* salmon stocks during the terminal fishery targeting sockeye salmon returns to Spiridon Lake.

The KBH has annually stocked Little Kitoi Lake with sockeye salmon of Saltery Lake origin since 1999 (Schrof and Aro 2007). The Little Kitoi Lake fishpass was closed from 1999 through 2002 to eliminate remnant production from past stocking efforts. Several strategies for the release of fry directly into Little Kitoi Lake were implemented during this time without achieving the desired level of success to maximize survival and reduce holdover of the Saltery Lake sockeye smolt. Consequently, releases were reduced to match the estimated carrying capacity of Little Kitoi Lake, which reduced the number of outmigrating smolt.

In 2003, the broodstock development program was modified in response to the low number of outmigrants and poor zooplankton levels in Little Kitoi Lake (Honnold and Aro 2004). Net pens were also employed for rearing a portion of the progeny from the 2003 Saltery Lake broodstock in Little Kitoi Lake for imprinting and releasing directly into Little Kitoi Bay. This rearing strategy

has proven successful, producing roughly 400,000 sockeye salmon smolts annually since 2006 (Aro and Schrof 2010; Schrof and Aro 2007) and producing adult returns sufficient to meet broodstock goals. However, due to the difficulty in capturing adults for broodstock at Little Kitoi Lake, egg takes have been conducted at both Saltery Lake and Little Kitoi Lake to ensure that adequate numbers of eggs were secured to meet Spiridon Lake stocking recommendations (Finkle and Byrne 2009).

Little Kitoi Lake will continue to be stocked in an effort to build a run size capable of supporting all KRAA late-run sockeye salmon stocking projects. Little Kitoi Lake sockeye salmon will be the preferred broodstock for late-run sockeye salmon projects in 2010 if the adult sockeye salmon returns are sufficient to allow an egg take. If 2010 Little Kitoi Lake escapement is not sufficient to meet the 2010 late-run sockeye salmon egg take goal, broodstock from Saltery Lake will again be collected and used for stocking Spiridon, Jennifer, and Ruth lakes and continuing broodstock development at Little Kitoi Lake (Figure 1). Ruth Lake has been stocked since 1996 and the Jennifer lakes have been stocked since 2004 (Appendix B6): both lakes are considered barren systems.

PCH also provides early-run juvenile sockeye salmon for stocking several barren lakes in the Kodiak area. Hidden, Crescent, Little Waterfall, and Big Waterfall lakes will be stocked with juvenile early-run sockeye salmon in 2010 (Figure 1). Afognak Lake sockeye salmon have traditionally been the primary and preferred broodstock for early-run stocking projects because of its historical run size, run timing, and accessibility. However, Afognak Lake adult sockeye salmon returns since 2001 have not been as strong as the runs of the 1990s. Between 2001 and 2003, egg takes were conducted on Afognak lake sockeye salmon; however, the broodstock size was substantially reduced compared to prior years (Appendix B1). In 2004, Malina Lake sockeye salmon were utilized as an alternative early-run broodstock. Early-run sockeye salmon egg takes were conducted at both Malina and Afognak lakes in 2005, with resultant juveniles stocked in 2006. Annual Afognak Lake sockeye salmon escapements since 2005 have been of sufficient strength to allow full egg takes. However, Malina Lake sockeye salmon will remain the alternative brood source in 2010 if egg take goals cannot be achieved using Afognak Lake brood exclusively.

PCH will also raise coho salmon juveniles of Buskin Lake origin for stocking lakes along the Kodiak road system to enhance recreational sport fishing opportunities (KRAA 1998). Buskin Lake coho salmon were reared to the fry or fingerling life stages at PCH annually from 1992 to 2000 for road system stocking (Figure 2). The installation of additional raceways for sport fish production in 2000 has allowed the option of rearing coho salmon to the presmolt or smolt life stages prior to release, which was not an option in the past. However, the priority use of the increased rearing volume is to hold Chinook salmon, and releases of coho salmon presmolts or smolts are thus dependent upon annual juvenile Chinook salmon inventories. Releases of coho salmon smolt of Buskin Lake origin are not planned for 2010, as it is precluded by the brood year (BY) 2008 juvenile Chinook salmon inventory. Future releases of coho smolts will continue to be dependent upon the number of Chinook salmon reared at PCH, and available rearing space. Buskin Lake coho salmon eggs are also used for several classroom incubation programs in Kodiak area schools.

In 2010, eyed eggs from the Big Kitoi Creek stock of coho salmon will be transferred from KBH to PCH for continued incubation, rearing, and eventual stocking into Katmai Lake as presmolt. KBH has stocked Katmai Lake with coho salmon since 1987 to provide subsistence opportunity

to the nearby village of Ouzinkie. PCH will assume stocking responsibility for this project because the aircraft chartered by PCH for aerial stocking is better equipped to deliver viable juvenile coho salmon to Katmai Lake than ground-based delivery used in the past.

In 2000, ADF&G, Division of Sport Fish and KRAA initiated a cooperative recreational fisheries enhancement project to develop Chinook salmon returns to streams on the Kodiak road system. A permit alteration request (PAR) was approved for the PCH Basic Management Plan in January 2000 (McCullough et al. 2000) providing for production of Chinook salmon at the facility. Chinook salmon eggs were collected for the first time from the Karluk River in August 2000. These eggs were incubated and reared at PCH and about 60,400 smolts were released into Monashka Creek in the spring of 2002 (Figure 2). This project continued with annual egg takes at the Karluk River through 2004, and the release of Karluk River stock Chinook salmon smolts from 2003 to 2006. In 2005, the return of the project's first adult Chinook salmon allowed for an egg take at Monashka Creek, establishing Monashka Creek Chinook salmon as the sole brood source for the KRAA/ADF&G Cooperative Kodiak Road System Chinook Enhancement Project. In 2007, Monashka Creek stock Chinook salmon were released into the American and Olds rivers for the first time. Installation of two raceways (one in 2006 and the other in 2009) at Monashka Creek, through a cooperative agreement between ADF&G and KRAA has provided a holding site for broodstock and additional rearing volume for juvenile Chinook salmon. Subsequent to the additional rearing space, a PAR was approved to increase the permitted number of eggs for the project from 300,000 to 450,000 in 2009 (Appendix A1).

In 2007 and 2008, PARs were approved for the PCH Basic Management Plan, allowing the hatchery to receive and incubate up to 92,000 eyed rainbow trout eggs transferred from the ADF&G Ft. Richardson Hatchery in Anchorage. Prior to 2007, ADF&G annually stocked juvenile all-female 3N triploid rainbow trout fry from Ft. Richardson Hatchery into 20 landlocked Kodiak road system lakes for sport fish enhancement, continuing a rainbow trout stocking program that began in 1953. From 2007 through 2009, rainbow trout eyed eggs were transferred from Ft. Richardson Hatchery to PCH, and stocked into Kodiak lakes following successful incubation and rearing. In 2010, eyed eggs from Ft. Richardson Hatchery are scheduled to be transferred to Pillar Creek Hatchery. Juveniles surviving to the fingerling stage will be stocked into 18 landlocked lakes (Figure 3).

PCH will continue to adhere to all measures for protecting natural salmon stocks, including genetics guidelines, policies and guidelines for health and disease control, and the prevention of straying.

2010 SOCKEYE SALMON RELEASES AND FUTURE RETURNS

Described below are stock-specific sockeye salmon releases planned for 2010. Juvenile sockeye salmon will be transported from the Kodiak road system to remote lakes by aircraft, and stocked either by aerial release or by a float plane which has landed on the lake.

EARLY-RUN SOCKEYE SALMON: AFOGNAK LAKE DONOR STOCK

A total of approximately 510,000 Afognak Lake stock juvenile early-run sockeye salmon will be released in 2010. Detailed plans for the release of the brood year 2009 fry and presmolt into Hidden, Big Waterfall, and Crescent Lakes are shown in Table 3 (Figure 1; Appendix B1). Low zooplankton biomass precluded the stocking of Little Waterfall Lake.

Adult returns from these releases are estimated to total about 29,000 fish over the 4-year period from 2012 to 2015 (Tables 3 and 4). The run timing of these returns should be similar to those of Afognak Lake and Malina Lake sockeye salmon (brood source) escapement, with runs beginning in late May, peaking about mid June, and substantially declining by early July (Figures 4 and 5).

LATE-RUN SOCKEYE SALMON: SALTERY LAKE DONOR STOCK

A total of approximately 2,846,500 Saltery Lake stock late-run sockeye salmon fry will be released in 2010 (Table 5), all into Spiridon Lake. Detailed plans for the release of the brood year 2009 fry into Spiridon Lake are shown in Table 5 (Figure 1; Appendix B6). No late-run sockeye salmon presmolt will be released in 2010.

Approximately 128,000 adult fish are expected to return as a result of the 2010 Saltery-stock sockeye salmon stocking. Details of the preliminary return estimates for these fish from 2012 to 2015 are shown in Table 5. The run timing of the Spiridon Lake return should be similar to the escapement timing of Saltery Lake sockeye salmon, with the run beginning in mid June, peaking in early to mid July, and ending in mid to late August (Figure 6).

LATE-RUN SOCKEYE SALMON: LITTLE KITOI LAKE DONOR STOCK

A total of approximately 193,500 juvenile late-run sockeye salmon of Little Kitoi Lake origin will be released in 2010 (Table 6). Detailed plans for the release of the brood year 2009 fry into Spiridon and Ruth lakes are shown in Table 6 (Figure 1; Appendix B2). Low zooplankton biomass precluded the stocking of the Jennifer lakes. No late-run sockeye salmon presmolt will be released in 2010.

Approximately 9,000 adult fish are expected to return as a result of the 2010 Little Kitoi stock sockeye salmon (stock of origin Saltery Lake) releases. Details of the preliminary return estimates for these fish from 2012 to 2015 are shown in Table 6. The run timing of these returns should be similar to the escapement timing of Little Kitoi Lake sockeye salmon, which in 2009 lagged the Saltery run by approximately two weeks. Historically, the Saltery run begins in mid June, peaks in early to mid July, and ends in mid to late August (Figure 6); Little Kitoi Lake 2009 escapement timing is detailed in Figure 7.

2010 COHO SALMON RELEASES AND FUTURE RETURNS

BUSKIN LAKE DONOR STOCK

PCH plans to release 99,000 coho salmon fingerlings [brood year (BY) 2009] into Kodiak road system lakes in 2010 (Table 7; Figure 2; Appendix B3). The fish are scheduled for releases into Island, Dark, Mission, Potato Patch, Big (Lily), Mayflower, Southern, Abercrombie (Gertrude), Margaret (Boy Scout), and Chiniak lakes in August 2010 (Table 7; Figure 2; Appendix B3). An additional 100,000 juveniles will be held to stock into Monashka and Pillar creeks as smolt in June 2011 (Table 7; Figure 2; Appendix B3). The 2011 stocking of brood year 2009 coho salmon smolt will mark the first release into Pillar Creek by PCH. The Board of Fish approved opening Pillar Creek to sport fishing in 2008; stocking is intended to mitigate the loss of coho brood to sport harvest.

All coho salmon juveniles are transported from PCH to each stocking location in a truck-mounted transport tank with the exceptions of Southern Lake, to which fish are transported by skiff, and Pillar Creek, which is stocked directly from the hatchery site.

Fingerling releases (BY 2009) in 2010 are expected to produce about 4,000 returning adults in 2012 (Tables 4 and 7). The run timing should be similar to the escapement timing of Buskin Lake coho, with fish beginning to return in mid to late August, peaking in late September, and declining by mid October (Figure 8).

During the 2009/2010 school year, numerous Kodiak Island Borough schools were provided 250 to 500 coho salmon eggs for educational programs. A total of 2,750 eggs were divided and distributed among nine schools. Eggs from the 2009 egg take were incubated in classroom incubators with resultant fry to be released by students into one of the previously mentioned lakes. The program is expected to continue annually.

BIG KITOI CREEK DONOR STOCK

PCH plans to release 30,000 coho salmon presmolt (BY 2009) into Katmai Lake, near the Village of Ouzinkie on Spruce Island, between September and October, 2010, as detailed in Table 8 (Figure 2; Appendix B3). The 2010 stocking of Big Kitoi Creek stock coho into Katmai Lake will be the first by PCH; past transport and stocking has been provided by Kitoi Bay Hatchery.

Presmolt releases (BY 2009) in 2010 are expected to produce about 3,000 returning adults in 2012 (Tables 4 and 8). The run timing should be similar to that of the coho return to Kitoi Bay, with fish beginning to return in mid to late July, peaking in late August to early September, and declining by mid to late September.

2010 CHINOOK SALMON RELEASES AND FUTURE RETURNS

MONASHKA CREEK DONOR STOCK

Approximately 235,000 Chinook salmon smolts will be released into Kodiak road system streams in 2010 (Table 9). Smolts will be transported from PCH to the stocking locations where they will be held for imprinting. The detailed 2010 stocking plan for Chinook salmon smolt releases into Monashka Creek and the American and Olds rivers is shown in Table 9 (Figure 2; Appendix B4). Fish are to be released into the American and Olds rivers following confinement in instream pens for approximately two weeks during May and June 2010. Fish to be released into Monashka Creek have been held in a raceway adjacent to the creek since October 2009, and will be allowed to volitionally migrate through Monashka Creek to salt water in June 2010.

Approximately 2,800 adult Chinook salmon are expected to return from the 2010 releases over a five-year period from 2011 to 2015 (Tables 4 and 9). At the time of the project's inception, it was anticipated that the run timing of the road system Chinook salmon would be similar to that of the donor stock (Karluk River Chinook salmon), which returns beginning in late May, peaking in mid June, and declining by early July. However, since 2005 Chinook salmon returning to Monashka Creek have been approximately two weeks later than the Chinook salmon returns to the Karluk River (S. Schmidt, Sport Fish Biologist, ADF&G, Kodiak; personal communication).

PCH will rear juvenile Chinook salmon resulting from the 2009 Monashka Creek egg take through 2010 for release as spring smolts in 2011. Detailed information regarding the 2009 egg take, projected 2011 release, and estimated resulting adult return figures are shown in Table 10 (Appendix B4).

2010 RAINBOW TROUT EGG TAKE AND RELEASES

FORT RICHARDSON HATCHERY CAPTIVE BROOD/SWANSON RIVER ORIGINAL DONOR STOCK

In 2010, approximately 67,500 all-female triploid rainbow trout fingerling will be stocked into 18 landlocked lakes on the Kodiak road system (Tables 2 and 11; Figure 3). These fish will be produced from an April 2010 egg take of approximately 90,000 eggs (116 adults) taken from captive broodstock at the Fort Richardson Hatchery in Anchorage. Approximately 82,000 eggs surviving to the eyed stage will be transported via air freight to PCH in May 2010. Following incubation and rearing at PCH, the resulting juveniles will be stocked in August–October 2010.

BROODSTOCK NUMBERS, ESCAPEMENT GOALS, AND EGG-TAKE GUIDELINES

In 2010, we propose collecting the following broodstock for egg takes:

- Approximately 1,191 Afognak Lake early-run sockeye salmon (Tables 12 and 13; Appendix B1) or the same estimated number if Malina Lake is used as an alternate early-run broodstock (Tables 12 and 13; Appendix B5). Broodstock collections from both brood sources can be combined to meet egg-take goals, if necessary;
- Approximately 4,436 Little Kitoi Lake late-run sockeye salmon (Tables 12 and 14; Appendix B2), or the same estimated number if Saltery Lake is used as an alternate late-run broodstock (Tables 12 and 14; Appendix B6). Broodstock collections from both brood sources can be combined to meet egg-take goals, if necessary;
- Approximately 64 Buskin Lake coho salmon (Tables 12 and 15; Appendix B3);
- Approximately 130 Big Kitoi Creek coho salmon (Tables 12 and 16; Appendix B3); and
- Approximately 150 Monashka Creek Chinook salmon (Tables 12 and 17; Appendix B4).

Escapement goal ranges for these systems are 20,000–50,000 sockeye salmon at Afognak Lake, 1,000–10,000 sockeye salmon at Malina Lake (alternative broodstock to Afognak Lake, if necessary), 15,000–30,000 sockeye salmon at Saltery Lake (alternative broodstock to Little Kitoi Lake, if necessary), and 3,200–7,200 coho salmon at Buskin River (Honnold et al. 2007). Little Kitoi Lake does not have a sockeye salmon escapement goal. Big Kitoi Creek does not have a coho salmon escapement goal. Monashka Creek does not have a Chinook salmon escapement goal.

The 2009 Pillar Creek Hatchery Annual Management Plan (Finkle and Byrne 2009) contained egg-take guidelines established by Honnold and Byrne (2005), which describe escapement thresholds, brood availability, and backstocking guidelines for sockeye salmon brood source systems. Sockeye escapements to brood source systems in 2010 are anticipated to be of sufficient strength to preclude application of those guidelines. However, should escapements for brood-source systems not meet the established goals, ADF&G and KRAA will meet inseason to determine a suitable course of action. The department and KRAA will also meet prior to drafting the 2011 PCH annual management plan to clarify or update egg-take guidelines.

2010 SOCKEYE SALMON EGG TAKES (2011 STOCKING)

The egg-take goals for 2010 and stocking levels for 2011 described below for each sockeye salmon broodstock are assumptions based on historical goals. Actual stocking and egg-take targets may be adjusted inseason (July and August 2010) as a result of the analysis of zooplankton data collected at each lake during the spring and summer. Rearing limitations at PCH (i.e., how many juveniles of each life stage can be successfully cultured) may also result in modifications to stocking levels in 2011.

EARLY-RUN SOCKEYE SALMON: AFOGNAK LAKE DONOR STOCK

The 2010 early-run sockeye salmon egg-take goal is approximately 1,418,000 Afognak Lake sockeye salmon eggs (1,191 adults; Table 13). Resulting juveniles will be stocked into Hidden, Big and Little Waterfall, and Crescent Lakes in 2011, as detailed in Table 13 (Appendix B1).

The escapement levels at Afognak Lake in 2010 will determine the number of broodstock available for an egg take (Tables 12 and 13). Malina Lake sockeye salmon may be used as an alternative broodstock for the aforementioned stocking projects if escapement levels preclude or do not allow the egg-take goal to be met at Afognak Lake (Tables 12 and 13; Appendices B1 and B5).

LATE-RUN SOCKEYE SALMON: LITTLE KITOI LAKE DONOR STOCK

The 2010 late-run sockeye salmon egg-take goal for PCH stocking projects is approximately 4,764,500 Little Kitoi Lake sockeye salmon eggs (3,966 adults). Resulting juveniles will be stocked into Spiridon, Jennifer, and Ruth lakes in 2011, as detailed in Table 14 (Appendix B2).

In addition, approximately 568,000 late-run sockeye green eggs (473 adults) will be collected as part of the ongoing KRAA late-run sockeye salmon broodstock development program. At the eyed-egg stage, eggs (approximately 520,000) will be transferred from PCH to KBH; KBH will incubate, rear, and release the juveniles into Little Kitoi Lake (Aro and Schrof 2010). With the development program eggs included, the total 2010 late-run egg-take goal is approximately 5,332,500 Little Kitoi Lake sockeye salmon eggs (4,439 adults).

The 2010 egg take at Little Kitoi Lake will be dependent upon an escapement adequate to meet broodstock requirements (Table 12). If inadequate escapement precludes attainment of the egg-take goal at Little Kitoi Lake, Saltery Lake sockeye salmon may be used as an alternative broodstock for the aforementioned late-run sockeye salmon stocking projects.

2010 COHO SALMON EGG TAKES (2011 STOCKING)

The egg-take goals for 2010 and stocking levels for 2011 described below for each coho salmon broodstock are consistent with recent historical targets. Actual stocking and egg-take targets may be adjusted as a result of hatchery incubation and rearing limitations, unusual egg and juvenile survival, or in the event that coho salmon production is increased to offset low Chinook salmon inventories.

BUSKIN LAKE DONOR STOCK COHO SALMON

Approximately 110,000 Buskin Lake coho salmon eggs (64 adults) will be collected in 2010, which will provide fingerlings to stock into Road System lakes and streams in 2011, as detailed in Table 15 (Appendix B3). Depending upon the hatchery Chinook salmon inventory, eggs may

be taken from as many as 75 spawning pairs, and a number of the resulting juveniles may be held to smolt in 2012 for stocking into Kodiak road system lakes or Monashka Creek.

We do not expect that Buskin River coho salmon escapement levels will preclude or reduce the broodstock collection in 2010, due to the small number (64) of broodstock needed to attain egg-take goals (Tables 12 and 15; Appendix B3) and the anticipated magnitude of the 2010 coho salmon escapement (S. Schmidt, Sport Fish Biologist, ADF&G, Kodiak; personal communication). However, alternate broodstocks for coho salmon stocking projects have not been identified and adherence to egg-take guidelines may result in reducing egg-take goals or not collecting eggs in 2010. Replacement requirements have not been identified for the Buskin River coho salmon stock, but may be developed in 2010.

BIG KITOI CREEK DONOR STOCK COHO SALMON

Approximately 34,700 Big Kitoi Creek coho salmon eggs (130 adult brood) will be collected in 2010 at Kitoi Bay Hatchery (Table 16; appendix B3) to support the Katmai Lake stocking project. Eggs will be transferred to Pillar Creek Hatchery at the eyed-egg stage to be incubated and reared until stocking as fall presmolt in 2011.

2010 CHINOOK SALMON EGG TAKES (2012 STOCKING)

The 2010 Chinook salmon egg-take goal is 450,000 Monashka Creek eggs (150 adults), which will provide smolts to stock Monashka Creek, the Olds River, and the American River in 2012 (Table 17; Appendix B4). There is no escapement goal for Chinook salmon in Monashka Creek, and thus, all of the escapement may be available for use as broodstock. The projected 2010 return should provide adequate broodstock to meet the project egg-take goals.

SOCKEYE SALMON HARVEST AND MANAGEMENT

A total of 165,350 sockeye salmon produced from PCH stocking projects are expected to return in 2010 (Table 18). The majority of these fish (126,000) will be a result of the Spiridon Lake project. Hidden, Little Waterfall, Big Waterfall, Crescent, Spiridon, Little Kitoi, and Ruth lakes are systems without native salmon runs. Salmon may be present in the lake outlet streams from marine waters to the salmon barrier. All sockeye salmon returning to these systems will be available for harvest. Prior to 2005, terminal harvest areas (THAs) were designated to manage the harvest of enhanced sockeye salmon production from PCH in an orderly fashion (Honnold and Byrne 2004). Special Harvest Areas (SHAs) replaced THAs to allow for cost recovery of the enhanced harvest if cost recovery is determined to be necessary or desirable (5 AAC 40.085).

HARVEST OF RETURNS TO HIDDEN LAKE

The Foul Bay (Hidden Lake; Figure 9) harvest strategy is designed to allow for the harvest of sockeye salmon produced from the Hidden Lake enhancement project and to provide for the protection of wild salmon stocks returning to, or passing through, the Northwest Afognak Section of the Afognak District (Figure 10). The run timing of Hidden Lake returns should be similar to the timing of Afognak Lake and Malina Lake sockeye salmon (brood sources) escapement, with runs beginning in late May, peaking in early June, and declining substantially by early July (Figures 4 and 5).

Hidden Lake sockeye salmon runs will be harvested in the Foul Bay SHA, which includes the area of Foul Bay east of 152°47.20′ W long. (Figure 9; 5 AAC 40.085(3)). By regulation the

only legal gear types for the SHA are purse seines and beach seines. Because a harvestable surplus of enhanced sockeye salmon is expected in the SHA, continuous fishing periods through the duration of the sockeye salmon run will be allowed by ADF&G, beginning 9 June (Jackson and Dinnocenzo 2010). The fishery directed at the Hidden Lake sockeye salmon run is not expected to impact pink salmon escapement to Hidden Creek because the fishery occurs prior to the arrival of pink salmon. There is no escapement requirement for sockeye salmon in Hidden Creek as the lake is inaccessible due to a large barrier falls. The sockeye salmon harvest is expected to occur primarily in the Foul Bay SHA; however, some Hidden Lake sockeye salmon may be harvested in the Northwest Afognak Section (Figure 10).

ADF&G recognizes that some incidental harvest of wild stocks could occur in the Foul Bay SHA while the fishery is managed to harvest the Hidden Lake sockeye salmon run. The ADF&G may adjust the size of the SHA to minimize the harvest of wild stocks and to target the Hidden Lake sockeye salmon. Age and scale pattern analyses of the commercial harvest have indicated a minimal wild stock bycatch (Schrof et al. 2000; Schrof and Honnold 2003). Therefore, a reduction in the size of the SHA is not expected in 2010 (J. Jackson, Kodiak Area Management Biologist, ADF&G, Kodiak; personal communication).

HARVEST OF RETURNS TO CRESCENT LAKE

The purpose of the Crescent Lake stocking project is to provide additional sockeye salmon for harvest in the Settler Cove (Crescent Lake) area without compromising wild stock escapements, primarily Barabara Lake sockeye salmon (Figure 11). The run timing of Crescent Lake returns should be similar to the escapement timing of Afognak Lake and Malina Lake sockeye salmon (brood sources), with runs beginning in late May, peaking in early June, and declining substantially by early July (Figures 4 and 5).

The harvest of Crescent Lake sockeye salmon is expected to occur during fishing periods targeting early-run sockeye and chum salmon in the Central Section of the Northwest Kodiak District (Figure 10). During 2010, the fishery will open in the Central Section of the Northwest Kodiak District on 9 June for a 33-hour period (Jackson and Dinnocenzo 2010). Additional fishing time is dependent on the run strength of early-run Karluk Lake sockeye salmon (5 AAC 18.362). The Settler Cove SHA includes all waters of Settler Cove west of 152°50.80′ W long. (Figure 11; 5 AAC 40.085(5)), could open in 2010, if large numbers of sockeye salmon are not harvested during normal commercial fishery openings and are observed in the Settler Cove area. All fish in the SHA will be available for harvest; residents of Port Lions will be able to utilize the inriver escapement for subsistence purposes.

HARVEST OF RETURNS TO LITTLE AND BIG WATERFALL LAKES

The Waterfall Bay harvest strategy was designed to harvest all enhanced sockeye salmon returning to Waterfall Bay and provide safeguards for the area's wild salmon escapements (Figure 12). The run timing of returns to Waterfall Bay should be similar to the escapement timing of Afognak Lake and Malina Lake sockeye salmon (brood sources), with runs beginning in late May, peaking in early June, and declining substantially by early July (Figures 4 and 5).

The sockeye salmon harvest is expected to occur in the Waterfall Bay SHA within the Perenosa Bay Section (Figure 12). The Waterfall Bay SHA includes waters seaward of the stream terminus of Little (251-822) and Big (251-821) Waterfall creeks to a straight line extending northwesterly from 58°24.15′ N lat., 152°28.23′ W long. to 58°25.60′ N lat., 152°28.23′ W

long. (5 AAC 40.085(4)). By regulation, the only legal gear types for the Waterfall Bay SHA are purse seines and beach seines. Because there is no required escapement, all returning sockeye salmon will be available for harvest. Because a harvestable surplus of enhanced sockeye salmon is expected in 2010, continuous fishing through the duration of the sockeye run will be allowed beginning 9 June (Jackson et al. 2010).

A barrier net will be erected at the terminus of Little Waterfall Creek so that all returning adults are available for harvest. The net will be suspended and anchored to the bottom near the terminus of Little Waterfall Creek prior to the opening of the fishery.

HARVEST OF RETURNS TO SPIRIDON LAKE

The Spiridon Lake sockeye salmon management plan (5 AAC 18.366) is designed to allow for the harvest of enhanced sockeye salmon returning to Spiridon Lake (Jackson and Dinnocenzo 2010; Figure 13) and to provide adequate protection for escapements of wild salmon stocks returning to streams in the area (Spiridon River pink, chum, and coho salmon; stream number 254-401). The intent of this stocking project is to provide enhanced sockeye salmon in traditional commercial fishing areas in the Northwest Kodiak District and Telrod Cove (Figures 10 and 13). The run timing of the 2010 return to Telrod Cove should be similar to the Saltery Lake sockeye salmon (brood source) run beginning in late June and continuing into mid-August (Figure 6).

Harvests of Spiridon Lake sockeye salmon are expected to occur during openings targeting Karluk Lake sockeye salmon and westside pink and chum salmon stocks (Jackson and Dinnocenzo 2010). An SHA, however, is required to provide for an orderly harvest of enhanced sockeye salmon that have migrated past the traditional commercial fishing areas of the Northwest Kodiak District. The Spiridon Bay SHA includes all waters of Telrod Cove north of a line extending from Stream Point at 57°39.00′ N lat., 153°38.50′ W long., to a point at 57°38.80′ N lat., 153°37.70′ W long. (5 AAC 40.085(2); Figure 13). In 2010, the KRAA Board of Directors approved the implementation of a cost recovery fishery in the Spiridon Bay SHA to supplement funding of KRAA operations. This is the first time a cost recovery fishery will be executed in the Spiridon Bay SHA. The harvest goal for the 2010 cost recovery has been set at 60,000 pounds of sockeye salmon. The cost recovery fishery is expected to occur between June 21 and June 27. A vessel will be contracted to harvest and deliver the fish to the purchasing processor(s).

A continuous fishing period within the SHA will be announced by ADF&G following attainment of the cost recovery fishery goal (Jackson and Dinnocenzo 2010). By regulation, the only legal gear types for the Spiridon Bay SHA are purse seines and beach seines. A series of barrier falls prevents salmon from entering Spiridon Lake, but sockeye salmon returning to Telrod Cove have access to Telrod Creek (Figure 13). Closed water markers ensure that intertidal habitat is not disturbed during fishing operations.

ADF&G recognizes that some incidental harvest of wild stocks could occur in this area while the fishery is managed to harvest the enhanced Spiridon Lake sockeye salmon. The restricted size of the SHA coupled with the projected run timing (Saltery Lake sockeye salmon broodstock) of sockeye salmon returns to Telrod Cove, however, are expected to reduce the incidental harvest of wild salmon stocks returning to Spiridon River and Telrod Creek.

The SHA will be monitored by ADF&G and KRAA personnel beginning in mid June and continuing until early August.

HARVEST OF RETURNS TO RUTH, JENNIFER, AND LITTLE KITOI LAKES

The combined return of PCH-stocked enhanced sockeye salmon to Ruth, Jennifer, and Little Kitoi lakes is projected to be 7,950 in 2010 (Table 18). The enhanced sockeye salmon returning to these systems will be harvested incidentally in 2010 during pink, chum, and coho salmon fisheries in the Kitoi, Izhut, and Duck Bay sections of the Afognak District (Figure 10; Aro and Schrof 2010). Harvest of all species in these sections will be managed with a goal of achieving late-run sockeye salmon escapement into Little Kitoi Lake adequate to meet PCH broodstock needs. The run timing is expected to be similar to that described for Spiridon Lake runs, since Saltery Lake sockeye salmon were used as broodstock for both enhancement projects (Figure 6).

HARVEST REPORTING

Spiridon Lake SHA, Foul Bay SHA, Waterfall Bay SHA, and Kitoi Bay Area (Ruth, Jennifer, and Little Kitoi lakes) salmon harvest information will be monitored through daily verbal processor reports and the ADF&G fish ticket database. On-site estimates of harvest and the collection of age and sex composition data from returning sockeye salmon will be collected by field personnel at each of these locations where run strength is sufficient to warrant monitoring (Foster et al. 2010).

Harvest information from the Crescent Lake sockeye salmon run will be monitored through the ADF&G fish ticket database and subsistence permit reports. The harvest contribution from this project will be determined by assigning all sockeye salmon harvested in the Settler Cove SHA as originating from Crescent Lake. The run timing and location of the fishery (SHA) provides for an isolated harvest of returning adults. The subsistence harvest will be assigned through the ADF&G subsistence use reporting system.

ADDITIONAL MEASURES FOR WILDSTOCK PROTECTION

GENETICS POLICY

The ADF&G Genetics Policy is designed to ensure that stocking projects do not negatively impact the genetic integrity of wild stocks (McGee 1995). The policy addresses three primary areas: 1) stock transport, 2) protection of wild stocks, and 3) maintenance of genetic variance. This policy, as described in the 1998 Pillar Creek Hatchery Annual Management Plan (Honnold et al. 1998), will be followed in 2010 for all projects. Additional guidelines to help minimize potential viability risks to wild stocks that may include changes in run timing, spawning success, and reduced fitness are presented in the 2009 Pillar Creek Hatchery Annual Management Plan (Finkle and Byrne 2009).

To protect wild stocks and maintain their genetic integrity, adults produced from hatchery stocking projects must be prevented from straying into stream and lake systems supporting wild stocks. Harvest strategies in the Kodiak Management Area target the enhanced production as required by ADF&G to ensure compliance with state regulations for private nonprofit salmon hatcheries (5 AAC 40.005.(f)).

POLICIES AND GUIDELINES FOR HEALTH AND DISEASE CONTROL

The State of Alaska Pathology Review Committee has developed a long-range goal to prevent dissemination of infectious finfish (and shellfish) diseases within or outside the borders of Alaska (McGee 1995). This goal is intended to protect stocks without constraining aquaculture or stock renewal programs. The policy to achieve this goal aims to prevent the transplanting of wild finfish stocks between geographic zones to minimize the risk of transporting disease from one zone to another. This policy includes hatchery stocks in order to be consistent with the Genetics Policy. Some exceptions may be made on a case by case basis. The policy and guidelines for health and disease control, as described in the 1998 Pillar Creek Hatchery AMP (Honnold et al. 1998), will be followed in 2010 for all projects.

SPECIAL STUDIES/RESEARCH

The 1994 to 1997 and 2008 to 2009 Spiridon Lake sockeye salmon runs were reconstructed using scale pattern analyses to identify Spiridon Lake fish in the Northwest Kodiak District or in the Southwest Afognak Section commercial harvests (Nelson 1999; Nelson and Barrett 1994; Nelson and Swanton 1996; Nelson and Swanton 1997). The runs from 1998 to 2007, however, were not formally reconstructed due to the run timing differences between the original late-run Upper Station broodstock (stocked from 1991 to 1994 and 1996 to 1997) and the Saltery Lake broodstock (stocked in 1995 and from 1998 to the present). Stock separation techniques used when only the late-run Upper Station stock fish returned (1994 to 1997) were not appropriate for application to the mixed stock runs (1998 to 2002) or for runs when only the Saltery Lake fish return (Nelson 1999). This was primarily due to the increased number of both local and non-local stocks present in the Northwest Kodiak District when Spiridon Lake-bound sockeye salmon are migrating through.

The average proportion of the Spiridon-bound sockeye salmon harvested in the Telrod Cove THA from 1994 to 1997 (41%) was applied to the 1998 through 2007 THA (now SHA) harvest to reconstruct the Spiridon Lake sockeye salmon contribution to the harvests in the Southwest Afognak Section and Northwest Kodiak District (Honnold and Byrne 2004; Schrof et al. 2000). In 2008 and 2009, harvest of Spiridon-bound sockeye salmon in Northwest Kodiak and Southwest Afognak districts was estimated using a scale pattern analysis of the commercial harvest samples depending on recognition of the uniquely large freshwater scale pattern of the age-2.2 Spiridon sockeye salmon (M. B. Foster, Fishery Biologist, ADF&G, Kodiak; personal communication). Only in 2008 and 2009 was such a clearly identifiable scale pattern apparent; however, it is unlikely that scale pattern analysis can be relied upon consistently in the future. Thus, it is anticipated that until a new method of stock separation is developed and implemented to identify the Saltery Lake stock returns to Spiridon, the method of estimation applied from 1998 through 2007 will be used for the 2010 and future Spiridon Lake sockeye salmon runs.

Smolt abundance will be estimated and samples collected for age and condition during their emigration from Spiridon Lake as a check on stocking density and to assist with run forecasts (Foster et al. 2010). Stocked lakes will also be sampled to evaluate zooplankton trends and water quality parameters.

ACKNOWLEDGMENTS

We acknowledge KRAA Executive Director Kevin Brennan, KRAA staff including Tina Fairbanks, Tammy Hulsey, Al Seale, and a multitude of seasonal technicians, interns, and volunteers whose efforts supported the hatchery projects. We also acknowledge Raymond DeWalt and ADF&G salmon managers, project biologists, and field staff that contribute to Pillar Creek Hatchery programs including James Jackson, Jeff Wadle, Rob Baer, Steve Thomsen, Donn Tracy, Suzanne Schmidt, Tyler Polum, and Lindsay Gann. We wish to especially acknowledge Len Schwarz, who retired from his Kodiak Sport Fish Biologist position in 2009, for his contributions to Kodiak road system salmon enhancement. We also thank Nick Sagalkin, Mary Beth Loewen, and Steve Schrof for their timely and thorough review of this document.

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TABLES AND FIGURES

Table 1.–The Pillar Creek Hatchery annual management plan executive summary for sockeye, Chinook, and coho salmon, 2010.

Stocking location	Species	Broodstock	2010 Projected enhanced	2010 Stocking (brood year 2009)	2010 Stocking (brood year 2008)	2010 Egg-take goals	2011 Stocking (brood year 2010)	2012 Stocking (brood year 2010)
Hidden Lake	Sockeye	Afognak Lake early run	14,900	345,000		617,000	500,000	
Little Waterfall Lake	Sockeye	Afognak Lake early run	4000[a]	0		308,000	250,000	
Big Waterfall Lake	Sockeye	Afognak Lake early run		45,000		123,000	100,000	
Crescent Lake	Sockeye	Afognak Lake early run	11,000	120,000		370,000	300,000	
		Total Afognak Lake early run	29,900	510,000	0	1,418,000[b]	1,150,000	0
Hidden Lake	Sockeye	Malina Lake early run	100					
Little Waterfall Lake	Sockeye	Malina Lake early run	1400[a]					
Big Waterfall Lake	Sockeye	Malina Lake early run						
Crescent Lake	Sockeye	Malina Lake early run	0					
		Total Malina Lake early run	1,500	0	0	0[b]	0	0
		Total early-run sockeye salmon	31,400	510,000	0	1,418,000	1,150,000	0
Spiridon Lake	Sockeye	Little Kitoi Lake late run		153,500		4,342,000	3,340,000	
Ruth Lake	Sockeye	Little Kitoi Lake late run		40,000		97,500	75,000	
Jennifer Lake	Sockeye	Little Kitoi Lake late run				325,000	250,000	
Little Kitoi Lake	Sockeye	Little Kitoi Lake late run				568000[c]	500,000	
		Total Little Kitoi Lake late run	0	193,500	0	5,332,500[d]	4,165,000	0
Spiridon Lake	Sockeye	Saltery Lake late run	126,000	2,846,500				
Ruth Lake	Sockeye	Saltery Lake late run	3,400					
Jennifer Lake	Sockeye	Saltery Lake late run	4,400					
Little Kitoi Lake	Sockeye	Saltery Lake late run	150[e]					
		Total Saltery Lake late run	133,950	2,846,500	0	0[d]	0	0
		Total late-run sockeye salmon	133,950	3,040,000	0	5,332,500	4,165,000	0
		Total sockeye salmon	165,350	3,550,000	0	6,750,500	5,315,000	0
Monashka Creek	Chinook	Monashka Creek	300		83,500	125,000		100,000[f]
American River	Chinook	Monashka Creek	100		75,750	162,500		130,000
Olds River	Chinook	Monashka Creek	100		75,750	162,500		130,000
		Total Chinook salmon	500	0	235,000	450,000	0	360,000

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Table 1.–Page 2 of 2.

Stocking Location	Species	Broodstock	2010 Projected enhanced	2010 Stocking (brood year 2009)	2010 Stocking (brood year 2008)	2010 Egg-take goals	2011 Stocking (brood year 2010)	2012 Stocking (brood year 2010)
Island Lake	Coho	Buskin Lake	1,462	22,500		27,809	22,500	
Dark Lake	Coho	Buskin Lake	487	7,500		9,270	7,500	
Mission Lake	Coho	Buskin Lake	811	12,500		15,449	12,500	
Potato Patch Lake	Coho	Buskin Lake	616	9,500		11,742	9,500	
Big (Lily) Lake	Coho	Buskin Lake	0	10,000		0	0	
Mayflower Lake	Coho	Buskin Lake	420	6,500		8,034	6,500	
Southern Lake	Coho	Buskin Lake	Landlocked	3,500		4,326	3,500	
Margaret Lake	Coho	Buskin Lake	Landlocked	3,500		4,326	3,500	
Abercrombie Lake	Coho	Buskin Lake	Landlocked	3,500		4,326	3,500	
Chiniak Lake	Coho	Buskin Lake	Landlocked	20,000		24,719	20,000	
Monashka Creek	Coho	Buskin Lake	0	0		0	0	
Pillar Creek[g]	Coho	Buskin Lake	0	0		0	0	
		Total Buskin Lake coho	3,796	99,000	0	110,001	89,000	0
Katmai Lake	Coho	Big Kitoi Creek	1,500	30,000		34,700	30,000	
		Total Big Kitoi Creek coho	1,500	30,000	0	34,700	30,000	0
		Total coho salmon	5,296	129,000		144,701	119,000	

Note: New projects for 2010: 1. Stock coho presmolt (Big Kitoi Creek stock) into Katmai Lake from PCH, and
2. Conduct a cost recovery harvest in Spiridon Bay SHA with a goal of 60,000 pounds sockeye salmon

[a] The projected enhanced run for Big Waterfall and Little Waterfall lakes is a combined total estimate for the two systems.

[b] Afognak Lake sockeye salmon has traditionally been the primary broodstock for early-run stocking projects. Afognak Lake adult runs since 2001 have not been as strong as those of the 1990s, and in 2004, Malina Lake sockeye were utilized as an alternative early-run broodstock. Early-run sockeye egg takes were conducted at both Malina and Afognak Lakes in 2005. Afognak Lake has been the sole early-run sockeye brood source since 2005, and is the preferred brood source for 2010. Malina Lake sockeye may be utilized as a 2010 brood source if egg-take goals cannot be achieved using Afognak Lake brood exclusively.

[c] Late-run sockeye eyed eggs (Little Kitoi Lake or Saltery Lake stock) are transferred to Kitoi Bay Hatchery; KBH incubates these eggs and rears resulting juveniles. Juveniles are released into Little Kitoi Lake.

[d] Little Kitoi Lake is the preferred brood source for the 2010 Pillar Creek Hatchery late-run sockeye egg take. PCH has held an FTP to take sockeye eggs at Little Kitoi Lake (original donor stock Saltery Lake) since 2004. Through 2009, Little Kitoi Lake sockeye escapement has not been sufficient to meet the hatchery's late-run sockeye egg-take goals, and egg takes have been conducted at Saltery Lake, which serves as the alternate brood source for the late-run sockeye projects. In 2009, however, sockeye eggs were taken at Little Kitoi Lake; eggs taken from LKL brood comprised 17.4% of the PCH late-run sockeye egg inventory, with the balance provided by Saltery Lake sockeye.

[e] The projected return to Little Kitoi Lake of 150 late-run Saltery stock sockeye represents the portion of the 2010 run produced by PCH stocking of Little Kitoi Lake in 2005. The balance, and majority, of the run will be attributed to KBH stocking of Little Kitoi Lake, and the projection of those returns can be found in the Kitoi Bay Hatchery 2010 Annual Management Plan.

[f] The 2010 egg take is projected to result in a release of as many as 450,000 smolt in 2012. However, if warm water temperatures accelerate fish growth, it is possible that fish will be culled in order to keep raceway densities within acceptable limits, and fewer smolt would be released.

[g] The Board of Fish approved opening Pillar Creek to sport fishing in 2008. To mitigate removal of adult spawning coho salmon, Pillar Creek will be added to the Kodiak road system locations into which juvenile coho are stocked by the cooperative KRAA/ADF&G Sport Fish Kodiak stocking program.

Table 2.–The Pillar Creek Hatchery annual management plan executive summary for rainbow trout, 2010.

Stocking Location	Broodstock[a]	2010 Projected enhanced return	2010 Stocking	2011 Egg-take goals	2011 Stocking
Abercrombie (Gertrude) Lake	Ft. Richardson/Swanson R.	Landlocked	4,917	6,556	4,917
Aurel Lake	Ft. Richardson/Swanson R.	Landlocked	3,986	5,315	3,986
Big (Lily) Lake	Ft. Richardson/Swanson R.	Landlocked	4,783	6,378	4,783
Bull Lake	Ft. Richardson/Swanson R.	Landlocked	2,658	3,544	2,658
Caroline Lake	Ft. Richardson/Swanson R.	Landlocked	1,860	2,481	1,860
Cicely Lake	Ft. Richardson/Swanson R.	Landlocked	1,528	2,038	1,528
Dolgoi Lake	Ft. Richardson/Swanson R.	Landlocked	6,843	9,124	6,843
Dragonfly Lake	Ft. Richardson/Swanson R.	Landlocked	2,059	2,746	2,059
Heitman Lake	Ft. Richardson/Swanson R.	Landlocked	4,318	5,758	4,318
Horseshoe Lake	Ft. Richardson/Swanson R.	Landlocked	1,329	1,771	1,329
Jack Lake	Ft. Richardson/Swanson R.	Landlocked	1,329	1,771	1,329
Jupiter Lake	Ft. Richardson/Swanson R.	Landlocked	4,783	6,378	4,783
Lee Lake	Ft. Richardson/Swanson R.	Landlocked	3,720	4,960	3,720
Lily Pond Lake	Ft. Richardson/Swanson R.	Landlocked	2,126	2,834	2,126
Long Lake	Ft. Richardson/Swanson R.	Landlocked	4,783	6,378	4,783
Saturn Lake	Ft. Richardson/Swanson R.	Landlocked	3,189	4,252	3,189
Tanignak Lake	Ft. Richardson/Swanson R.	Landlocked	7,972	10,630	7,972
Twin Lake	Ft. Richardson/Swanson R.	Landlocked	5,315	7,087	5,315
	Total rainbow trout	0	67,500	90,000	67,500

[a] Rainbow trout eggs are taken from captive brood at ADF&G's Ft. Richardson Hatchery in Anchorage, and transferred to PCH as eyed eggs.

Table 3.–Pillar Creek Hatchery early-run sockeye salmon egg-take results (Afognak Lake broodstock) from 2009, resultant juvenile releases planned in 2010, projected adult production, and fish transport permit information.

		Location					
Stock information		Hidden Lake	Hidden Lake	Big Waterfall Lake	Crescent Lake	Crescent Lake	Totals
Egg take	Eggs	408,484	61,273	61,273	102,121	61,273	694,422
	Adults	318	48	48	79	48	540
Releases	N	300,000	45,000	45,000	75,000	45,000	510,000
	Size (g)	0.4	9.3	9.3	0.4	9.3	
	Lifestage	Fry	Presmolt	Presmolt	Fry	Presmolt	
	Date	07-Jun-10	01-Oct-10	01-Oct-10	07-Jun-10	01-Oct-10	
Projected	2012	986	509	509	246	509	2,757
Returns[a]	2013	3,551	1,490	1,490	888	1,490	8,907
	2014	6,305	2,358	2,358	1,576	2,358	14,955
	2015	2,228	0	0	557	0	2,784
	Total	13,068	4,356	4,356	3,267	4,356	29,403
Fish Transport	Number	09A-0047	09A-0048	10A-0122	06A-0047	10A-0123	
Permit (FTP)[b]	Expiration	31-Dec-14	31-Dec-14	31-Dec-20	31-Dec-11	31-Dec-20	
	Max N	500,000	500,000	250,000	500,000	275,000	
	Lifestage	Fry	Presmolt	Presmolt	Fry	Presmolt	

Table 4.–Salmon survival and egg assumptions used to estimate returns for Pillar Creek hatchery stocking projects.

		Stocking		Survival[a]	Age-at-return Proportions[a]							
Species	Broodstock[b]	Life Stage[c]	Size (g)	Stocking-to-adult return	1.1	1.2	2.1	1.3	2.2	1.4	2.3	1.5
Sockeye	AL/ML	F	0.4	4.5%	0.07	0.22	0.04	0.36	0.11		0.17	
Sockeye	AL/ML	FG	1.0-3.0	6.5%	0.07	0.22	0.04	0.36	0.11		0.17	
Sockeye	AL/ML	PS	8.0-15.0	10.0%	0.11	0.33		0.52				
Sockeye	LKL/SL	F	0.4-0.6	4.5%	0.01	0.31	0.01	0.39	0.24		0.05	
Sockeye	LKL/SL	FG	3.0-6.0	6.5%	0.01	0.31	0.01	0.39	0.24		0.05	
Sockeye	LKL/SL	PS	8.0-13.0	12.5%	0.02	0.55		0.44				
Coho	BL/BKC	FG	3.0-5.0	6.5%			1.00					
Coho	BL/BKC	PS	8.0	10.0%	1.00							
Coho	BL/BKC	S	15.0	12.5%	1.00							
Chinook	MC	S	20.0	1.2%	0.02	0.12		0.32		0.50		0.03

[a] Based on actual survival and age-at-return data from Pillar Creek Hatchery and/or other ADF&G research projects.

[b] AL=Afognak Lake early run, ML=Malina Lake early run, LKL=Little Kitoi Lake late run, SL=Saltery Lake late run, BL=Buskin Lake, BKC=Big Kitoi Creek, and MC=Monashka Creek.

[c] F=fry, FG=fingerling, PS=presmolt, and S=smolt.

Table 5.–Pillar Creek Hatchery late-run sockeye salmon egg-take results (Saltery Lake broodstock) from 2009, resultant juvenile releases planned for 2010, projected adult production, and fish transport permit information.

Stock information		Location				Totals
		Spiridon Lake	Ruth Lake	Upper Jennifer Lake	Lower Jennifer Lake	
Egg take	Eggs	3,201,622	0	0	0	3,201,622[a]
	Adults	2,590	0	0	0	2,590
Releases	N	2,846,500	0	0	0	2,846,500
	Size (g)	0.4	0.4	0.4	0.4	
	Lifestage	Fry	Fry	Fry	Fry	
	Date	26-Jun-10	26-Jun-10	26-Jun-10	26-Jun-10	
Projected	2012	640	0	0	0	640
Returns[b]	2013	40,733	0	0	0	40,733
	2014	79,674	0	0	0	79,674
	2015	6,917	0	0	0	6,917
	Total	127,964	0	0	0	127,964
Fish Transport	Number	10A-0126	10A-0125	10A-0129	10A-0129	
Permit (FTP)[c]	Expiration	31-Dec-20	31-Dec-20	31-Dec-20	31-Dec-20	
	Max N	7,000,000	300,000	400,000	400,000	
	Lifestage	Fry	Fry	Fry	Fry	

[a] An additional 658,427 eggs were taken, and 533 adult brood utilized for Kitoi Bay Hatchery late-run sockeye production. Eggs are transferred at the eyed-egg stage of development.

[b] Projected returns are calculated from Table 2 survival and age assumptions.

[c] FTP 09A-0052 – for 11.0 million green eggs, expiring 31 December 2014, authorizes the egg take for these projects.

Table 6.–Pillar Creek Hatchery late-run sockeye salmon egg take (Little Kitoi Lake broodstock) from 2009, resultant juvenile releases planned for 2010, projected adult production, and fish transport permit information.

Stock information		Location				Totals
		Spiridon Lake	Ruth Lake	Upper Jennifer Lake	Lower Jennifer Lake	
Egg take	Eggs	536,412	139,782	0	0	676,194
	Adults	399	104	0	0	503
Releases	N	153,500	40,000	0	0	193,500
	Size (g)	0.4	0.4	0.4	0.4	
	Lifestage	Fry	Fry	Fry	Fry	
	Date	26-Jun-10	26-Jun-10	26-Jun-10	26-Jun-10	
Projected	2012	35	9	0	0	44
Returns[a]	2013	2,197	572	0	0	2,769
	2014	4,296	1,120	0	0	5,416
	2015	373	97	0	0	470
	Total	6,901	1,798	0	0	8,699
Fish Transport	Number	10A-0124	10A-0124	10A-0124	10A-0124	
Permit (FTP)[b]	Expiration	31-Dec-20	31-Dec-20	31-Dec-20	31-Dec-20	
	Max N	7,000,000	300,000	400,000	400,000	
	Lifestage	Fry	Fry	Fry	Fry	

[a] Projected returns are calculated from Table 2 survival and age assumptions.

[b] FTP 09A-0052 and FTP 10A-0124 – both for 11.0 million green eggs, and expiring 31 December 2014, authorize the egg takes for these projects.

Table 7.–Pillar Creek Hatchery coho salmon egg-take results (Buskin Lake broodstock) from 2009, resultant juvenile releases planned for road system lakes in 2010 and 2011, projected adult production, and fish transport permit information.

		Location												
Stock information		Island Lake	Dark Lake	Mission Lake	Potato Patch Lake	Big (Lily) Lake	Mayflower Lake	Southern Lake	Margaret Lake	Abercrombie Lake	Chiniak Lake	Pillar Creek	Monashka Creek	Totals
Egg take	Eggs	32,355	10,785	17,975	13,661	14,380	9,347	5,033	5,033	5,033	28,760	71,901	71,901	286,164[a]
	Adults	13	4	7	6	6	4	2	2	2	12	29	29	116
Releases[b]	N	22,500	7,500	12,500	9,500	10,000	6,500	3,500	3,500	3,500	20,000	50,000	50,000	199,000
	Size (g)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	15.0	15.0	
	Lifestage	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Smolt	Smolt	
	Date	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	30-Aug-10	03-Jun-11	03-Jun-11	
Projected	2012	1,463	488	813	618	650	0	0	0	0	0	6,250	6,250	16,530
Returns[c]	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	1,463	488	813	618	650	0	Landlocked	Landlocked	Landlocked	Landlocked	6,250	6,250	16,530
Fish Transport	Number	04A-0006	04A-0006	04A-0006	04A-0006	05A-0004	04A-0006	04A-0005	04A-0013	05A-0003	07A-0019	10A-0009	10A-0010	
Permit (FTP)[d]	Expiration	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	01-Jul-12	2015	2015	
	Max N	22,500	7,500	12,500	9,500	10,000	6,500	3,500	3,500	3,500	20,000	50,000	50,000	
	Lifestage	Any	Any	Any	Any	Any	Any	Any	Any	Any	Any	Smolt	Smolt	

[a] The total egg-take numbers in this table do not include approximately 2,757 green eggs taken for local school classroom incubators.

[b] Coho may be reared to, and released as, spring smolt depending upon hatchery Chinook salmon smolt inventory. Included in this table are projected 2011 smolt releases into Pillar and Monashka Creeks.

[c] Projected returns are calculated from Table 4 survival and age assumptions.

[d] FTP 04A-0004 – for 200,000 green eggs, expiring 31 December, 2013, authorizes the egg take for these projects.

Table 8.–Kitoi Bay Hatchery Brood Year 2009 coho salmon egg take (Big Kitoi Creek broodstock), egg transfer to Pillar Creek Hatchery, resultant juvenile release planned for Katmai Lake in 2010, projected adult production, and fish transport permit information.

		Location	
Stock information		Katmai Lake	Totals
Egg take	Eggs	34,700	34,700[a]
	Adults	129	129
Releases[b]	N	30,000	30,000
	Size (g)	7.5	
	Lifestage	Presmolt	
	Date	01-Oct-10	
Projected	2012	3,000	3,000
Returns[c]	2013	0	0
	Total	3,000	3,000
Fish Transport	Number	10A-0115	
Permit (FTP)[d]	Expiration	31-Dec-20	
	Max N	40,000	
	Lifestage	Presmolt	

[a] The egg-take numbers in this table represent only coho eggs taken at Kitoi Bay Hatchery (KBH) for the Katmai Lake stocking project; information regarding other stocking projects supported by the 2009 KBH coho egg take can be found in the 2010 Kitoi Bay Hatchery Annual Management Plan.

[b] Kitoi Bay Hatchery has stocked juvenile Big Kitoi Creek stock coho salmon into Katmai Lake since 1992. The 2010 stocking will be the first to be executed by Pillar Creek Hatchery (PCH).

[c] Projected returns are calculated from Table 4 survival and age assumptions.

[d] FTP 02A-0010 – for 40,000 green eggs, expiring 01 May 2012, authorizes the egg take for this project.

Table 9.–Pillar Creek Hatchery Chinook salmon egg-take results (Monashka Creek broodstock) from 2008, resultant juvenile releases in 2010, projected adult production, and fish transport permit information.

Stock information		Location			Totals
		American River	Olds River	Monashka Creek	
Egg take	Eggs	86,258	86,258	95,083	267,600
	Adults	45	45	49	139
Releases	N	75,750	75,750	83,500	235,000
	Size (g)	12.0	12.0	12.0	
	Lifestage	Smolt	Smolt	Smolt	
	Date	31-May-10	31-May-10	31-May-10	
Projected	2011	20	20	23	63
Returns[a]	2012	108	108	120	336
	2013	290	290	320	900
	2014	458	458	505	1,422
	2015	31	31	34	96
	Total	908	908	1,001	2,818
Fish Transport	Number	07A-0017	07A-0020	05A-0050	
Permit (FTP)[b]	Expiration	31-Dec-11	31-Dec-11	01-Sep-14	
	Max N	None	None	None	
	Lifestage	Smolt	Smolt	Smolt	

[a] Projected returns are calculated from Table 4 survival and age assumptions.

[b] FTP 05A-0050 – for 450,000 green eggs, expiring September 1, 2014, authorizes the egg take for these projects.

Table 10.–Pillar Creek Hatchery Chinook salmon egg take (Monashka Creek broodstock) conducted in 2009, resultant juvenile releases in 2011, projected adult production, and fish transport permit information.

		Location			
Stock information		American River	Olds River	Monashka Creek	Totals
Egg take	Eggs	8,920	8,920	53,520	66,840
	Adults	5	5	33	104
Releases	N	7,500	7,500	45,000	60,000
	Size (g)	15.0	15.0	15.0	
	Lifestage	Smolt	Smolt	Smolt	
	Date	31-May-11	31-May-11	31-May-11	
Projected	2012	2	2	12	16
Returns[a]	2013	11	11	64	86
	2014	29	29	172	230
	2015	45	45	272	363
	2016	3	3	18	25
	Total	90	90	540	719
Fish Transport	Number	07A-0017	07A-0020	05A-0050	
Permit (FTP)[b]	Expiration	31-Dec-11	31-Dec-11	01-Sep-14	
	Max N	None	None	None	
	Lifestage	Smolt	Smolt	Smolt	

[a] Projected returns are calculated from Table 4 survival and age assumptions.

[b] FTP 05A-0050 – for 450,000 green eggs, expiring September 1, 2014, authorizes the egg take for these projects.

Table 11.–Proposed Pillar Creek Hatchery rainbow trout egg take (Ft. Richardson Hatchery captive brood, original donor stock Swanson River) in 2010; eyed-egg transfer from Ft. Richardson Hatchery, resultant juvenile releases planned for road system lakes in 2010, and fish transport permit information.

	Egg take[a,b]		Releases[a,c]				Projected
Location	Eggs	Adults	N	Size (g)	Lifestage	Date	Returns
Abercrombie Lake	6,556	9	4,917	2.0	Fingerling	15-Sep-10	Landlocked
Aurel Lake	5,315	7	3,986	2.0	Fingerling	15-Sep-10	Landlocked
Big (Lily) Lake	6,377	8	4,783	2.0	Fingerling	15-Sep-10	Landlocked
Bull Lake	3,544	5	2,658	2.0	Fingerling	15-Sep-10	Landlocked
Caroline Lake	2,480	3	1,860	2.0	Fingerling	15-Sep-10	Landlocked
Cicely Lake	2,037	3	1,528	2.0	Fingerling	15-Sep-10	Landlocked
Dolgoi Lake	9,124	12	6,843	2.0	Fingerling	15-Sep-10	Landlocked
Dragonfly Lake	2,745	4	2,059	2.0	Fingerling	15-Sep-10	Landlocked
Heitman Lake	5,757	7	4,318	2.0	Fingerling	15-Sep-10	Landlocked
Horseshoe Lake	43,937	57	1,329	2.0	Fingerling	15-Sep-10	Landlocked
Jack Lake	1,772	2	1,329	2.0	Fingerling	15-Sep-10	Landlocked
Jupiter Lake	1,772	2	4,783	2.0	Fingerling	15-Sep-10	Landlocked
Lee Lake	6,377	8	3,720	2.0	Fingerling	15-Sep-10	Landlocked
Lily Pond Lake	4,960	6	2,126	2.0	Fingerling	15-Sep-10	Landlocked
Long Lake	2,835	4	4,783	2.0	Fingerling	15-Sep-10	Landlocked
Saturn Lake	6,377	8	3,189	2.0	Fingerling	15-Sep-10	Landlocked
Tanignak Lake	4,252	6	7,972	2.0	Fingerling	15-Sep-10	Landlocked
Twin Lake	10,630	14	5,315	2.0	Fingerling	15-Sep-10	Landlocked

[a] Note that unlike other salmon species, the egg take and stocking of rainbow trout occur in the same calendar year.

[b] FTP 07A-0029 allows the transfer of a maximum of 92,000 eyed eggs from Ft. Richardson to PCH and expires on 31 December, 2012.

[c] FTP 08A-0054 allows the release of a maximum of 92,000 juveniles into Kodiak road system lakes and expires on 31 December, 2012.

Table 12.–Donor stock, broodstock numbers, and escapement goal ranges for 2010 egg takes.

Species	Donor Stock	Broodstock Numbers	Escapement Goal Range
Sockeye	Afognak Lake	1,191	20,000-50,000
Sockeye	Malina Lake	1,196	1,000-10,000
Sockeye	Saltery Lake[a]	4,436	15,000-30,000
Sockeye	Little Kitoi Lake[a]	4,436	No escapement goal
Coho	Buskin Lake	64	3,200-7,200
Coho	Big Kitoi Creek	130	No escapement goal
Chinook	Monashka Creek	150	No escapement goal

[a] Broodstock numbers include approximately 470 adults for Kitoi Bay Hatchery projects (Aro and Schrof 2010).

Table 13.–Proposed Pillar Creek Hatchery early-run sockeye salmon egg takes (Afognak Lake or Malina Lake broodstock) in 2010, juvenile releases in 2011, projected adult production, and fish transport permit information.

		Location							
Stock information		Hidden Lake	Hidden Lake	Little Waterfall Lake	Little Waterfall Lake	Big Waterfall Lake	Crescent Lake	Crescent Lake	Totals
Egg take[a]	Eggs	369,913	246,609	123,304	184,957	123,304	246,609	123,304	1,418,000
	Adults	311	207	104	155	104	207	104	1,191
Releases	N	300,000	200,000	100,000	150,000	100,000	200,000	100,000	1,150,000
	Size (g)	0.4	10.0	0.4	10.0	10.0	0.4	10.0	
	Lifestage	Fry	Presmolt	Fry	Presmolt	Presmolt	Fry	Presmolt	
	Date	01-Jun-11	01-Oct-11	01-Jun-11	01-Oct-11	01-Oct-11	01-Jun-11	01-Oct-11	
Projected	2013	986	2,260	329	1,695	1,130	657	1,130	7,201
Returns[b]	2014	3,551	6,620	1,184	4,965	3,310	2,367	3,310	21,756
	2015	6,305	10,480	2,102	7,860	5,240	4,203	5,240	35,125
	2016	2,228	0	743	0	0	1,485	0	2,228
	Total	13,068	19,360	4,356	14,520	9,680	8,712	9,680	66,308
Fish Transport	Number	09A-0047	09A-0048	06A-0042	09A-0049	10A-0122	06A-0047	10A-0123	
Permit (FTP)	Expiration	31-Dec-14	31-Dec-14	31-Dec-11	31-Dec-14	31-Dec-20	31-Dec-11	31-Dec-20	
Afognak Lake	Max N	500,000	500,000	400,000	200,000	250,000	500,000	275,000	
stock[c]	Lifestage	Fry	Presmolt	Fry	Presmolt	Presmolt	Fry	Presmolt	
Fish Transport	Number	10A-0119	10A-0119	10A-0120	10A-0120	10A-0117	10A-0118	10A-0118	
Permit (FTP)	Expiration	31-Dec-14	31-Dec-14	31-Dec-14	31-Dec-14	31-Dec-20	31-Dec-20	31-Dec-20	
Malina Lake	Max N	600,000	500,000	400,000	350,000	250,000	500,000	275,000	
stock[d]	Lifestage	Fry	Presmolt	Fry	Presmolt	Presmolt	Fry	Presmolt	

[a] Afognak Lake sockeye salmon has traditionally been the primary broodstock for early-run stocking projects. Afognak Lake adult returns since 2001 have not been as strong as those of the 1990s, and in 2004, Malina Lake sockeye were utilized as an alternative early-run broodstock. Early-run sockeye egg takes were conducted at both Malina and Afognak Lakes in 2005. Afognak Lake is the preferred brood source for the 2010 early-run sockeye egg take. Malina Lake sockeye may be utilized as a 2010 brood source if egg-take goals cannot be achieved using Afognak Lake brood exclusively.

[b] Projected returns are calculated from Table 4 survival and age assumptions.

[c] FTP 09A-0044 – for 4.1 million green eggs, expiring 31 December 2014, authorizes the Afognak Lake egg take for these projects.

[d] FTP 10A-0016 – for 4.1 million green eggs expiring 31 December 2014, authorizes the Malina Lake egg take for these projects.

Table 14.–Proposed Pillar Creek Hatchery late-run sockeye salmon egg takes (Little Kitoi Lake or Saltery Lake broodstock) in 2010, juvenile releases for Spiridon, Jennifer, and Ruth lakes in 2011, projected adult production, and fish transport permit information.

		Location				
Stock information		Spiridon Lake	U. Jennifer Lake	L. Jennifer Lake	Ruth Lake	Late-run Totals
Egg take[a, b]	Eggs	4,342,000	227,500	97,500	97,500	4,764,500
	Adults	3,614	189	81	81	3,966
Releases	N	3,340,000	175,000	75,000	75,000	3,665,000
	Size (g)	0.4	0.4	0.4	0.4	
	Lifestage	Fry	Fry	Fry	Fry	
	Date	19-Jun-11	19-Jun-11	19-Jun-11	19-Jun-11	
Projected	2013	752	39	17	17	825
Returns[c]	2014	47,795	2,504	1,073	1,073	52,446
	2015	93,487	4,898	2,099	2,099	102,583
	2016	8,116	425	182	182	8,906
	Total	150,150	7,867	3,372	3,372	164,760
Fish Transport	Number	10A-0124	10A-0124	10A-0124	10A-0124	
Permit (FTP)	Expiration	31-Dec-20	31-Dec-20	31-Dec-20	31-Dec-20	
Saltery Lake	Max N	7,000,000	400,000	400,000	300,000	
stock[d]	Lifestage	Fry	Fry	Fry	Fry	

[a] Saltery Lake sockeye salmon have been the primary broodstock for late-run stocking projects since 1997. Saltery Lake stock sockeye have been stocked into Little Kitoi Lake to build a new late-run sockeye brood source. Little Kitoi Lake is the preferred brood source for the 2010 late-run sockeye egg take. If 2010 Little Kitoi Lake escapement is insufficient to meet the Pillar Creek Hatchery egg-take goal, the 2010 late-run sockeye egg take will be executed at Saltery Lake.

[b] Totals do not include approximately 470 additional adult brood and 568,182 green eggs that will be utilized for Kitoi Bay Hatchery projects (Aro and Schrof 2010).

[c] Projected returns are calculated from Table 4 survival and age assumptions.

[d] FTP 09A-0052 – for 11.0 million green eggs, expiring 31 December 2014, authorizes the Saltery Lake egg take for these projects. FTP 10A-0124 – for 11.0 million green eggs, expiring 31 December 2020, authorizes the Little Kitoi Lake egg take for these projects. Since Saltery Lake is the donor stock for Little Kitoi Lake sockeye, the FTPs which permit stocking of Saltery Lake sockeye are also valid for juvenile sockeye resulting from Little Kitoi Lake egg takes.

Table 15.–Proposed Pillar Creek Hatchery coho salmon egg takes (Buskin Lake broodstock) in 2010, resultant juvenile releases planned for Road System Lakes in 2011 (Monashka Creek in 2012), projected adult production, and fish transport permit information.

		Location											
Stock information		Island Lake	Dark Lake	Mission Lake	P.Patch Lake	Mayflower Lake	Southern Lake	Abercrombie Lake	Chiniak Lake	Margaret Lake	Pillar Creek	Monashka Creek	Totals
Eggtake	Eggs	27,809	9,270	15,449	11,742	8,034	4,326	4,326	24,719	4,326	0	0	110,000
	Adults	16	5	9	7	5	3	3	14	3	0	0	64
Releases[a]	N	22,500	7,500	12,500	9,500	6,500	3,500	3,500	20,000	3,500	0	0	89,000
	Size (g)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	15.0	15.0	
	Lifestage	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Fingerling	Smolt	Smolt	
	Date	15-Aug-11	15-Aug-11	15-Aug-11	15-Aug-11	15-Aug-11	15-Aug-11	15-Aug-11	15-Aug-11	15-Aug-11	03-Jun-12	03-Jun-12	
Projected	2012	0	0	0	0	0	0	0	0	0	0	0	0
Returns[b]	2013	1,463	488	813	618	423	0	0	0	0	0	0	3,803
	Total	1,463	488	813	618	423	Landlocked	Landlocked	Landlocked	Landlocked	0	0	3,803
Fish Transport	Number	04A-0006	04A-0006	04A-0006	04A-0006	04A-0006	04A-0005	05A-0003	07A-0019	04A-0013	10A-0009	10A-0010	
Permit (FTP)	Expiration	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	31-Dec-13	01-Jul-12	31-Dec-13	2015	2015	
Afognak Lake	Max N	22,500	7,500	12,500	9,500	6,500	3,500	3,500	20,000	10,000	10,000	10,000	
stock[c]	Lifestage	Any	Any	Any	Any	Any	Any	Any	Any	Any	Smolt	Smolt	

[a] Coho may be reared to spring smolt and then released into landlocked lakes, and/or Monashka Creek depending upon Chinook salmon smolt production. Possible 2012 releases are not included in column above of total releases for all locations.

[b] Projected returns are calculated from Table 4 survival and age assumptions.

[c] FTP 04A-0004 – for 200,000 green eggs, expiring 31 December 2013, authorizes the egg take for these projects.

Table 16.–Kitoi Bay Hatchery Brood Year 2010 coho salmon egg take (Big Kitoi Creek broodstock), egg transfer to Pillar Creek Hatchery, resultant juvenile release planned for Katmai Lake in 2011, projected adult production, and fish transport permit information.

		Location	
Stock information		Katmai Lake	Totals
Egg take	Eggs	34,700	34,700[a]
	Adults	130	130
Releases[b]	N	30,000	30,000
	Size (g)	7.5	
	Lifestage	Presmolt	
	Date	01-Oct-10	
Projected	2012	3,000	3,000
Returns[c]	2013	0	0
	Total	3,000	3,000
Fish Transport	Number	10A-0115	
Permit (FTP)[d]	Expiration	31-Dec-20	
	Max N	40,000	
	Lifestage	Presmolt	

[a] The egg-take numbers in this table represent only coho eggs taken at Kitoi Bay Hatchery (KBH) for the Katmai Lake stocking project; information regarding other stocking projects supported by the 2010 KBH coho egg take can be found in the 2010 Kitoi Bay Hatchery Annual Management Plan.

[b] Kitoi Bay Hatchery has stocked juvenile Big Kitoi Creek stock coho salmon into Katmai Lake since 1992.

[c] Projected returns are calculated from Table 4 survival and age assumptions.

[d] FTP 02A-0010 – for 40,000 green eggs, expiring 01 May 2012, authorizes the egg take for this project.

Table 17.–Pillar Creek Hatchery Chinook salmon proposed egg take (Monashka Creek broodstock) in 2010, resultant juvenile releases in 2012, projected adult production, and fish transport permit information.

		Location			
Stock information		American River	Olds River	Monashka Creek	Totals
Egg take	Eggs	162,500	162,500	125,000	450,000
	Adults	54	54	42	150
Releases	N	130,000	130,000	100,000	360,000
	Size (g)	15.0	15.0	15.0	
	Lifestage	Smolt	Smolt	Smolt	
	Date	31-May-12	31-May-12	31-May-12	
Projected	2013	35	35	27	97
Returns[a]	2014	186	186	143	515
	2015	498	498	383	1,379
	2016	787	787	605	2,178
	2017	53	53	41	147
	Total	1,559	1,559	1,199	4,317
Fish Transport	Number	07A-0017	07A-0020	05A-0050	
Permit (FTP)[b]	Expiration	31-Dec-11	31-Dec-11	01-Sep-14	
	Max N	None	None	None	
	Lifestage	Smolt	Smolt	Smolt	

[a] Projected returns are calculated from Table 4 survival and age assumptions.

[b] FTP 05A-0050 – for 450,000 green eggs, expiring 1 September 2014, authorizes the egg take for these projects.

Table 18.–Estimated 2010 sockeye salmon runs as a result of Pillar Creek Hatchery stocking projects.

			Run Forecast		
				Range	
Lake Stocked	Broodstock [a]	Harvest Location	Point	Minimum	Maximum
Hidden	Afognak/Malina Lake (ER) [b]	Foul Bay SHA	15,000	8,000	35,000
Big & Little Waterfall	Afognak/Malina Lake (ER)	Waterfall Bay SHA	5,400	3,000	24,000
Crescent	Afognak/Malina Lake (ER)	Settler Cove SHA [c]	11,000	4,000	18,000
Spiridon	Saltery Lake (LR)	Spiridon Bay SHA [d]	126,000	47,000	303,000
Ruth Lake	Saltery Lake (LR)	Izhut and Ruth Bays	3,400	1,700	5,100
Jennifer Lake	Saltery Lake (LR)	Izhut and Kitoi Bays	4,400	2,200	6,500
Little Kitoi Lake [e]	Saltery Lake (LR)	Izhut and Kitoi Bays	150		
Total Early Run:			31,400	15,000	77,000
Total Late Run:			133,950	50,900	314,600
Total Both Runs:			165,350	65,900	391,600

[a] ER = early run; LR = late run

[b] Afognak Lake serves as the primary brood source for early-run sockeye projects; Malina Lake is an alternate brood source. Early-run systems were stocked with BY04 Malina sockeye in 2005. In 2006, Hidden and Crescent lakes were stocked with BY05 Afognak Lake sockeye; Big and Little Waterfall lakes were stocked with BY05 Malina sockeye.

[c] Some fish may be harvested in the Central Section of the Northwest Kodiak District.

[d] Fish will also be harvested in traditional commercial fishing areas in the Northwest Kodiak District.

[e] The projected return to Little Kitoi Lake of 150 late-run Saltery stock sockeye represents the portion of the 2010 run produced by PCH stocking of Little Kitoi Lake in 2005. The balance, and majority, of the run will be attributed to KBH stocking of Little Kitoi Lake, and the projection of those returns can be found in the Kitoi Bay Hatchery 2010 Annual Management Plan (Aro and Schrof 2010).

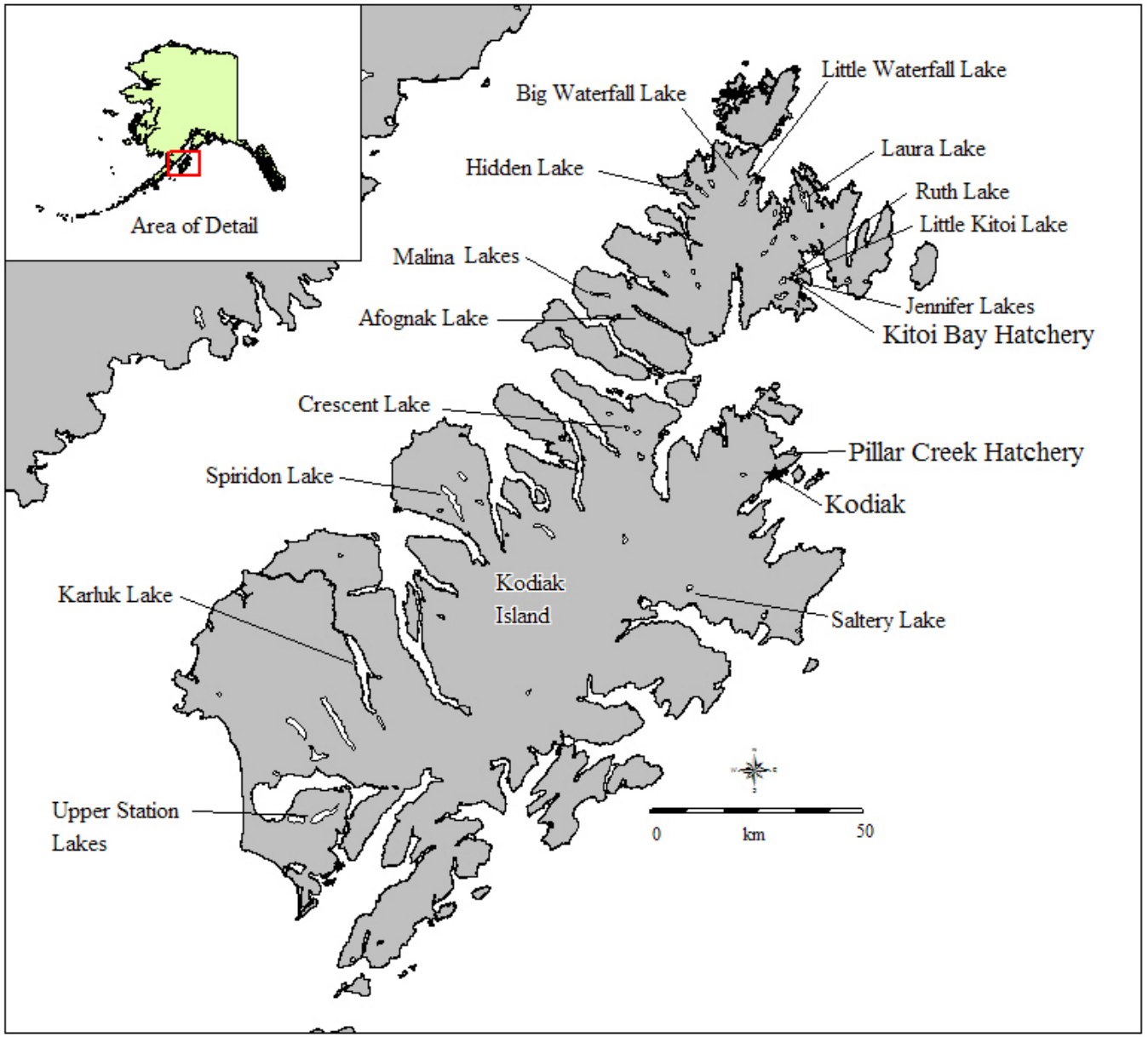

Figure 1.–Locations of past and present sockeye salmon enhancement and rehabilitation projects, and current egg-take sites on Kodiak and Afognak Islands.

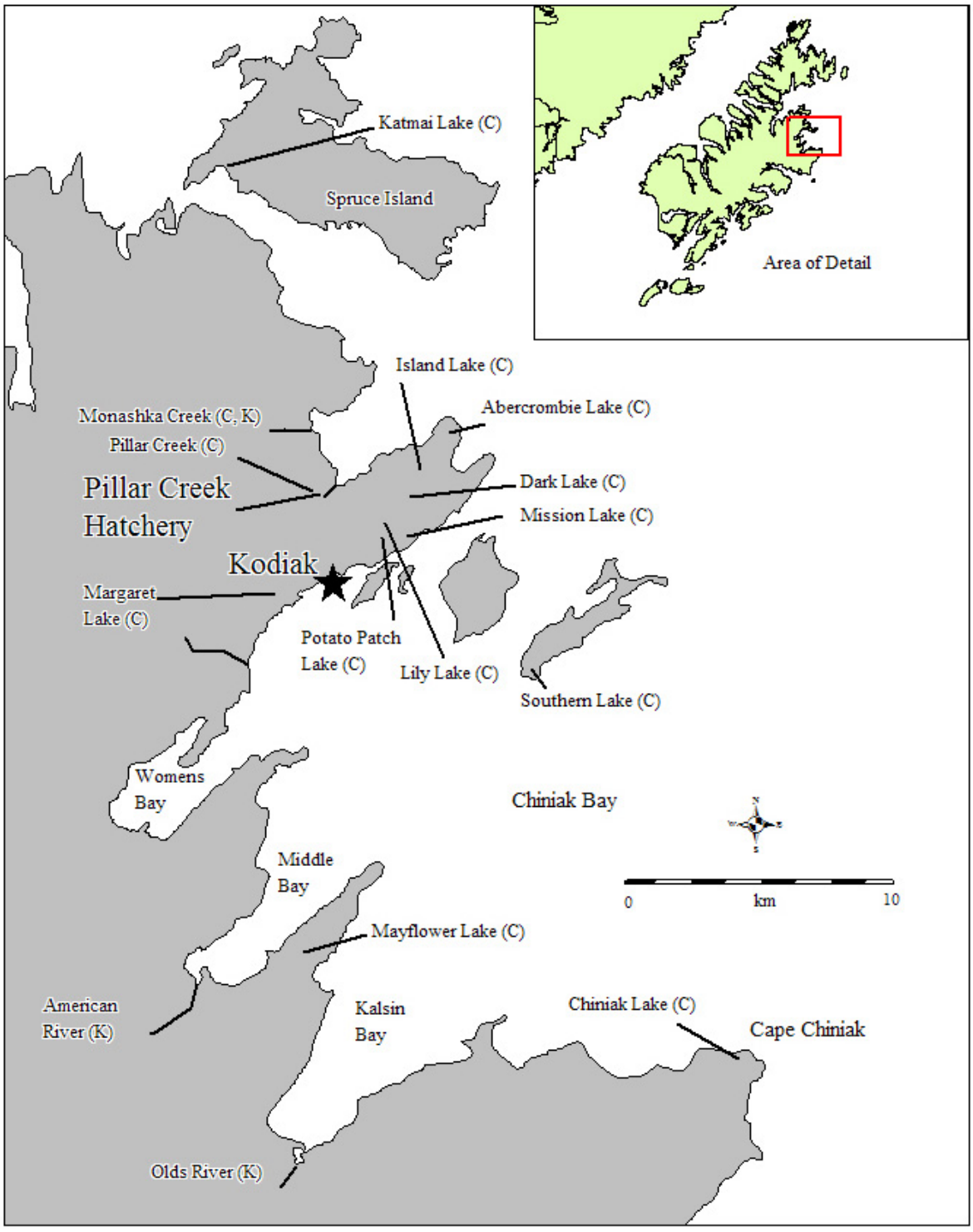

Figure 2.–Locations of Kodiak Island road system lakes and rivers that are to be stocked with coho (C) and Chinook (K) salmon in 2010.

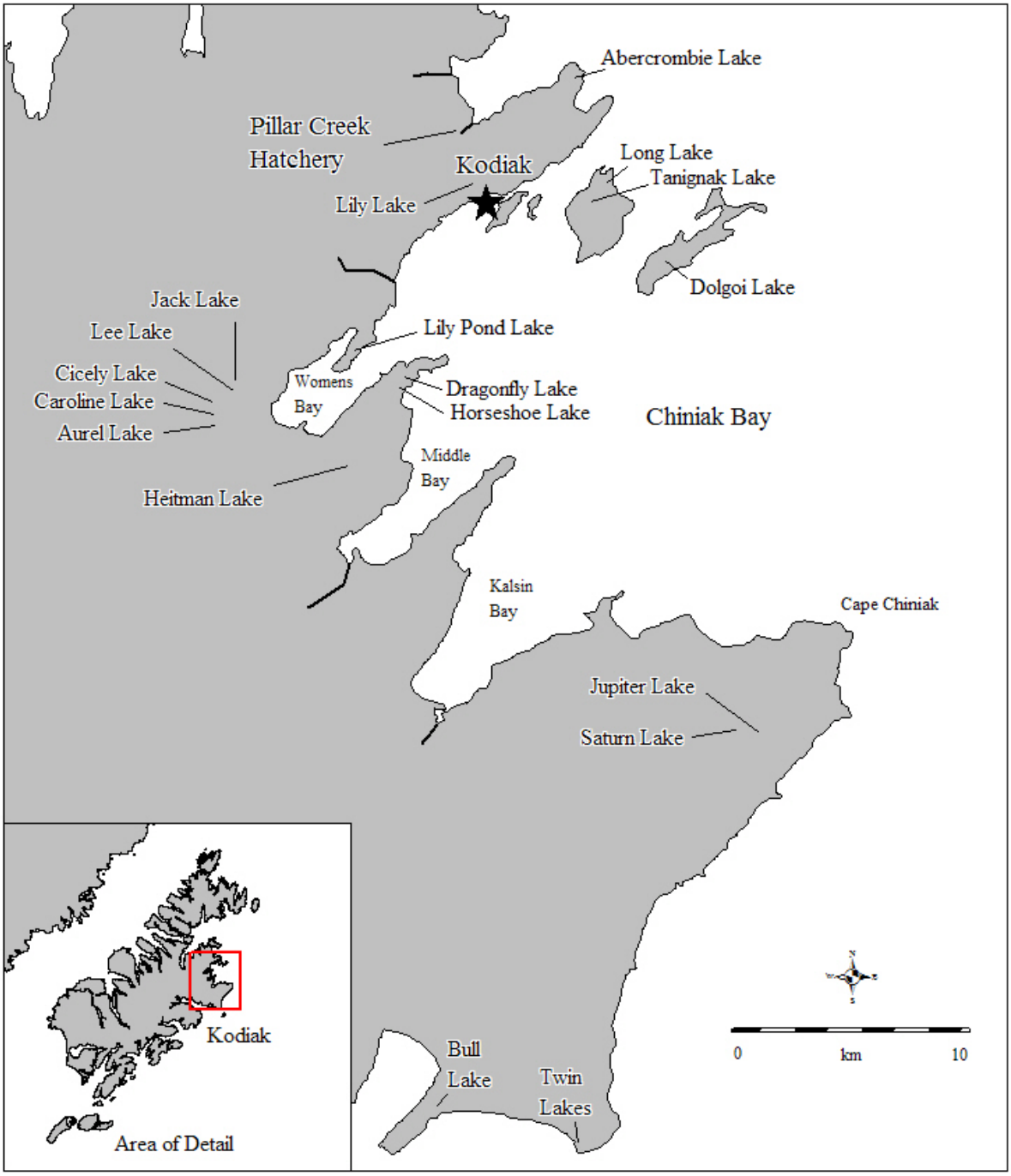

Figure 3.–Locations of Kodiak Island road system lakes that are to be stocked with rainbow trout in 2010.

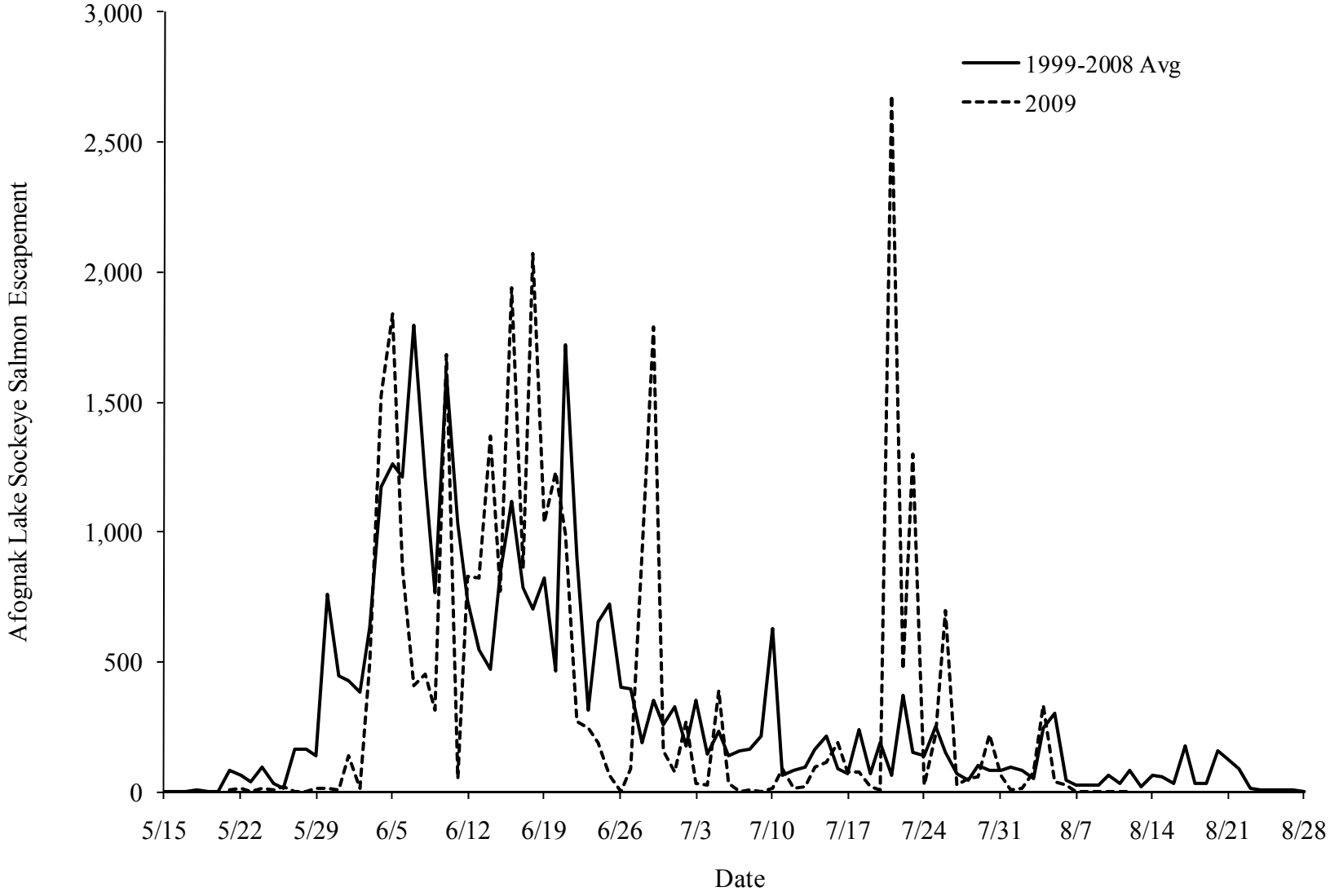

Figure 4.–Afognak Lake sockeye salmon average escapement timing (1999–2008) compared to the 2009 escapement timing.

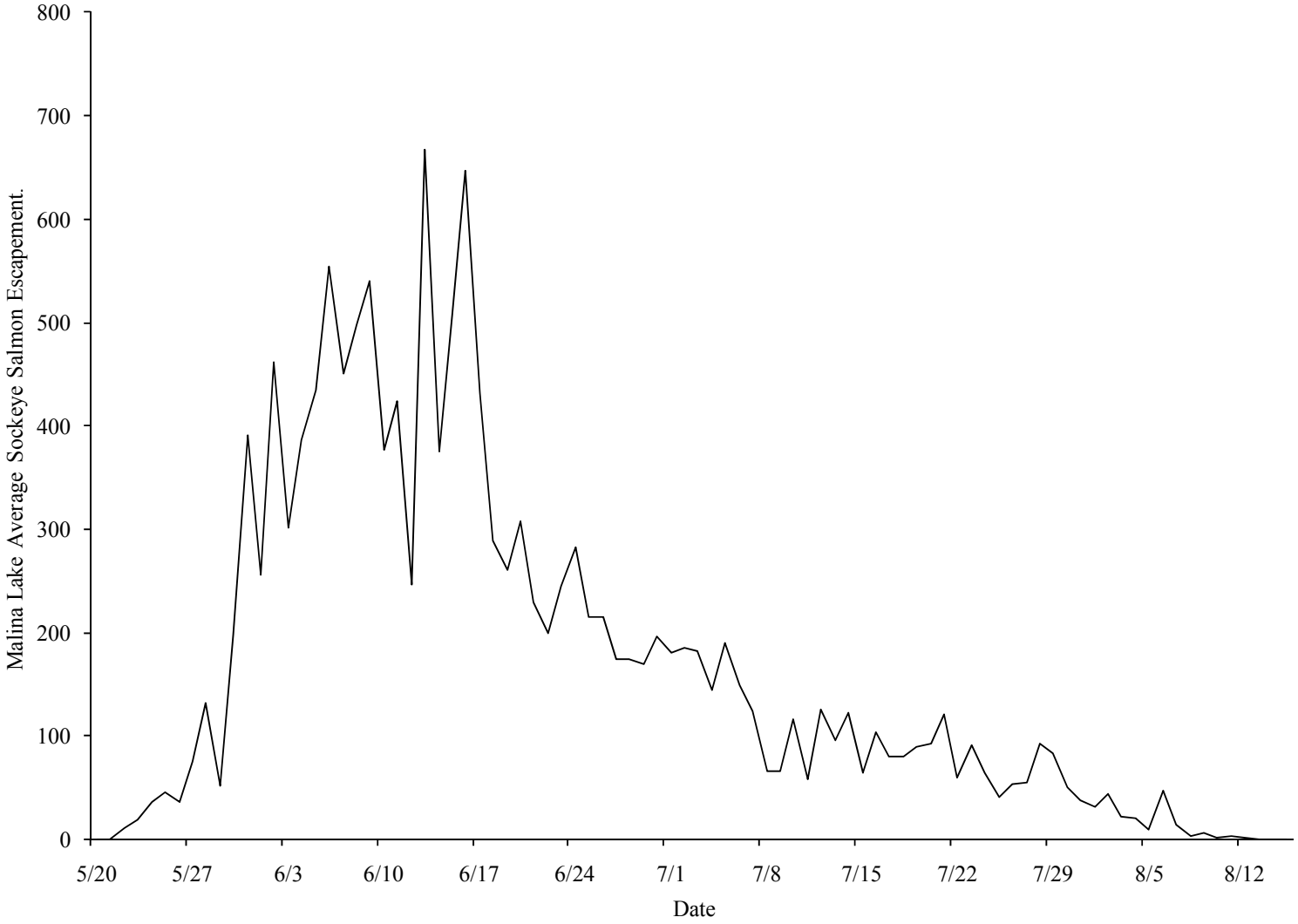

Figure 5.–Malina Lake sockeye salmon average escapement timing, 1993–2001. The weir was not operated over the entire duration of the run in 2002, 2004, and 2005, and was not operated at all in 2003 or following 2005.

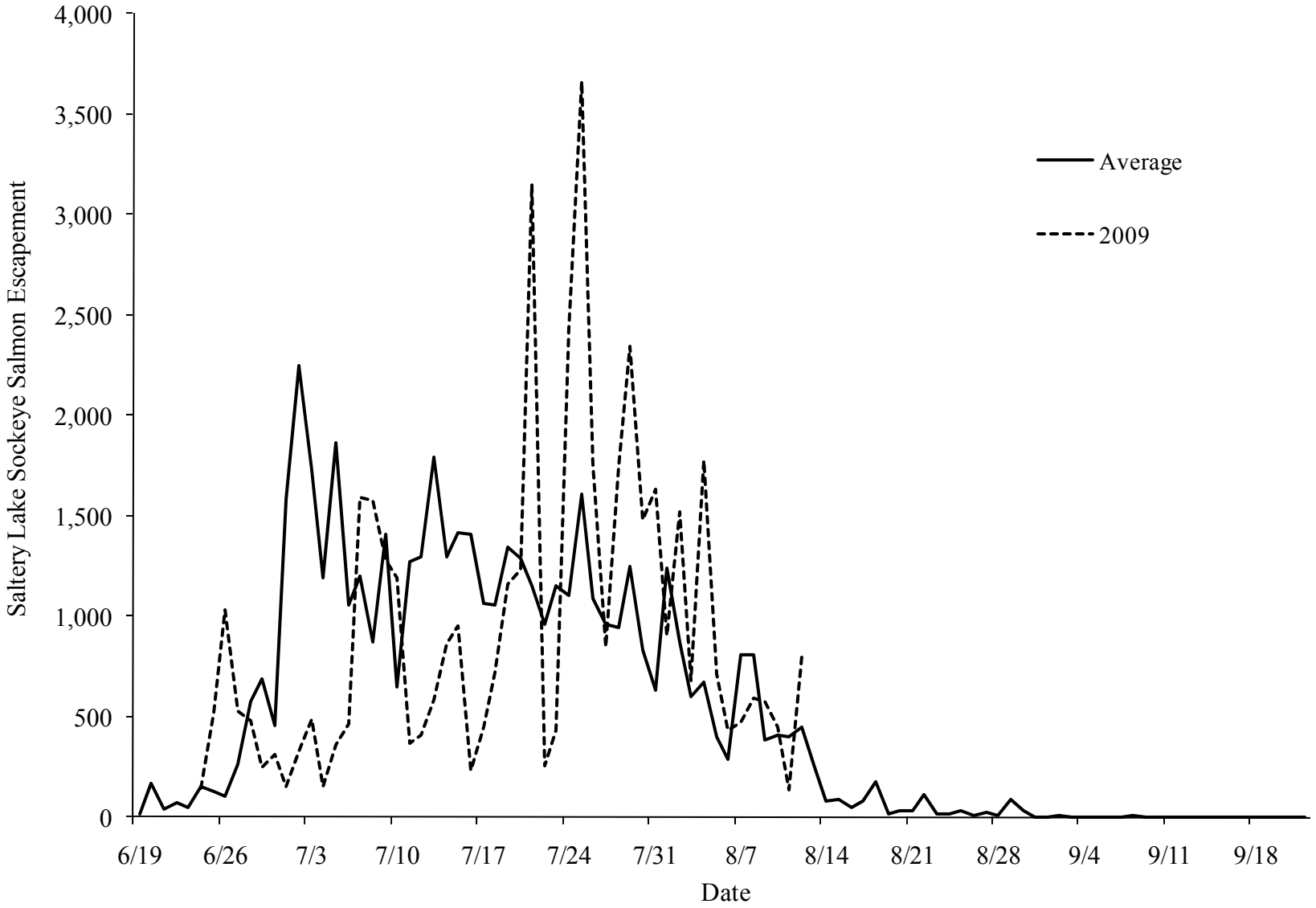

Figure 6.–Saltery Lake sockeye salmon average escapement timing (1999–2003 and 2008) compared to the 2009 escapement timing. The Saltery Lake weir was not operated 2004–2007.

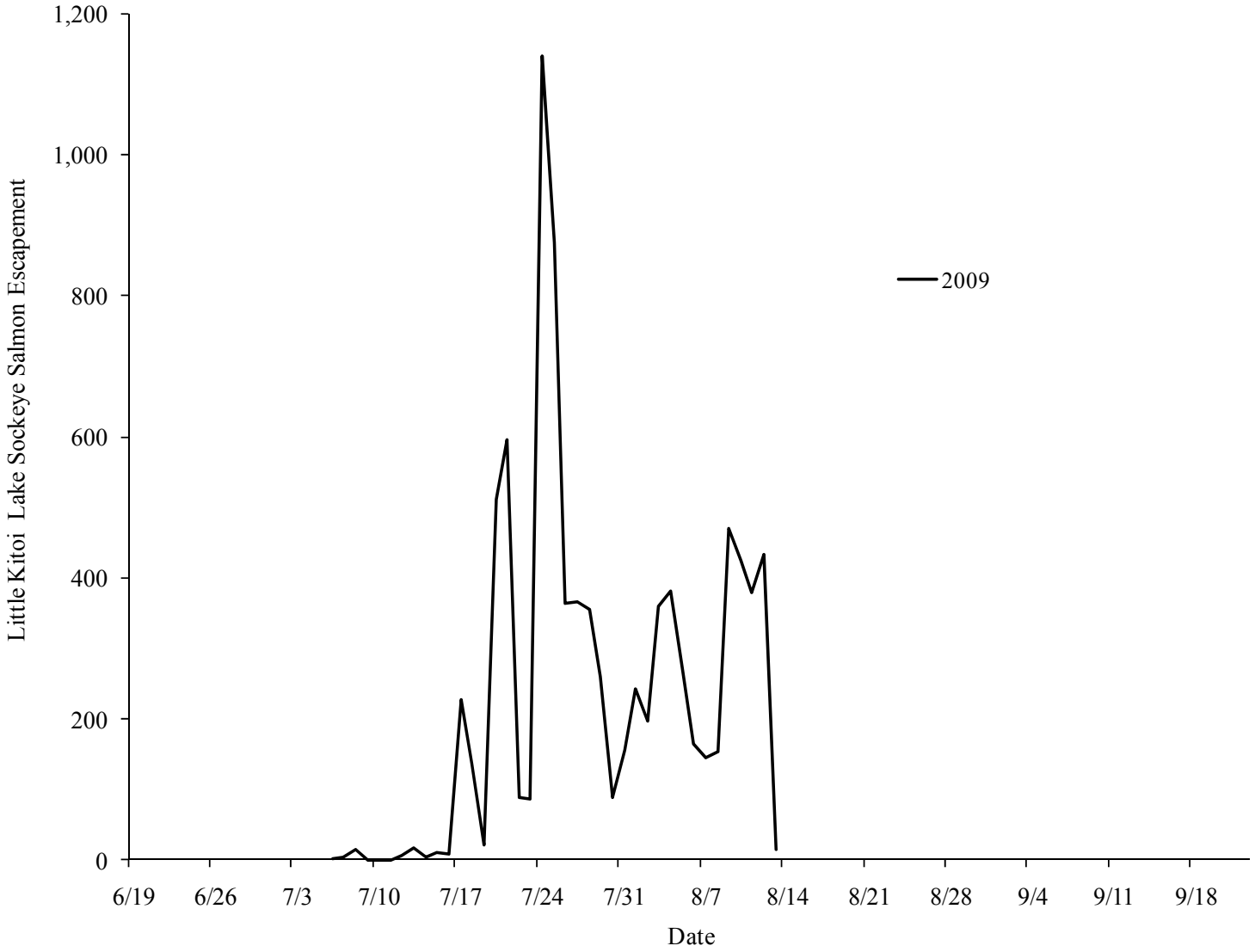

Figure 7.–Little Kitoi Lake sockeye salmon 2009 daily escapement. Daily escapement counts for Little Kitoi Lake were unavailable prior to the 2009 installation of a motion-activated underwater camera system.

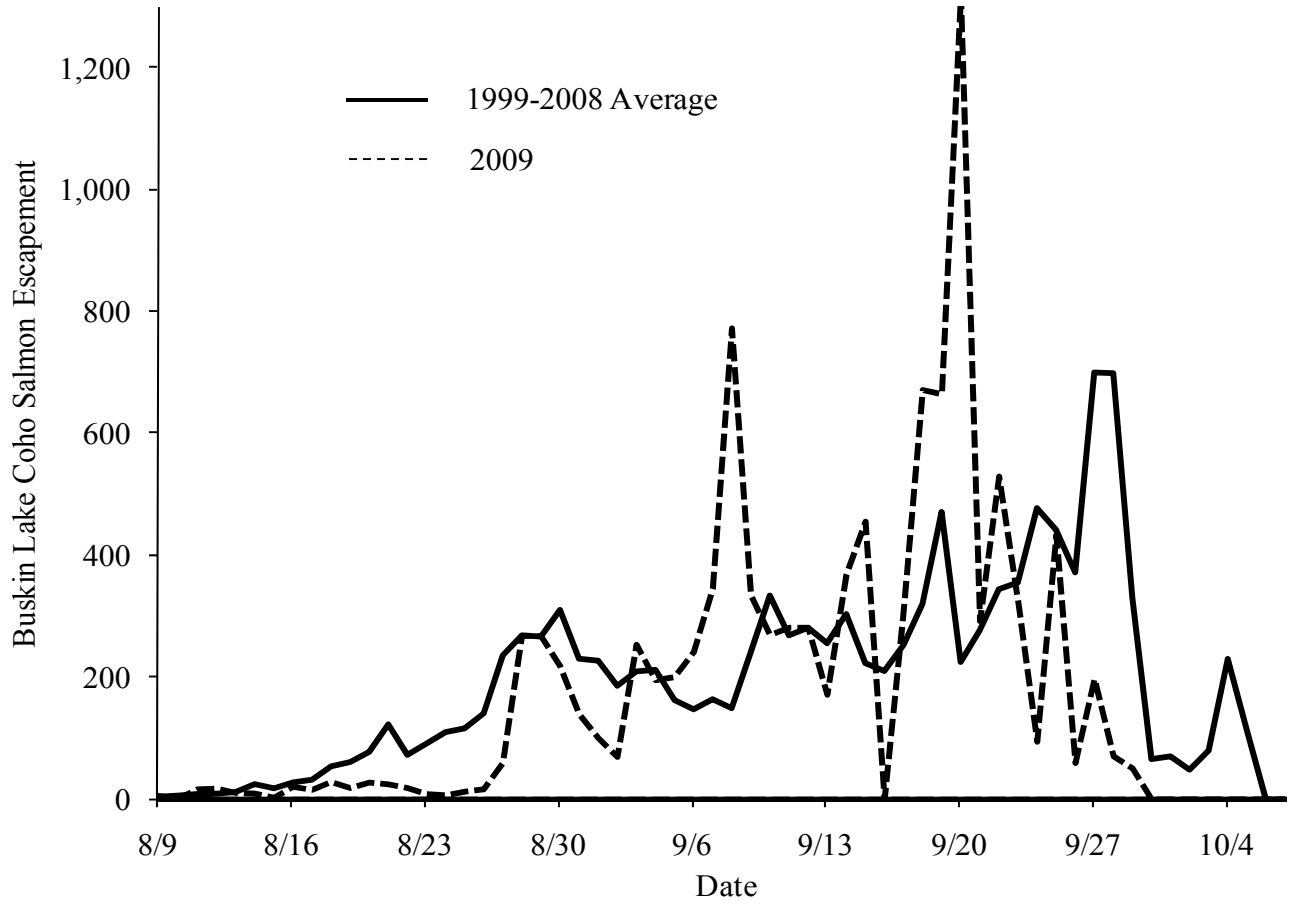

Figure 8.–Buskin River coho salmon average escapement timing (1999–2008) compared to the 2009 escapement timing.

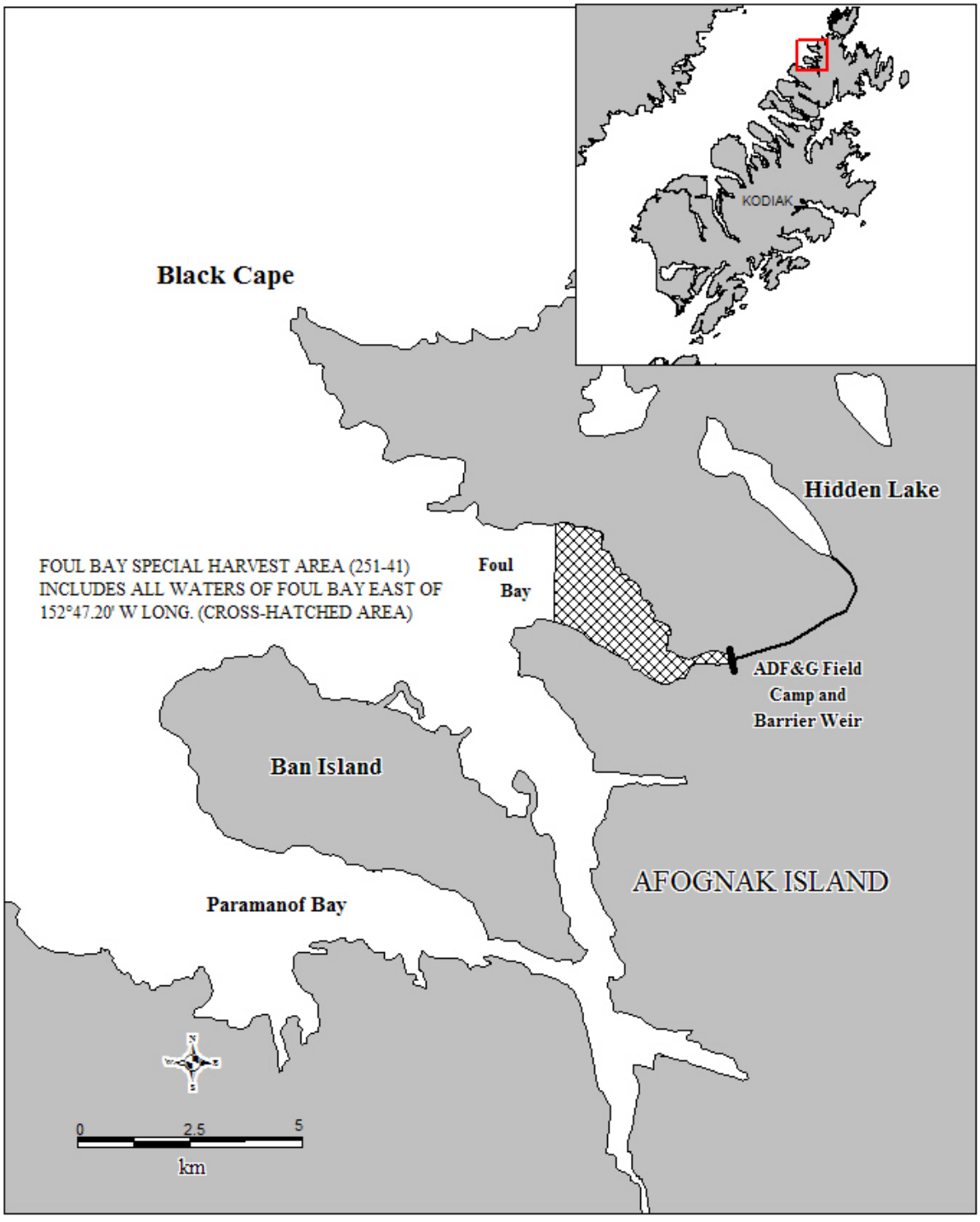

Figure 9.–Location of the Foul Bay special harvest area, and former locations of the ADF&G field camp and fish weir at Hidden Creek.

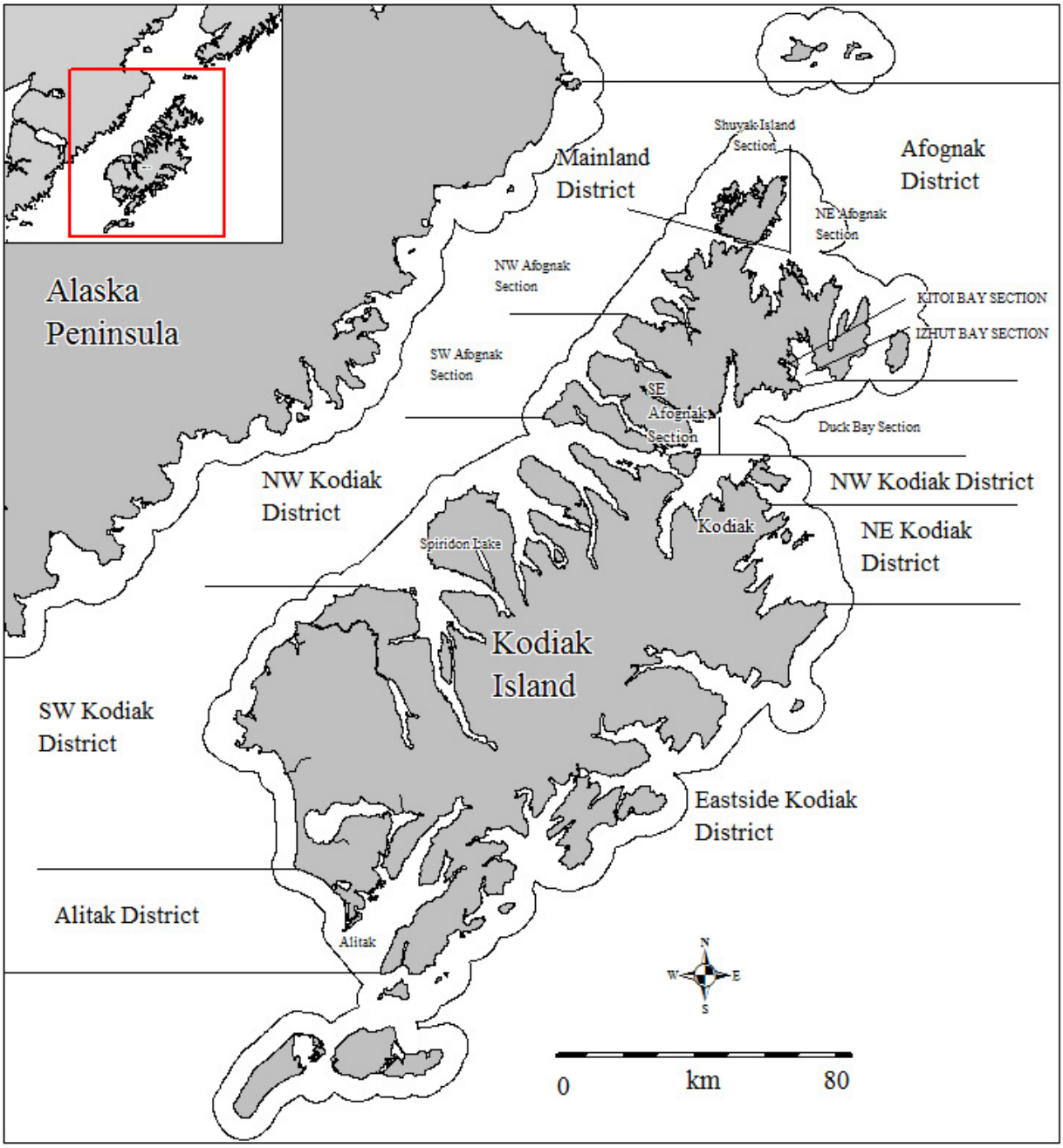

Figure 10.–Map of the Kodiak Management Area depicting commercial fishing districts and selected sections.

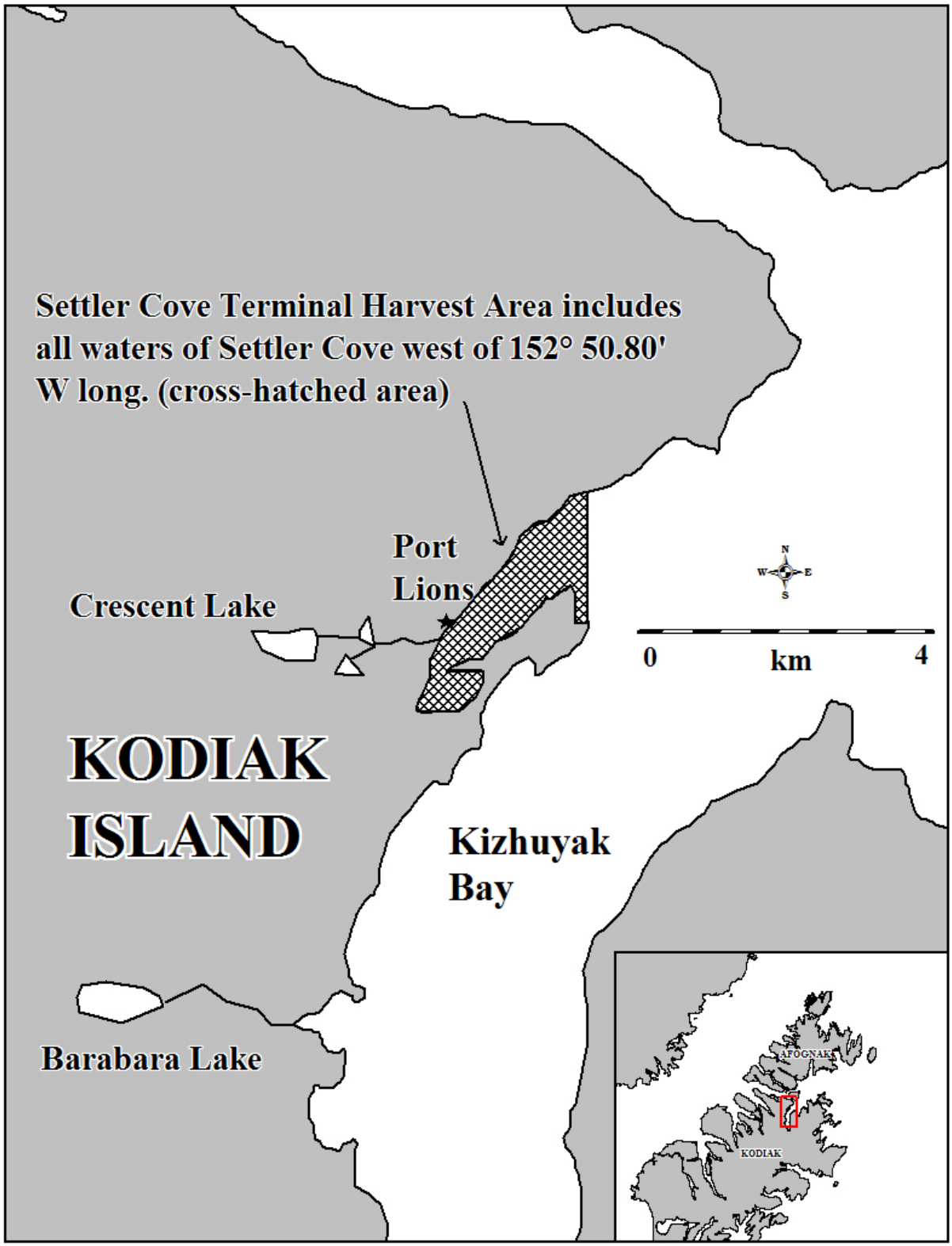

Figure 11.–Settler Cove (Crescent Lake) special harvest area boundaries in Kizhuyak Bay.

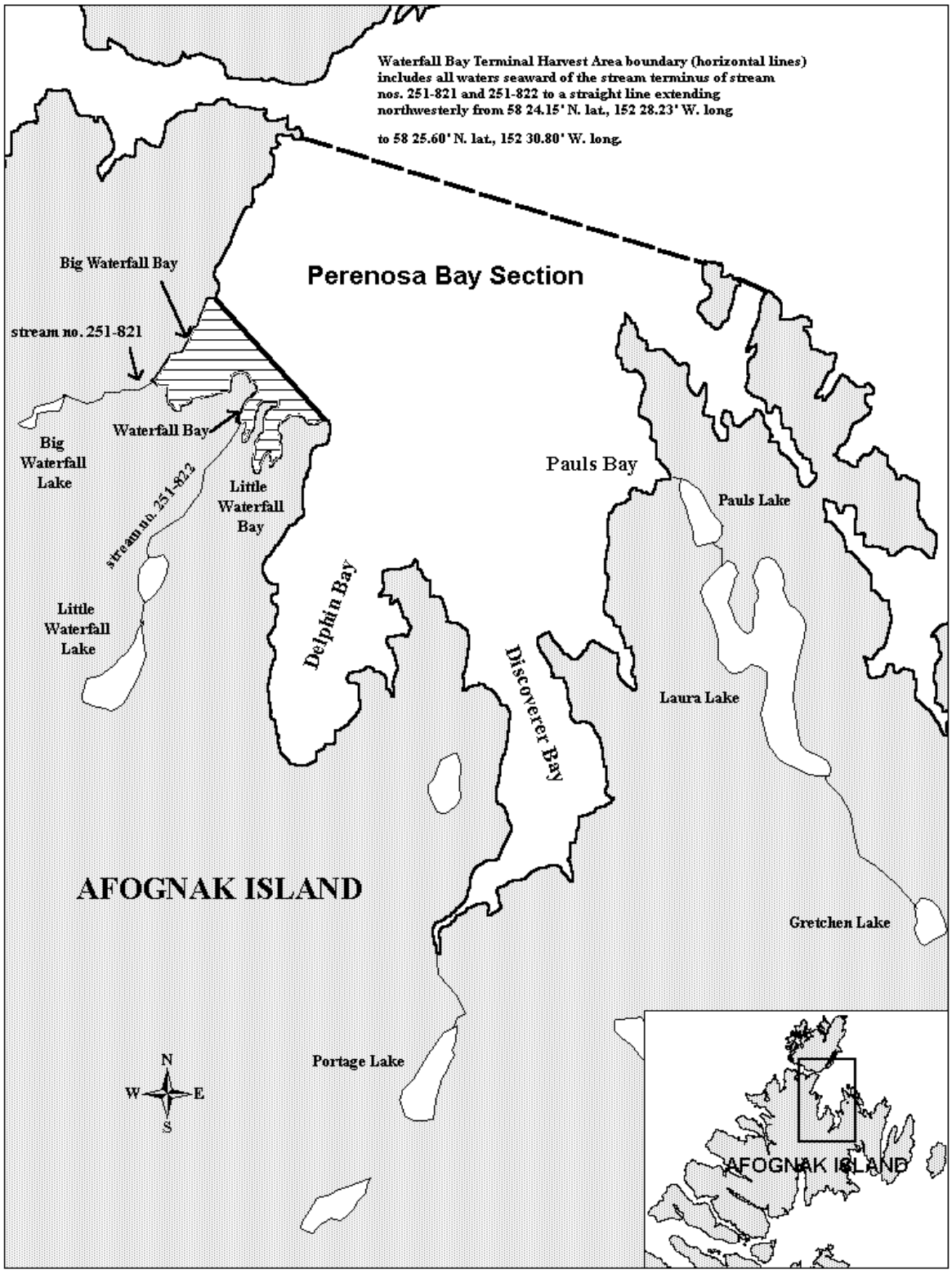

Figure 12.–Waterfall Bay (Little and Big Waterfall lakes) special harvest area, Pauls Bay system (Pauls and Laura lakes), and the Pauls Bay Section in Perenosa Bay.

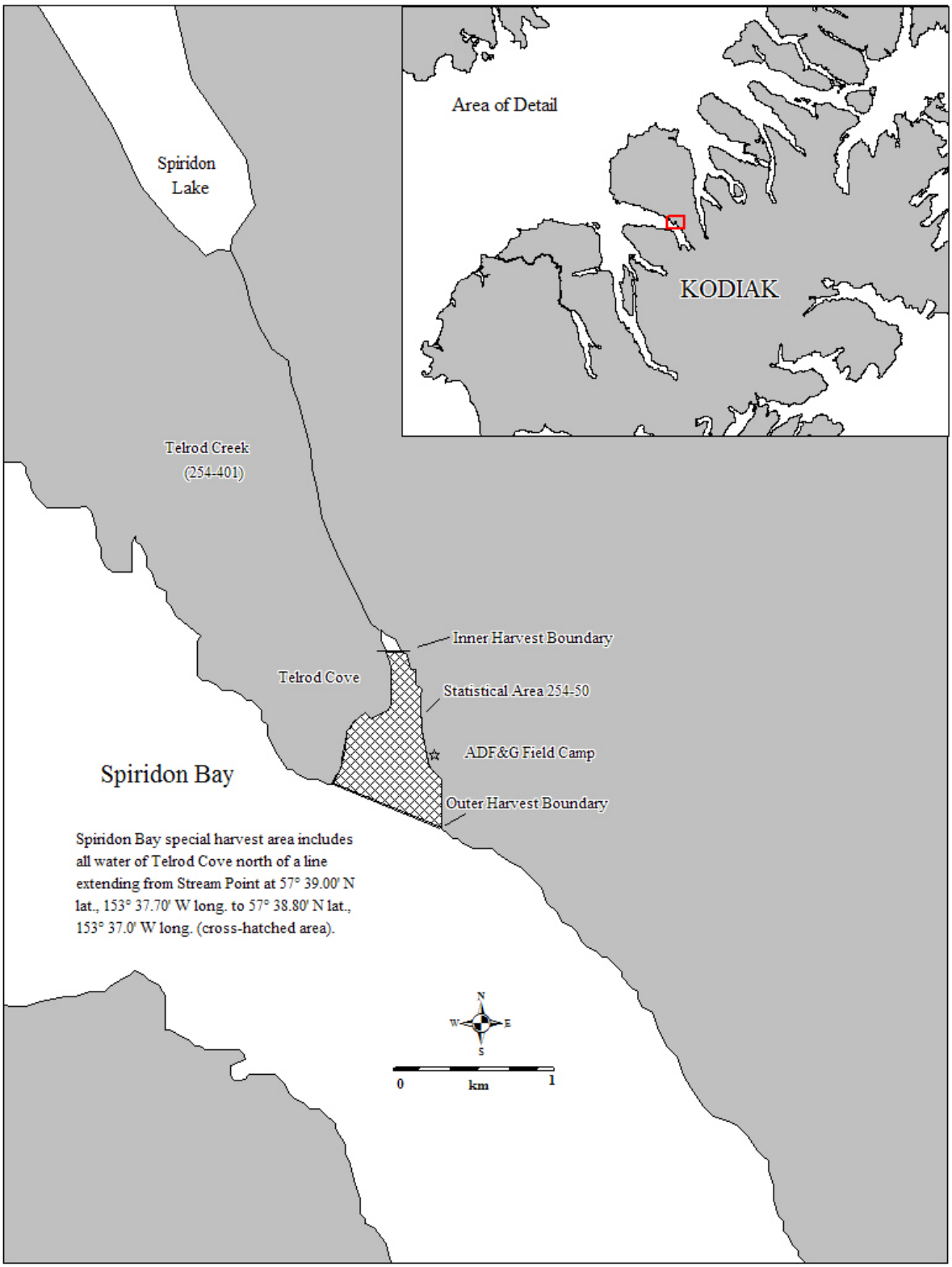

Figure 13.–Spiridon Bay (Telrod Cove) special harvest area boundaries, and ADF&G camp location in Telrod Cove.

APPENDIX A. PILLAR CREEK ACTIVE FISH TRANSPORT PERMIT SUMMARY

Appendix A1.–A summary of the active (in use) Pillar Creek Hatchery fish transport permits (FTPs).

Project Name FTP Number	Issue Date	Expiration Date	Purpose
SOCKEYE: The permitted PCH sockeye salmon capacity authorized by PNP Permit Number 41 is 20,000,000 green eggs.			
Egg takes, early-run sockeye			
Afognak Lake 09A-0044	6/1/2009	12/31/2014	Allows egg take of 4,100,000 green eggs at Afognak Lake, and transport to PCH for incubation. Resulting juveniles will eventually be released into Hidden, Crescent, Big Waterfall and Little Waterfall lakes.
Malina Lakes 10A-0116	4/15/2010	12/31/2014	Allows egg take of 4,100,000 green eggs at Malina Lake, and transport to PCH for incubation. Resulting juveniles will eventually be released into Hidden, Crescent, Big Waterfall and Little Waterfall lakes.
Egg takes, late-run sockeye			
Saltery Lake 09A-0052	6/15/2009	12/31/2014	Allows egg take of 11,000,000 green eggs at Saltery Lake, and transport to PCH for incubation. Resulting juveniles will eventually be released into Spiridon, Little Kitoi, Ruth, and Jennifer lakes.
Little Kitoi Lake 10A-0124	4/15/2010	12/31/2020	Allows egg take of 11,000,000 green eggs at Little Kitoi Lake, and transport to PCH for incubation. Resulting juveniles will eventually be released into Spiridon, Little Kitoi, Ruth, and Jennifer lakes.
Stocking, early-run sockeye			
Afognak Lake 10A-0121	4/15/2010	12/31/2020	Allows the release of up to 300,000 Afognak Lake stock fry, or 150,000 fingerlings, or 75,000 presmolt, incubated and reared at PCH, into Afognak Lake.
Hidden Lake 09A-0047	6/1/2009	12/31/2014	Allows the release of up to 500,000 Afognak Lake stock fry, incubated and reared at PCH, into Hidden Lake.
Hidden Lake 06A-0044	4/1/2006	12/31/2011	Allows the release of up to 500,000 Afognak Lake stock fingerlings, incubated and reared at PCH into Hidden Lake.
Hidden Lake 09A-0048	6/1/2009	12/31/2014	Allows the release of up to 500,000 Afognak Lake stock presmolt, incubated and reared at PCH into Hidden Lake
Hidden Lake 10A-0119	4/16/2010	12/31/2014	Allows the release of up to 600,000 each Malina Lake stock fry and fingerlings, and 500,000 presmolt, incubated and reared at PCH, into Hidden Lake.
Little Waterfall Lake 06A-0042	5/1/2006	12/31/2011	Allows the release of up to 400,000 Afognak Lake stock fry, incubated and reared at PCH into Little Waterfall Lake.

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Project Name FTP Number	Issue Date	Expiration Date	Purpose
Little Waterfall Lake 06A-0045	4/1/2006	12/31/2011	Allows the release of up to 400,000 Afognak Lake stock fingerlings, incubated and reared at PCH into Little Waterfall Lake.
Little Waterfall Lake 09A-0049	6/1/2009	12/31/2014	Allows the release of up to 200,000 Afognak Lake stock presmolts, incubated and reared at PCH into Little Waterfall Lake.
Little Waterfall Lake 10A-0120	4/15/2010	12/31/2014	Allows the release of up to 400,000 each Malina Lake stock fry and fingerlings, and 350,000 presmolt, incubated and reared at PCH, into Little Waterfall Lake.
Big Waterfall Lake 06A-0046	4/1/2006	12/31/2011	Allows the release of up to 250,000 Afognak Lake stock fry, incubated and reared at PCH, into Big Waterfall Lake
Big Waterfall Lake 09A-0045	6/1/2009	12/31/2014	Allows the release of up to 250,000 Afognak Lake stock fingerlings, incubated and reared at PCH, into Big Waterfall Lake.
Big Waterfall Lake 10A-0122	4/15/2010	12/31/2020	Allows the release of up to 250,000 Afognak Lake stock presmolts, incubated and reared at PCH, into Big Waterfall Lake
Big Waterfall Lake 10A-0117	4/15/2010	12/31/2020	Allows the release of up to 250,000 each Malina Lake stock fry, fingerlings and presmolts, incubated and reared at PCH, into Big Waterfall Lake.
Crescent Lake 06A-0047	4/1/2006	12/31/2011	Allows the release of up to 500,000 Afognak Lake stock fry, incubated and reared at PCH into Crescent Lake.
Crescent Lake 09A-0046	6/1/2009	12/31/2014	Allows the release of up to 500,000 Afognak Lake stock fingerlings, incubated and reared at PCH into Crescent Lake.
Crescent Lake 10A-0123	4/15/2010	12/31/2020	Allows the release of up to 275,000 Afognak Lake stock presmolts, incubated and reared at PCH, into Crescent Lake.
Crescent Lake 10A-0118	4/15/2010	12/31/2020	Allows the release of up to 500,000 each Malina Lake stock fry and fingerlings, and 275,000 presmolt, incubated and reared at PCH, into Crescent Lake.
Malina Lake 06A-0043	4/1/2006	12/31/2011	Allows the release of up to 500,000 Malina Lake stock fry, incubated and reared at PCH, into Malina Lake.

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Project Name FTP Number	Issue Date	Expiration Date	Purpose
Spiridon Lake 09A-0050	6/15/2009	12/31/2014	Allows the release of up to 7,000,000 Saltery Lake stock fingerlings, incubated and reared at PCH into Spiridon Lake.
Spiridon Lake 10A-0126	4/15/2010	12/31/2020	Allows the release of up to 7,000,000 Saltery Lake stock fry, and 1,000,000 presmolts, incubated and reared at PCH, into Spiridon Lake.
Ruth Lake 09A-0051	6/15/2009	12/31/2014	Allows the release of up to 300,000 Saltery Lake stock fingerlings, incubated and reared at PCH, into Ruth Lake.
Ruth Lake 10A-0125	4/15/2010	12/31/2020	Allows the release of up to 300,000 each Saltery Lake stock fry and presmolts, incubated and reared at PCH, into Ruth Lake.
Jennifer Lake 10A-0129	4/15/2010	12/31/2020	Allows the release of 400,000 and 250,000 Saltery Lake stock fry and presmolts, incubated and reared at PCH, into Jennifer Lake.
COHO SALMON: The permitted PCH coho capacity authorized by PNP Permit Number 41 is 500,000 green eggs.			
Egg takes, coho Buskin Lake 04A-0004	1/1/2004	12/31/2013	Allows egg take from 75 spawning pairs at Buskin Lake; incubation and rearing at PCH, and release of the resultant progeny into anadromous and landlocked systems in Chiniak Bay.
Egg transfer, coho KBH transfer 10A-0115	4/15/2010	12/31/2020	Allows transfer of 40,000 Big Kitoi Creek stock coho eggs from Kitoi Bay Hatchery to PCH for subsequent incubation and rearing, and release of resultant juveniles into Katmai Lake.
Stocking, coho road system lakes 04A-0006	1/1/2004	12/31/2013	Allows the release of Buskin Lake stock juveniles, incubated and reared at PCH, into Kodiak road system lakes, as follows: 22,500 into Island Lake 7,500 into Dark Lake 12,500 into Mission Lake 9,500 into Potato Patch Lake 6,500 into Mayflower Lake
Southern Lake 04A-0005	1/1/2004	12/31/2013	Allows the release of up to 3,500 Buskin Lake stock juveniles, incubated and reared at PCH, into Southern Lake.

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Project Name FTP Number	Issue Date	Expiration Date	Purpose
Margaret Lake 04A-0013	1/1/2004	12/31/2013	Allows the release of up to 3,500 Buskin Lake stock juveniles, incubated and reared at PCH, into Margaret Lake.
Abercrombie Lake 05A-0003	1/1/2005	12/31/2013	Allows the release of up to 3,500 Buskin Lake stock juveniles, incubated and reared at PCH, into Abercrombie Lake.
Big (Lily) Lake 05A-0004	1/1/2005	12/31/2013	Allows the release of up to 10,000 Buskin Lake stock juveniles, incubated and reared at PCH, into Big (Lily) Lake.
Chiniak Lagoon 07A-0019	3/15/2007	7/1/2012	Allows the release of up to 20,000 Buskin Lake stock juveniles, incubated and reared at PCH, into Chiniak Lagoon.
Monashka Creek 10A-0010	2011	2015	Allows the release of up to 50,000 Buskin Lake stock smolt, incubated and reared at PCH, into Monashka Creek.
Pillar Creek 10A-0009	2011	2015	Allows the release of up to 50,000 Buskin Lake stock juveniles, incubated and reared at PCH, into Pillar Creek.
CHINOOK SALMON: The permitted PCH Chinook capacity authorized by PNP Permit Number 41 is 450,000 green eggs.			
Egg takes, Chinook Monashka Creek 05A-0050	Aug. 2005	Aug. 2014	Allows egg take of 450,000 green eggs at Monashka Creek, incubation and rearing at PCH, and release of resultant smolt into Monashka Creek.
Juvenile transfer, Chinook PCH transfer 10A-0128	4/15/2010	12/31/2020	Allows transport of 450,000 juveniles from rearing units Monashka Creek to rearing units at Pillar Creek Hatchery.
Stocking, Chinook Monashka Creek			see above
American River 07A-0017	5/1/2007	12/31/2011	Allows the release of up to 450,000 Monashka Creek stock Chinook smolt, incubated and reared at PCH, into the American River.
Olds River 07A-0020	5/1/2007	12/31/2011	Allows the release of up to 450,000 Monashka Creek stock Chinook smolt, incubated and reared at PCH, into the Olds River.

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Appendix A1.–Page 5 of 5.

Project Name FTP Number	Issue Date	Expiration Date	Purpose
RAINBOW TROUT: The permitted PCH coho capacity authorized by PNP Permit Number 41 is 92,000 green eggs.			
Egg transfer, rainbow trout Ft. Richardson transfer 07A-0029	3/20/2007	12/31/2012	Allows transfer of 92,000 eyed all-female 3N triploid eggs from ADF&G's Ft. Richardson Hatchery in Anchorage to PCH; incubation and rearing at PCH, and release of the resultant juveniles into kodiak road system lakes.
Stocking, rainbow trout road system lakes 08A-0054	1/26/2007	7/31/2012	Allows the release of Ft. Richardson Hatchery stock juveniles (original donor stock; Swanson River), incubated and reared at PCH, into Kodiak road system lakes, as follows: 6,440 into Abercrombie (Gertrude) Lake 5,520 into Aurel Lake 6,440 into Big (Lily) Lake 3,680 into Bull Lake 2,760 into Caroline Lake 1,840 into Cicely Lake 9,200 into Dolgoi Lake 2,760 into Dragonfly Lake 5,520 into Heitman Lake 1,840 into Horseshoe Lake 1,840 into Jack Lake 6,440 into Jupiter Lake 5,520 into Lee Lake 2,760 into Lily Pond Lake 6,440 into Long Lake 4,600 into Saturn Lake 11,040 into Tanignak Lake 7,360 into Twin Lake

APPENDIX B. PILLAR CREEK HATCHERY SALMON EGG TAKES, 1991–2010

Appendix B1.–Release locations from the Pillar Creek Hatchery Afognak Lake sockeye salmon egg takes, 1991–2010.

Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1991	2,076	2.6	260,000	1992	Hidden Lake
			399,000	1992	Crescent Lake
			493,000	1992	Little Waterfall Lake
			96,000	1992	Big Waterfall Lake
			464,000	1992	Afognak Lake
			182,000	1992	Little Kitoi Bay
1992	1,890	2.7	554,600	1993	Hidden Lake
			202,000	1993	Crescent Lake
			205,000	1993	Little Waterfall Lake
1993	2,169	3.4	250,000	1994	Hidden Lake
			314,000	1994	Crescent Lake
			150,000	1994	Little Waterfall Lake
			183,000	1994	Little Kitoi Lake
			311,000	1994	Afognak Lake
			293,000	1994	Little Kitoi Bay
			3,500	1995	Little Kitoi Lake
			97,800	1995	Little Waterfall Lake
1994	1,190	1.6	98,650	1995	Hidden Lake
			90,200	1995	Crescent Lake
			100,000	1995	Little Waterfall Lake
			112,900	1995	Little Kitoi Lake
1995	1,440	2.2	390,800	1996	Hidden Lake
			427,000	1996	Crescent Lake
			82,300	1996	Little Waterfall Lake
			146,000	1996	Sorg Lake
			50,600	1996	Little Kitoi Lake
			528,000	1996	Afognak Lake
1996	1,700	2.2	455,200	1997	Hidden Lake
			432,000	1997	Crescent Lake
			246,800	1997	Little Waterfall Lake
			125,800	1997	Little Kitoi Lake
			328,300	1997	Afognak Lake
1997	1,600	2.4	340,400	1998	Hidden Lake
			571,000	1998	Crescent Lake
			237,300	1998	Little Waterfall Lake
			422,700	1998	Afognak Lake
1998	1,060	1.6	310,000	1999	Hidden Lake
			273,000	1999	Little Waterfall Lake
			42,000	1999	Big Waterfall Lake
			371,700	1999	Crescent Lake

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Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1999	1,350	1.8	504,400	2000	Hidden Lake
			358,800	2000	Little Waterfall Lake
			124,400	2000	Big Waterfall Lake
			206,000	2000	Crescent Lake
2000	1,420	2.1	315,500	2001	Hidden Lake
			310,000	2001	Little Waterfall Lake
			224,300	2001	Big Waterfall Lake
			331,500	2001	Crescent Lake
2001	290	0.4	51,600	2002	Hidden Lake
			46,100	2002	Little Waterfall Lake
			44,300	2002	Big Waterfall Lake
			33,600	2002	Crescent Lake
2002	180	0.3	31,000	2003	Hidden Lake
			72,500	2003	Little Waterfall Lake
			0	2003	Big Waterfall Lake
			36,500	2003	Crescent Lake
2003	268	0.4	70,700	2004	Hidden Lake
			32,100	2004	Little Waterfall Lake
			0	2004	Big Waterfall Lake
			22,600	2004	Crescent Lake
2004[a]	0	0.0	0	2005	
2005[b]	1,296	1.3	421,700	2006	Hidden Lake
			0	2006	Little Waterfall Lake
			238,000	2006	Crescent Lake
2006	1,445	1.7	500,300	2007	Hidden Lake
			249,500	2007	Little Waterfall Lake
			100,000	2007	Big Waterfall Lake
			309,000	2007	Crescent Lake
2007	1,037	1.3	353,800	2008	Hidden Lake
			252,400	2008	Little Waterfall Lake
			46,600	2008	Big Waterfall Lake
			345,200	2008	Crescent Lake
2008	822	1.0	254,600	2009	Hidden Lake
			162,400	2009	Little Waterfall Lake
			59,500	2009	Big Waterfall Lake
			202,900	2009	Crescent Lake

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Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
2009[c]	540	0.7	345,000	2010	Hidden Lake
			0	2010	Little Waterfall Lake
			45,000	2010	Big Waterfall Lake
			120,000	2010	Crescent Lake
2010[d]	1,191	1.4	500,000	2011	Hidden Lake
			250,000	2011	Little Waterfall Lake
			100,000	2011	Big Waterfall Lake
			300,000	2011	Crescent Lake

[a] No egg take occurred at Afognak Lake in 2004. Malina Lake was utilized as an alternative broodstock for early-run sockeye stocking projects because adult returns to Afognak Lake had been depressed since 2001.

[b] Afognak Lake was one of two brood sources utilized for the 2005 early-run sockeye egg take; Malina Lake sockeye were also utilized. A total of 1,917,609 early-run sockeye eggs were taken from the two brood sources in 2005.

[c] Brood year 2009 and 2010 stocking figures are projected.

[d] Afognak Lake is the preferred brood source for the 2010 early-run sockeye egg take. Malina Lake sockeye may be utilized as a 2010 brood source if egg-take goals cannot be achieved using Afognak Lake sockeye salmon; egg-take goal to be determined after inseason limnology evaluation and escapement results.

Appendix B2.–Historical production information on sockeye salmon egg takes performed at Little Kitoi Lake, 1992–2010.

Brood Year	Adult Salmon	Eggs (millions)	Stock of origin	Hatchery[a]	Number Stocked	Year Stocked	Stocking Location
1992	1,011	0.59	U. Station	KBH	0	1993	Little Kitoi Bay
1993	1,050	1.10	U. Station	KBH	880,000	1995	Little Kitoi Bay
1994	600	1.50	U. Station	KBH	150,000	1995	Little Kitoi Lake
					300,000	1995	Jennifer Lake
					880,000	1996	Little Kitoi Bay
1995	155	0.19	U. Station	KBH	150,000	1996	Little Kitoi Lake
1996	1,210	1.20	U. Station	KBH	150,000	1997	Little Kitoi Lake
					580,000	1998	Little Kitoi Bay
1997[b]	0	0.00	U. Station	PCH	0	1998	Little Kitoi Lake
					0	1998	Spiridon Lake
					0	1998	Ruth Lake
					0	1998	Jennifer Lake
					0	1999	Little Kitoi Bay
2004[c]	0	0.00	Saltery Lake	PCH	0	2005	No egg take conducted
2005	0	0.00	Saltery Lake	PCH	0	2006	No egg take conducted
2006	0	0.00	Saltery Lake	PCH	0	2007	No egg take conducted
2007	0	0.00	Saltery Lake	PCH	0	2008	No egg take conducted
2008	0	0.00	Saltery Lake	PCH	0	2009	No egg take conducted
2009	503	0.68	Saltery Lake	PCH	153,500	2010	Spiridon Lake
				PCH	40,000	2010	Ruth Lake
				PCH	0	2010	Jennifer Lake
				PCH		2010	Little Kitoi Lake
				KBH	0	2010	Little Kitoi Lake
				KBH	0	2011	Little Kitoi Lake
2010[d]	4,436	5.33	Saltery Lake	PCH	3,340,000	2011	Spiridon Lake
				PCH	75,000	2011	Ruth Lake
				PCH	250,000	2011	Jennifer Lake
				PCH		2011	Little Kitoi Lake
				KBH	100,000	2011	Little Kitoi Lake
				KBH	400,000	2012	Little Kitoi Lake

[a] Pillar Creek Hatchery (PCH), Kitoi Bay Hatchery (KBH).

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[b] Little Kitoi Lake was a contingency egg-take location in 1997; the late-run sockeye brood source for KRAA projects was changed from Upper Station to Saltery Lake stock in 1997.

[c] 2004 was the first year that the late-run sockeye return to Little Kitoi Lake was composed exclusively of Saltery Lake origin stock, and that Little Kitoi Lake sockeye could be considered as the new late-run sockeye brood source for KRAA projects. Little Kitoi Lake sockeye escapements from 2004 to 2008 were not sufficient to support egg-take goals. In 2009, Little Kitoi Lake sockeye broodstock contributed 17.4% of the total late-run sockeye eggs taken by PCH; the remainder were from Saltery Lake brood. Little Kitoi Lake is the preferred brood source for the 2010 late-run sockeye egg take; Saltery Lake is the alternate brood source.

[d] Egg-take goal to be determined after inseason limnology evaluation and escapement results.

Appendix B3.–Pillar Creek Hatchery coho salmon egg takes, 1991–2010.

Brood Year	Adult Salmon	Green Eggs	Number Stocked	Year Stocked	Stocking Location
Monashka Creek stock:					
1991	25	60,100	52,000	1992	Monashka Creek
1992	6	10,500	9,000	1993	Monashka Creek
Buskin River stock:					
1993[a] [a]	78	156,000	136,200	1994	Kodiak road system lakes [b]
1994	56	98,000	76,140	1995	"
1995	85	120,000	28,000	1996	"
1996	65	177,000	148,200	1997	"
1997	65	153,000	134,500	1998	"
1998	102	158,000	128,000	1999	"
1999	40	91,000	63,800	2000	"
2000	60	112,000	73,400	2001	"
2001	60	146,000	110,000	2002	"
2002	29	57,100	48,300	2003	"
	25	51,000	43,100	2004	Kodiak road system lakes, Monashka Creek[c]
2003	49	98,500	88,100	2004	"
	21	43,200	33,500	2005	"
2004	22	36,700	33,900	2005	"
	32	54,100	48,600	2006	"
2005	39	76,600	33,000	2006	"
	17	19,800	8,500	2007	"
2006	60	114,500	75,200	2007	"
	0	0	0	2008	"
2007	56	92,600	88,500	2008	"
	0	0	0	2009	"
2008	52	91,300	82,700	2009	"
	0	0	0	2010	"
2009	58	142,500	99,000	2010	"
	58	143,900	100,000	2011	"
2010	64	110,000	89,000	2011	"
	0	0	0	2012	"
Big Kitoi Creek stock[d]:					
2009	129	34,700	30,000	2010	Katmai Lake
2010	130	34,700	30,000	2011	"

[a] Prior to 1993, Kitoi Bay Hatchery supplied juvenile coho salmon for stocking the road system lakes.

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[b] Road system lakes include: Island, Dark, Mission, Potato Patch, Big (Lily), Mayflower, Southern (on Long Island), Margaret (Boy Scout), Abercrombie (Gertrude), and Chiniak lakes.

[c] Smolt releases occur only as rearing space allows. Lower than anticipated Chinook production can make available rearing space for spring coho smolt production. The determination to take eggs for coho smolt is made just prior to the coho egg take, when Chinook egg survival for the brood year has been assessed.

[d] Eggs taken at Kitoi Bay Hatchery and transferred to Pillar Creek Hatchery.

Appendix B4.–Release locations from the Pillar Creek Hatchery Chinook salmon egg takes, 2000–2010.

Brood Year[a]	Adult Salmon	Number of Eggs	Number Stocked	Year Stocked	Stocking Location
2000	48	124,818	60,400	2002	Monashka Creek
2001	34	86,120	34,000	2003	Monashka Creek
2002	59	147,000	12,300	2004	Monashka Creek
2003	70	172,300	72,150	2005	Monashka Creek
2004	76	181,600	29,000	2006	Monashka Creek
2005	92	208,700	46,800	2007	Monashka Creek
			28,200	2007	American River
			28,300	2007	Olds River
2006	123	357,100	113,100	2007	Island Lake
			10,000	2007	Abercrombie Lake
			60,000	2008	Monashka Creek
			44,250	2008	American River
			44,250	2008	Olds River
2007	83	208,700	79,300	2009	Monashka Creek
			51,500	2009	American River
			54,100	2009	Olds River
2008	139	267,600	83,500	2010	Monashka Creek
			75,750	2010	American River
			75,750	2010	Olds River
2009	104	66,800	45,000	2011	Monashka Creek
			7,500	2011	American River
			7,500	2011	Olds River
2010	150	450,000	100,000	2012	Monashka Creek
			130,000	2012	American River
			130,000	2012	Olds River

[a] Chinook egg takes for Brood Years 2000–2004 were conducted at the Karluk River. 2005 was the first year that adult progeny of the Chinook project returned to Monashka Creek. Since 2005 egg takes have been conducted at Monashka Creek utilizing a portion of the return as brood. Monashka Creek is now the established brood source for the KRAA/ADF&G Cooperative Kodiak Road System Chinook Enhancement Project.

Appendix B5.–Pillar Creek Hatchery sockeye salmon egg takes at Malina Lake, 1991–2010.

Brood Year	Adult Salmon	Eggs (millions)	Number Stocked	Year Stocked	Stocking Location
1991	120	0.141	85,000	1992	Malina Lake
1992	1,005	1.410	318,000	1993	Malina Lake
1993	644	0.930	547,000	1994	Malina Lake
1994	350	0.475	53,500	1995	Malina Lake
1995	400	0.590	426,300	1996	Malina Lake
1996	454	0.791	390,400	1997	Malina Lake
1997	470	0.800	350,500	1998	Malina Lake
1998[a]	550	0.710	406,000	1999	Malina Lake
2004[b]	2,450	1.582	188,300	2005	Hidden Lake
			78,700	2005	Little Waterfall Lake
			49,100	2005	Big Waterfall Lake
			54,000	2005	Crescent Lake
2005[c]	727	0.647	184,600	2006	Little Waterfall Lake
			75,100	2006	Big Waterfall Lake
			80,800	2006	Malina Lake
2006[d]	0	0.000	0	2007	No egg take conducted
2007[d]	0	0.000	0	2008	No egg take conducted
2008[d]	0	0.000	0	2009	No egg take conducted
2009[d]	0	0.000	0	2010	No egg take conducted
2010[e]	1,196	1.418	500,000	2011	Hidden Lake
			250,000	2011	Little Waterfall Lake
			100,000	2011	Big Waterfall Lake
			300,000	2011	Crescent Lake

[a] Escapement goal was achieved from 1999 to 2002 and no additional rehabilitation egg takes are planned.

[b] Malina Lake sockeye were utilized as an alternative broodstock for early-run sockeye enhancement projects in 2004. Afognak Lake is the primary early-run sockeye broodstock, but the low 2004 Afognak Lake escapement precluded conducting an egg take.

[c] Malina Lake was one of two brood sources utilized for the 2005 early-run sockeye egg take; Afognak Lake sockeye were also utilized. A total of 1,917,609 early-run sockeye eggs were taken from the two brood sources in 2005.

[d] No egg take occurred at Malina Lake in 2006 through 2009. Afognak Lake is the preferred brood source for the early-run sockeye egg take, and escapement has been sufficient to allow the full egg-take goal to be achieved there since 2005.

[e] Afognak Lake is the preferred brood source for the 2010 early-run sockeye egg take. Malina Lake sockeye may be utilized as a 2010 brood source if egg-take goals cannot be achieved using Afognak Lake sockeye salmon; egg-take goal to be determined after inseason limnology evaluation and escapement results.

Appendix B6.–Historical production information for sockeye salmon egg takes performed at Saltery Lake, 1994–2010.

Brood Year	Adult Salmon	Eggs (millions)	Hatchery[a]	Number Stocked	Year Stocked	Stocking Location
1994	4,238	7.60	PCH	4,599,000	1995	Spiridon Lake
1995	122	0.20	PCH	150,000	1996	Ruth Lake
1996	103	0.20	PCH	147,000	1997	Ruth Lake
1997	2,700	4.00	PCH	3,340,000	1998	Spiridon Lake
			PCH	100,000	1998	Ruth Lake
			KBH	106,700	1999	Little Kitoi Lake
1998	2,560	4.30	PCH	3,564,000	1999	Spiridon Lake
			PCH	66,500	1999	Ruth Lake
			KBH	98,700	1999	Little Kitoi Lake
			KBH	74,500	2000	Little Kitoi Lake
			KBH	23,800	2000	Little Kitoi Bay
1999	4,318	6.80	PCH	4,397,100	2000	Spiridon Lake
			PCH	78,700	2000	Ruth Lake
			KBH	154,000	2000	Little Kitoi Lake
2000	2,582	4.80	PCH	1,700,600	2001	Spiridon Lake
			PCH	0	2001	Ruth Lake
			KBH	282,100	2001	Little Kitoi Lake
2001	845	1.57	PCH	1,182,000	2002	Spiridon Lake
			PCH	0	2002	Ruth Lake
			KBH	212,400	2002	Little Kitoi Lake
2002	2,000	3.30	PCH	1,417,500	2003	Spiridon Lake
			PCH	0	2003	Ruth Lake
			KBH	102,800	2003	Little Kitoi Lake
			KBH	193,600	2004	Little Kitoi Lake
2003	4,175	5.96	PCH	2,800,000	2004	Spiridon Lake
			PCH	111,400	2004	Ruth Lake
			PCH	0	2004	Jennifer Lake
			PCH	97,400	2004	Little Kitoi Lake
			KBH	20,700	2004	Little Kitoi Lake
			KBH	280,000	2005	Little Kitoi Lake
2004	4,079	4.99	PCH	1,380,000	2005	Spiridon Lake
			PCH	35,000	2005	Ruth Lake
			PCH	0	2005	Jennifer Lake
			PCH	56,900	2005	Little Kitoi Lake
			KBH	20,000	2005	Little Kitoi Lake
			KBH	380,000	2006	Little Kitoi Lake

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Brood Year	Adult Salmon	Eggs (millions)	Hatchery[a]	Number Stocked	Year Stocked	Stocking Location
2005	5,422	6.39	PCH	3,196,500	2006	Spiridon Lake
			PCH	46,800	2006	Ruth Lake
			PCH	22,900	2006	Jennifer Lake
			PCH	0	2006	Little Kitoi Lake
			KBH	206,900	2006	Little Kitoi Lake
			KBH	404,000	2007	Little Kitoi Lake
2006	3,537	4.41	PCH	1,810,100	2007	Spiridon Lake
			PCH	72,600	2007	Ruth Lake
			PCH	342,300	2007	Jennifer Lake
			PCH		2007	Little Kitoi Lake
			KBH	133,500	2007	Little Kitoi Lake
			KBH	415,000	2008	Little Kitoi Lake
2007	1,818	2.19	PCH	1,049,800	2008	Spiridon Lake
			PCH	0	2008	Ruth Lake
			PCH	0	2008	Jennifer Lake
			PCH	0	2008	Little Kitoi Lake
			KBH	116,500	2008	Little Kitoi Lake
			KBH	417,800	2009	Little Kitoi Lake
2008[b]	1,799	2.39	PCH	1,475,160	2009	Spiridon Lake
			PCH	0	2009	Ruth Lake
			PCH	0	2009	Jennifer Lake
			PCH	0	2009	Little Kitoi Lake
			KBH	100,400	2009	Little Kitoi Lake
			KBH	400,000[b]	2010	Little Kitoi Lake
2009[b,c]	3,123	3.86	PCH	2,846,500	2010	Spiridon Lake
			PCH	0	2010	Ruth Lake
			PCH	0	2010	Jennifer Lake
			PCH	0	2010	Little Kitoi Lake
			KBH	100,000	2010	Little Kitoi Lake
			KBH	400,000	2011	Little Kitoi Lake
2010[b,d]	4,408	5.33	PCH	3,340,000	2011	Spiridon Lake
			PCH	75,000	2011	Ruth Lake
			PCH	250,000	2011	Jennifer Lake
			PCH		2011	Little Kitoi Lake
			KBH	100,000	2011	Little Kitoi Lake
			KBH	400,000	2012	Little Kitoi Lake

-continued-

[a] Pillar Creek Hatchery (PCH), Kitoi Bay Hatchery (KBH).

[b] Stocking figures for brood year 2009 and 2010, and for the KBH 2010 release of brood year 2008 smolt, are projected.

[c] In 2009, Saltery Lake sockeye broodstock contributed 82.6% of the total late-run sockeye eggs taken by PCH; the remainder were from Little Kitoi Lake brood.

[d] Little Kitoi Lake is the preferred brood source for the 2010 late-run sockeye egg take. Saltery Lake sockeye may be utilized as a 2010 brood source if Little Kitoi Lake escapement is insufficient to meet egg-take goals; egg-take goal to be determined after inseason limnology evaluation.

SIGN-OFF for the 2010 Pillar Creek Hatchery Annual Management Plan

KB for Gary Byrne — 8-3-10

Gary Byrne: Pillar Creek Hatchery Manager, KRAA — Date

Steve Schrof — 8/5/2010

Steve Schrof: Regional Resource Development Biologist, CFD — Date

8/5/10

Matt Nemeth: Regional Finfish Research Supervisor, CFD — Date

8/23/10

Steve Honnold: Regional Supervisor, CFD — Date

8/23/10

Jeff Wadle: Regional Finfish Management Biologist, CFD — Date

8-5-10

James Jackson: Area Finfish Management Biologist, CFD — Date

8-5-10

Donn Tracy: Area Management Biologist, SFD — Date

– Thomas D. Vania For James Hasbrouck — 8-11-10

James Hasbrouck: Regional Supervisor, SFD — Date

8-3-10

Kevin Brennan: Executive Director, KRAA — Date

The 2010 Hatchery Management Plan for PCH is hereby approved:

10/4/2010

Denby S. Lloyd: Commissioner, ADF&G, Juneau — Date