

2019 ANNUAL MANAGEMENT PLAN

Port Armstrong Hatchery

Armstrong-Keta, Inc.

This Annual Management Plan (AMP) plan is prepared to fulfill the requirements of 5 AAC 40.840. This plan must organize and guide the hatchery's operations, for each calendar year, regarding production goals, broodstock development, and harvest management of hatchery returns. Egg take through release details are included in planning for succeeding calendar years. Inseason assessments and project alterations by Armstrong-Keta, Inc. (AKI) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. AKI will notify the ADF&G private nonprofit (PNP) hatchery program coordinator in a timely manner of any departure from the AMP. The ADF&G PNP coordinator will advise as to whether an amendment, exception report, or other action is warranted. No variation or deviation will be implemented until an AMP amendment has been approved or waived by both the department and AKI. This policy applies to all hatchery operations covered under the AMP.

1.0 Executive Summary

1.1 Introduction

The Port Armstrong Hatchery (PAH) is a PNP facility owned and operated by Armstrong-Keta, Inc. (AKI). The hatchery is located at the outlet of Jetty Lake, in Port Armstrong, near the southeastern tip of Baranof Island along Chatham Strait (Figure 1). Fed by water from two lakes perched 285 feet above the facility, up to 30 cfs of water is seasonally available for hatchery use and hydropower generation. The hatchery facilities include a primary incubation building, a king and coho salmon building, freshwater raceways, and two saltwater net pen complexes.

PAH is currently producing pink, chum, and coho salmon, and is also permitted to rear king salmon. Because of the overlap of its king and chum runs, AKI decided to move its king salmon production from its PAH facility to the Little Port Walter Research Station, where there is extra water and facility space available. AKI has procured a hatchery permit for that production but is waiting on the availability of broodstock to start production there. All fish are released at or near Port Armstrong, except for a small portion of the pink salmon reared and released annually at Port Herbert SHA. In addition, PAH has a chum salmon release site at Port Lucy that has not been active. Fish from Port Armstrong contribute to common property fisheries in southern Chatham Strait and other areas of Southeast Alaska. PAH is located in a productive traditional troll fishery area, and seine fisheries exist immediately north and east of Port Armstrong. Salmon returning to Port Armstrong not harvested in common property fisheries are used for hatchery cost recovery and broodstock.

AKI believes that nearshore predation on salmon fry is negatively impacting marine survival. Since 2015, AKI has been experimenting with different pink salmon release strategies to boost marine survivals. In addition to towing a differentially thermal marked cohort of PAH pink salmon fry into Chatham Strait for release to avoid the narrow bottleneck at the entrance of Port Armstrong, AKI in 2017 and 2018 released an additional cohort of PAH pink salmon fry

offshore of the hatchery in southern Chatham Strait via a fry transport vessel. It is hoped this method will better ensure departure of the fry from the nearshore area, while still allowing them to home in on the PAH water signature in 2019. Fish are reared in pens at PAH and then ocean water is pumped into the fish holds during transport to ensure the fry have contact with the same water they would have otherwise traveled through on out-migration. This transport and release method is authorized by the FTP listed in Section 1.3.

1.2 *New this year (production, harvest management, culture techniques, etc.)*

In 2019, PAH intends to take the full chum salmon permitted capacity of 60 million green eggs if the return is strong enough and the weather conditions are favorable enough to get sufficient broodstock up the fish ladder. Because of facility limitations, the 2019 pink salmon egg take goal is 40 million green eggs. AKI is looking into acquiring new net pens, and if successful, expects to take up to the full 105 million green eggs that the current permit allows. Additionally, there have been difficulties with the three year old chum broodstock. Many of the eggs were much smaller than normal, resulting in health issues and poor quality fry. AKI is examining its practice of taking these small eggs and may discontinue doing so. If a shortfall occurs in the chum salmon egg take, the pink salmon egg take will be increased accordingly to make full use of the hatchery capacity.

1.3 *New permits or permit amendments*

In 2019, AKI submitted two new fish transport permits (FTPs) to allow PAH to release up to 20,000,000 pink fry (19J-1006) and chum fry (FTP in review) several miles offshore. Due to the pink fry showing signs of distress and infection before the scheduled release vessel transport release, PAH had to abandon this pink release strategy for 2019 and use its traditional release methods before the transport vessel became available.

1.4 *Expected Returns*

Species, Run	Release Location	Total Return	Common Property Harvest	Return to Hatchery	Broodstock Needed	Available for Cost Recovery
Pink salmon, BY17	Port Armstrong	987,634	454,312	533,322	72,000	461,322
Pink Salmon, BY17	Port Herbert	180,932	83,229	97,703	0	97,703
Coho salmon, BY16	Port Armstrong	200,312	100,156	100,156	6,000	94,156
King salmon, BY14 -15	Port Armstrong	497	149	0	0	0
Chum salmon, BY13 -16	Port Armstrong	454,381	45,438	408,943	60,000	348,943

Additional detail on adult salmon returns from PAH projects can be found in the appendices Table 1.

1.5 *Production Summary*

Program Name	Brood Year	Planned Release Date	Number to Release	Life Stage	Type of Mark, Percent or Number Marked
Armstrong pink salmon; Tow out release	2018	May 1, 2019	27.0 million	Fed Fry	100% TM 3H
Armstrong pink salmon; S. Chatham boat release	2018	May 1, 2019	12.0 million	Fed Fry	100% TM 3H3
Armstrong coho salmon	2017	May 15, 2019	3.8 million	Smolt	CWT, 1.64%
Armstrong chum salmon	2018	May 1, 2019	52.0 million	Fed fry	TM 100% 6H

In 2019, the egg-take goal at PAH will be 40 million or more pink salmon eggs, depending on net pen space available; 60 million chum salmon eggs; 5 million coho salmon eggs; and zero king salmon eggs.

1.6 *Current Permitting*

The permitted capacity of PAH is 105 million pink salmon eggs, 60 million chum salmon eggs, and 5 million combined king and coho salmon eggs, (with no more than 2 million being king salmon eggs.)

2.0 Late Summer Pink Salmon Production

2.1 *Program details*

Since 1983, PAH has been producing pink salmon. In previous years, PAH strived to annually release 97 million, 0.5 gram to 1.2 gram, otolith-marked pink salmon fry. Due to the increase in chum production, the hatchery has insufficient capacity to continue releasing pink salmon at its full permitted level until it is able to procure additional net pens. PAH's pink egg take goal for 2019 is at least 40 million, unless there is a shortfall in its chum egg take goal, in which case PAH will increase pink production as space allows. The purpose of the program is to provide pink salmon to common property fisheries in Lower Chatham Strait, as well as provide sufficient pink salmon return to the hatchery to meet PAH cost-recovery and broodstock requirements.

Average marine survival of PAH pink salmon has been approximately 2.0%, with a high of 6.9% in return-year 1990 and a low of 0.12% in return-year 2008 (Table 2). In 2015, PAH began investigating the effects of release location on marine survival by towing a cohort of differentially marked pink salmon into Chatham Strait for release. In 2017, PAH began releasing a portion of their pink salmon production at Port Herbert SHA (Figure 2). In 2017, there were four pink salmon release strategies: traditional rearing and release at PAH; traditional rearing at PAH with release in Chatham Strait; remote rearing and release at Port Herbert; and release via vessel transport of fed fry to lower Chatham Strait, approximately 10 miles from PAH in the direction of their normal

outmigration. In 2018, the hatchery chose not to rear pink fry at the Port Herbert site due to the reduced egg take number, requiring that all the pinks be released from the Port Armstrong Hatchery in order to ensure sufficient broodstock. AKI was initially planning the same release strategy for 2019; however, due to low oxygen levels in Port Armstrong and the outbreak of an infectious disease in the net pens, PAH released the pink fry early within Port Armstrong and with net pen tows into Chatham, precluding the vessel transport release.

Due to severe water flow problems in the PAH pipelines during the fall and winter of 2017-2018, PAH thermally marked thirty percent of the brood year 2017 (BY17) pink salmon fry with its post-hatch differential otolith marks, enabling comparative analysis of these various release strategies by reading otoliths from pink salmon recovered in the Port Armstrong SHA cost recovery harvest.

ADF&G has estimated that, on average, 44% of the PAH pink salmon return is harvested in the Lower Chatham seine fishery (district 109). This is an estimate made years ago by the Sitka and Petersburg ADF&G area management biologists based on review of historical catch records.

2.2 *Egg Takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong pink salmon	Sashin Creek	Port Armstrong Hatchery 109-10-002	P	40,000,000	105,000,000
Totals				40,000,000	105,000,000

2.3 *Broodstock capture method*

Pink salmon returning to the hatchery are an enhanced run. Sex ratios are sampled during the harvest to monitor run timing. Broodstock mature in the inner bay over the course of the run. In early September, when broodstock have sufficiently matured, two fish ladders are opened and adults are recruited into raceways. An electro-anesthesia unit attached to the raceways is used during egg take.

2.4 *Spawning*

Approximately 72,000 pink salmon will be required for broodstock. Spawning takes place on a covered deck adjacent to the broodstock raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are collected. The eggs are transported by hand cart to the incubation building, where fertilization and rinsing takes place. The fertilized eggs are loaded into R-48 bulk incubators for incubation to the eyed stage.

2.5 *Egg-take schedule*

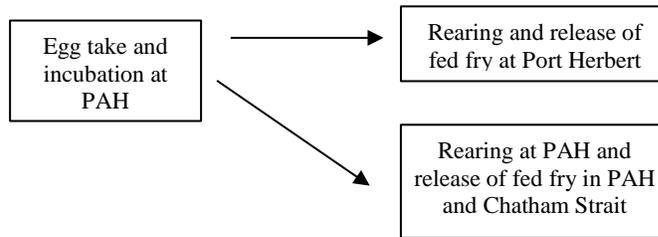
Egg take typically begins around September 10 and lasts for two to three weeks, but may be extended due to run timing and pace of recruitment to the fish ladder. Egg take should approximate the normal run curve since broodstock will be allowed to accumulate at the mouth of the creek proportionally during the course of the run. Depending on the number of ripe females and fecundity, between 5 and 10 million eggs can be taken in a day.

2.6 *Carcass disposal*

The majority of carcasses are expected to be sold to processors. Those carcasses not sold are collected daily in a small barge. Carcasses may also be given away and/or sold as bait. All remaining carcasses are driven approximately one mile offshore and discarded in Chatham Strait.

2.7 *Planned releases this calendar year of previous brood year's production*
See table 1.5 above

2.8 *Operational diagram*



2.9 *Fish transport permits*

FTP #	Egg take, transport or release	Transport from □ to	Maximal #, Life Stage	Expires
98J-1009	Egg take and release	PAH to PAH	105 million eggs	1/31/2025
15J-1014	Transport and release	PAH to Port Herbert	55 million eggs	12/31/2020
15J-1015	Egg take, transport and release	Sashin Creek to PAH	105 million eggs	12/31/2025
19J-1006	Transport and release	PAH to offshore of PAH	20 million fry	5/31/2021

Egg take at Sashin Creek under 15J-1015 cannot commence until the ADF&G Division of Commercial Fisheries area management biologist has authorized it for that year. The escapement target for Sashin Creek is a peak aerial survey count of between 20,000 and 40,000 pink salmon. This includes fish above and below the weir site. The weir may be installed once a 20,000 pink salmon peak aerial survey count has been made. No hatchery broodstock may be collected until an estimated 20,000 fish are above the weir. Once 20,000 fish are estimated above the weir, 20% of the daily return may be collected for hatchery broodstock until an estimated 50,000 fish are above the weir. Once 50,000 fish are estimated above the weir, 50% of the daily return may be

collected for hatchery broodstock until an estimated 100,000 fish are above the weir. Once 100,000 fish are estimated above the weir, 80% of the daily return may be collected for hatchery broodstock.

Permit 17J-1010 was a temporary experimental permit that expired in 2018. AKI submitted a new permit request 19J-1006 to allow two additional years of this alternative release strategy to determine if marine survival of PAH pink salmon can be improved by vessel transporting fry out of the near-shore environment at time of release. Fry will be reared in net pens at PAH per usual practice, but at time of release they will be transferred to a vessel which will transport them for around two hours to a point several miles offshore near the mouth of Chatham Strait.

3.0 Fall Coho Salmon

3.1 Program details

The purpose of the program is to provide coho salmon to common property fisheries in Lower Chatham Strait and outer Baranof Island, as well as provide a sufficient coho salmon return to the hatchery to meet PAH cost recovery and broodstock requirements.

In 1988, PAH began its coho salmon program with broodstock taken from Blanchard Lake in Deep Cove. In 1989 and 1990, broodstock was taken from Sashin Creek stock at the NSRAA Mist Cove site. In 2005, the permitted capacity of PAH coho salmon increased from 2 million to 3 million eggs. In 2007, the permitted capacity increased to a possible 5 million coho salmon eggs, if no king salmon eggs are collected (permitted capacity is 5 million combined king and coho salmon eggs with no more than 2 million being king salmon eggs). Coded wire tag (CWT) recoveries indicate the average contribution rate to the troll fishery averages approximately 50% of the total PAH return. Overall marine survivals for BY88 through BY11 releases average 5.8% (Table 3). The highest marine survival was 23.6% (BY99) and the low was 1.45 % (BY02). Bacterial kidney disease (BKD) is managed by strict family tracking with culling of positive families prior to hatching, isolation between brood years and stocks, and early diagnosis and possible treatment. Fish are also being fed Aqua 100 at fry stage as a BKD preventative. PAH strives to annually release at least 4.0 million, 25 to 35-gram coho salmon smolt, maintain a green egg to smolt survival rate over 80%, maintain marine survivals comparable to, or exceeding, those experienced at Hidden Falls and Mist Cove, and maintain a fishery contribution rate of 50% or higher.

In FY18, approximately 67,900 BY16 coho salmon smolt were coded wire tagged. These tags are to be recovered by AKI at the rack and by ADF&G during sampling of the commercial and sport fisheries. PAH will continue to CWT coho salmon at ADF&G approved tag rates.

3.2 *Egg takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	Primary (P) or (A) Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong coho salmon	Deep Cove/Sashin Creek	Port Armstrong Hatchery 109-10-002	P	5,000,000	5,000,000 ¹
Armstrong coho salmon	Deep Cove/Sashin Creek	Hidden Falls Hatchery	A	None	3,000,000
Species/ Run Totals				5,000,000	5,000,000

¹Five million combined king and coho salmon eggs, with no more than two million being king salmon eggs.

3.3 *Broodstock capture method*

Coho salmon returning to the hatchery are enhanced fish. In October, two fish ladders are opened and adult coho salmon are recruited into several holding raceways. Males and females are monitored for the next several weeks for ripeness.

3.4 *Spawning*

Approximately 6,000 adults are required for broodstock. Spawning takes place on a covered deck adjacent to the broodstock raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are collected and transported to the coho and king salmon incubation building. Initial incubation takes place in Heath tray incubators. Iodophor is used to disinfect eggs. Eggs are family-tracked and are culled from parents identified to be BKD-positive.

3.5 *Egg-take schedule*

Egg take usually occurs between late October and early November, over a one to two-week period, as females ripen. Eggs will be taken in lots of approximately 500,000, or greater, until the egg-take goal has been reached. In the event that sufficient broodstock is not available at PAH, additional eggs may be taken at HFH.

3.6 *Carcass disposal*

Carcasses are sold to processors when possible. Carcasses that are not sold are collected in a small barge and made available to local residents or fishermen for bait. Any remaining carcasses are disposed of in Chatham Strait, approximately one mile offshore.

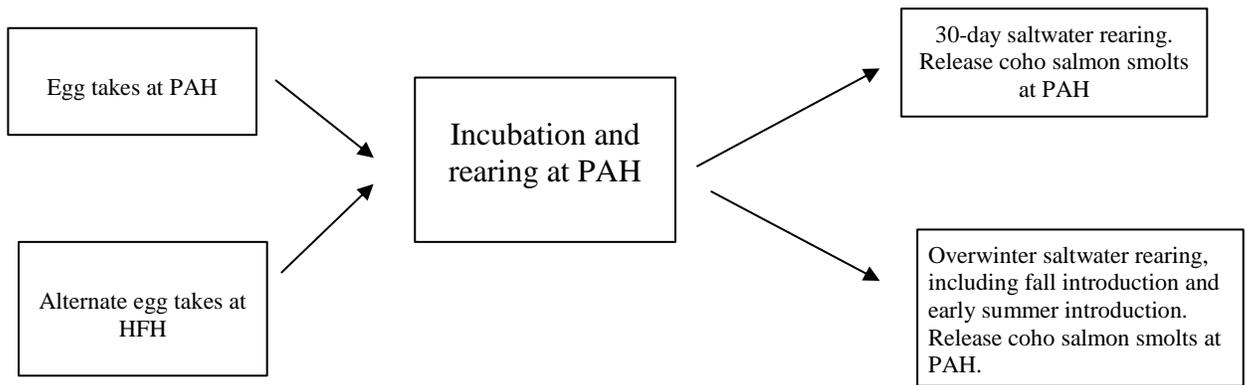
3.7 *Planned releases this calendar year of previous brood years' production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, Number Marked
Armstrong coho salmon	2017	5/15/19	3.8 million	smolt	CWT: 65,700

3.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live	Life Stage	Type of Mark Number Marked	Number to Release, Date
Armstrong coho salmon	2018	3,881,172	fry	65,000 CWT	3.75 million, May 2020

3.9 *Operational diagram*



3.10 *Fish transport permits*

FTP #	Stock	Egg take, transport, or release	Trans. From □ To	Maximal #, Life Stage	Expires
98J-1010	Sashin Creek	Egg take and release	PAH to PAH	5,000,000 eggs ¹	8/31/2025
93J-1036	Sashin Creek	Egg take, transport and release	HFH to PAH	3,000,000 eggs ¹	8/31/2025
17J-1027	Deep Cove	Egg take and release	PAH to PAH	5,000,000 eggs ¹	8/31/2025
17J-1028	Deep Cove	Egg take, transport, release	HFH to PAH	3,000,000 eggs ¹	8/31/2025

¹Total not to exceed 5 million eggs when combined with king salmon eggs.

4.0 Spring king salmon

4.1 *Program details*

In 2001, PAH began a king salmon broodstock program utilizing the Unuk River stock king salmon from LPW. The purpose of the program is to provide increased opportunity for common property harvest of king salmon in Lower Chatham Strait, as well as provide a sufficient king salmon return to the hatchery to meet PAH cost- recovery and broodstock requirements. In 2005, the first adult king salmon returned to PAH. In 2006, PAH conducted its first king salmon egg take. PAH initiated a zero-check program beginning with BY06. For this program, a portion of the eggs are incubated in warmer water, ponded early, and reared in indoor tanks. A minimum of 30,000 fish from this release group will be given a CWT (per ADF&G guidelines) and transferred to saltwater pens in May for short-term rearing, then released in late May at approximately 14 grams. The purpose of the zero-check program is to increase king salmon production at PAH within the constraints of fresh water and existing raceway capacity while keeping production costs manageable. The remaining king salmon are incubated in colder water and reared in a traditional one-check program. Fry are reared in freshwater raceways and then transferred to a saltwater net pen for overwinter rearing and released the following May. A minimum of 30,000 fish from this release group will be given a CWT (per ADF&G guidelines). The target release size of one-check smolt is 25 to 40 grams. The smolt release is timed to coincide with LPW king salmon releases. PAH strives to annually release 140,000 25 to 40 gram king salmon smolt and 120,000 14 gram zero-check king salmon. PAH strives to maintain a green egg to smolt survival rate above 80%, although in some years extra eggs are culled when survivals exceed anticipated percentages, resulting in reported survivals lower than actual rates. CWT recoveries will be used to evaluate PAH common property contributions and survival rates. ADF&G personnel recover CWTs while sampling the commercial troll and sport fisheries. PAH employees also recover CWTs at the rack during egg take. Additional information on PAH king salmon survival can be found in the appendices (Table 4).

No king salmon eggs have been taken at PAH since 2015, and the last king salmon smolts released were zero-checks released by June 30, 2016. The king salmon program has been suspended until such time that Keta River stock king salmon eggs are available to initiate rearing at Little Port Walter. In 2019, PAH will not release any king salmon and will not take any king salmon eggs at PAH.

4.2 *Egg takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	(P) Primary or (A) Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong king salmon	Unuk River	Little Port Walter	A	0	2,000,000
Armstrong king salmon	Unuk River	Port Armstrong Hatchery 109-10-002	P	0	2,000,000
Armstrong king salmon	Unuk River	Deer Mountain Hatchery	A	0	2,000,000
Species/ Run Totals				0	2,000,000

4.3 *Broodstock capture method*

King salmon returning to the hatchery are enhanced fish. Over the course of the run, broodstock enter the inner bay and mature. In mid-July, two fish ladders are opened and adults are recruited into several holding raceways. Males and females are monitored for ripeness. Little Port Walter research facility, located five miles north of PAH, is a backup egg source for Unuk River stock king salmon eggs.

4.4 *Spawning*

Not applicable because no egg takes are planned for 2019.

4.5 *Egg-take schedule*

No egg takes are planned for 2019.

4.6 *Carcass disposal*

Not applicable because no egg takes are planned for 2019.

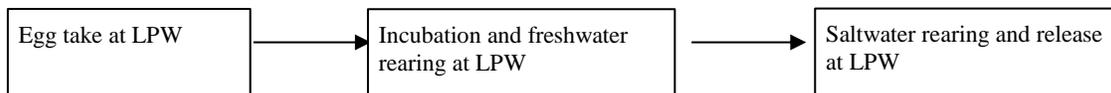
4.7 *Planned releases this calendar year of previous brood years' production.*

No previous brood year fish available for release (see section 4.1)

4.8 *Previous brood years that will remain in culture during the entire calendar year.*

Program Name	Brood Year	Number Live	Life Stage	Type of Mark, # to Mark	Number to Release, Date
Armstrong king salmon	N/A	-	-	-	-

4.9 *Operational diagram*



4.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Trans. From To	Maximal #, Life Stage	Expires
01J-1005	Egg take, transport, and release	LPW to PAH	2,000,000 eggs ¹	9/30/25
11J-1004	Egg take, transport, and release	PAH to PAH	2,000,000 eggs ¹	12/31/25

¹Total not to exceed 5 million eggs when combined with coho salmon eggs.

5.0 Summer chum salmon

5.1 Program details

In 2003, PAH began its summer chum salmon program utilizing the enhanced chum salmon stock from GCH and HFH. The purpose of the program is to establish a chum salmon return at PAH that will provide opportunities for common property harvest of chum salmon in Lower Chatham Strait, as well as broodstock and cost recovery fish for PAH. Since 2009, a full complement of chum salmon year-classes has returned to PAH. It is anticipated that all future egg-take goals will be achieved from returns to PAH. In 2015, permitted chum salmon production at PAH increased from 30 million to 60 million green eggs, and a permitted remote release site was added at Port Lucy (Figure 3). The production goal is to annually release over 55 million 2.0 gram or larger thermal marked chum salmon fry from both Port Armstrong and from Port Lucy, once the program is at full production. Chum salmon will be released from each location as a single group, near the beginning of May. PAH strives to maintain a green egg to fry survival rate above 90%.

AKI thermally marks 100% of the chum salmon incubated at PAH.

5.2 Egg takes

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong chum salmon	HFH	PAH, 109-10-002	P	60,000,000	60,000,000
Armstrong chum salmon	HFH		A	30,000,000	30,000,000
Armstrong chum salmon	HFH	HFH	A	30,000,000	30,000,000
Species/ Run Totals				60,000,000	60,000,000

5.3 Broodstock capture method

Returning chum salmon are from an enhanced run. Sex ratios will be sampled during the harvest to monitor run timing. In late July, when broodstock have sufficiently matured, three fish ladders are opened and adults recruit into raceways. An electro-anesthesia unit, attached to the raceways, is used during egg take.

5.4 Spawning

Approximately 60,000 chum salmon will be required for broodstock. Additional broodstock may be required if eggs are taken for HFH. Spawning takes place on a covered deck adjacent to the brood raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are collected. The eggs are transported by handcart to the incubation building,

where fertilization and rinsing takes place. The fertilized eggs are loaded into R48 bulk incubators for incubation to the eyed stage.

5.5 *Egg-take schedule*

Egg take generally begins around the end of July, and lasts for one to two weeks; however, it may be extended depending on run timing and pace of recruitment into the fish ladder. Between 3 and 6 million eggs can be taken in a day, depending on the number of ripe females available and their fecundities.

5.6 *Carcass disposal*

The majority of carcasses will be sold to processors. Those carcasses not sold are collected daily in a small barge. Carcasses may also be given away and/or sold as bait. All remaining carcasses are driven approximately one mile offshore and discarded in Chatham Strait.

5.7 *Planned releases this calendar year of previous brood years' production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Armstrong chum salmon	BY18	5/15/2019	54 million	Fed Fry	TM 100%

5.8 *Operational diagram*

Egg take, incubation, rearing, and release at PAH

5.9 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from to	Maximal #, Life Stage	Expires
06J-1011	Egg take and release	PAH to PAH	60,000,000 eggs	12/31/2025
03J-1009	Transport and release	HFH to PAH	30,000,000 eggs	11/01/2022
15J-1016	Transport and release	PAH to Port Lucy	30,000,000 eggs	12/31/2025

6.0 HARVEST MANAGEMENT

6.1 *Special harvest areas*

Described in 5 AAC 40.081 District 9: Port Armstrong Special Harvest Area.

The AKI Special Harvest Area (SHA) for king salmon is defined in regulation as the waters of Port Armstrong west of 134°39.47' W. longitude and is open for harvest by the hatchery permit holder beginning April 15. The SHA for chum, pink, and coho salmon includes the waters of Port Armstrong Bay enclosed by a line from Point Eliza at 56°17.73' N. latitude, 134°38.75' W. longitude to a point on the Baranof Island shoreline at 56°17.98' N. latitude, 134°38.35' W. longitude (Figure 1) and is open to harvest to the hatchery permit holder from June 15 through October 31. This area will be closed to common property commercial fishing by regulation from July 31 through September 30, unless opened by emergency order (EO) to harvest salmon surplus to cost recovery and broodstock needs, or for continued trolling by request of PAH.

Sport fishing will be open in the SHA. Sport fisheries will be managed by regional sport fishing regulations in effect for the Port Armstrong SHA. If necessary to protect broodstock, sport fishing may be closed by EO. If the number of king salmon returning to the SHA is expected to exceed broodstock needs, the sport fish bag and possession limit may be increased.

Port Herbert Special Harvest Area–Terminal Harvest Area.

The hatchery special harvest area (SHA) for Port Herbert is designated as waters within Port Herbert west of 134°39.70'W longitude. Prior to August 15, Port Herbert will be closed west of 134°44.30'W longitude. Prior to September 1, waters off Nakvassin Creek will be closed inside a line from 56°26.51' N. latitude, 134°44.85' W. longitude to 56°26.33' N. latitude, 134°44.64' W. longitude to 56°26.53' N. latitude, 134°44.55' W. longitude (Figure 2). A hatchery permit holder harvesting salmon within the SHA is exempt from the provisions of 5 AAC 33.310. Fishing periods for the hatchery permit holder will be opened and closed by emergency order by gear type. Notwithstanding 5 AAC 33.330, legal gear type for the hatchery permit holder in the SHA is purse seine, beach seine, gillnet, troll gear, and dip net. Additionally, AKI may be required to remove unharvested pink salmon remaining in the terminal harvest area should a significant number remain after common property fisheries have ceased.

Port Lucy Special Harvest Area–Terminal Harvest Area.

The hatchery special harvest area (SHA) for Port Lucy is designated as all waters of Port Lucy west of 134°40.0'W longitude (Figure 3). A hatchery permit holder harvesting salmon within the SHA is exempt from the provisions of 5 AAC 33.310. Fishing periods for the hatchery permit holder will be opened and closed by emergency order by gear type. Notwithstanding 5 AAC 33.330, legal gear type for the hatchery permit holder in the SHA is purse seine, beach seine, gillnet, troll gear, and dip net. AKI will be required to remove unharvested hatchery-produced chum salmon remaining in the terminal harvest area should a significant number remain after common property fisheries have ceased.

6.2 *Projected return this year*

Species, run	Program Name	Projected Common Property Harvest	Other ¹	Total Projected Return, Current Year
Pink salmon BY 17	Port Armstrong	454,312	533,322	987,634
Pink salmon BY 17	Port Herbert	83,229	97,703	180,932
Coho salmon BY 16	Port Armstrong	100,156	100,156	200,312
Chum salmon BY 14-16	Port Armstrong	45,438	408,943	454,381
King salmon BY 13-15	Port Armstrong	149	348	497

¹Other includes broodstock, cost recovery, escapement, etc.

6.3 *Common property fisheries management:*

Commercial fisheries

King Salmon

In 2019, PAH is expecting about 500 adult king salmon to return. PAH king salmon will be caught in the traditional summer troll season in the outer coastal waters and Lower Chatham Strait. An estimated 20% to 40% of these fish will be harvested in common property fisheries.

Chum Salmon

In 2019, PAH is expecting approximately 454,000 adult chum salmon to return at 1.5% ocean survival. The ancestral stock is HFH chum salmon, which return in July. If PAH chum salmon return through Lower Chatham Strait, very few will be harvested in traditional purse seine fisheries, since Lower Chatham Strait purse seine fisheries do not occur until August. Conversely, if PAH chum salmon enter inside waters through Cross Sound, harvest would be expected in traditional seine fisheries in northern Chatham Strait and the Hidden Falls THA. Traditional troll fisheries allow good access to PAH chum salmon. All chum salmon returning to the SHA in excess of broodstock requirements will be harvested for cost recovery by PAH. Common property openings targeting PAH chum salmon are not anticipated in the SHA; however, the outer bay portion of the SHA may be kept open for troll access when the inner bay is closed. Though unlikely, common property openings may be necessary to harvest surplus fish in the SHA if cost-recovery harvesting is overwhelmed. PAH will maintain close contact with the Sitka Area ADF&G management staff throughout the return so the department can respond to unharvested surplus fish in a timely manner, should the need arise. PAH may request the outer bay be closed if broodstock collection or cost recovery falls below projection.

Pink Salmon

In 2019, AKI is predicting a return to Port Armstrong of approximately 988,000 adult pink salmon at 1.5% ocean survival. All pink salmon returning to the SHA in excess of broodstock requirements will be harvested by PAH for cost recovery. No common property openings targeting PAH pink salmon are anticipated in the SHA. Though unlikely, common property openings may be necessary to harvest surplus fish in the SHA if cost-recovery harvesting is overwhelmed. Additionally, 181,000 pinks are forecast to return to the Port Herbert rearing and release site. PAH will maintain close contact with the Sitka Area ADF&G management staff throughout the return so the department can respond to unharvested surplus in a timely manner, should the need arise.

Wild stock run timing in the most southerly portions of sections 9-A and 9-B overlaps with the run timing of returning PAH pink salmon; therefore, a significant interception of pink salmon returning to PAH would be expected in these fisheries during mid to late August. Opportunities for traditional purse seine fisheries in the southern portions of sections 9-A and 9-B will be determined in season based on observations and abundance. In Section 9-A, traditional purse seine fisheries occur north of Armstrong Point. In recent years, few if any common property openings for seining have occurred south of Red Bluff Bay.

Coho Salmon

In 2019, PAH is expecting a return of about 200,000 adult coho salmon at 7% ocean survival. PAH coho salmon are mostly harvested in the traditional summer troll season in the outer coastal waters and in Lower Chatham Strait. It is estimated that 50% of PAH coho salmon will be harvested in the common property fisheries. All coho salmon returning to the SHA in excess of broodstock requirements will be harvested for cost recovery by PAH.

6.4 *Cost recovery harvest management:*

Species	CR goal
King salmon	All king salmon in terminal area.
Chum salmon	All chum salmon in terminal area.
Pink salmon	All pink salmon in terminal areas.
Coho salmon	All coho salmon in terminal area.

Pink salmon run timing is monitored via daily sex ratio sampling during the harvest activities. Initially, the early portion of the pink salmon return is managed to provide the highest quality flesh condition, as the preponderance of these fish are excess males. As the run progresses and more females begin to account for a larger share of the return, management emphasis may turn to harvesting strategies aimed at maximum roe value, with flesh quality being secondary. As a general practice, PAH and its contracted processor's harvester will strive to keep the outer portion of the SHA fully harvested each day in order to minimize any potential straying. PAH anticipates 559,000 pink salmon to be available for cost recovery, not counting fish that are lost to sea lion

predation. Sufficient processing and tendering capabilities will be contracted to handle daily harvest amounts of nearly 800,000 lbs. if necessary.

With the decline in king salmon returns anticipated since the cessation of king salmon egg takes at PAH, the staff no longer intends to use a gillnetter during May and June for cost recovery of returning king salmon. In past years, the gillnetter has used a driftnet of 6” or greater mesh size in the inner bay and attempt to harvest kings as quickly as possible as they return in order to maximize quality and take advantage of the higher early-season prices.

In 2019, PAH anticipates a return of 349,000 chum salmon to be available for cost recovery in the SHA, again, not counting sea lion predation. Chum salmon should make a significant contribution to PAH’s cost-recovery harvest. The chum salmon run generally ends before the end of July, one to two weeks before the pink salmon harvest begins. PAH plans to contract a seiner to fish at least twice a week, to keep the SHA fully harvested.

Based on historical catch data, PAH anticipates that approximately 50% of returning coho salmon will be captured in the traditional summer troll fishery in the outer coastal waters of Baranof Island and Lower Chatham Strait. Adult coho salmon not caught in common property fisheries typically begin arriving in the SHA in late August. The coho salmon return usually overlaps with the end of the pink salmon return. If requested by the processor, efforts may be made to harvest coho salmon and pink salmon separately. Coho salmon often completely segregate themselves from pink salmon within the inner bay. Definitive coho salmon harvest strategies may vary with changing conditions and different fish behavior.

7.0 ADDITIONAL INFORMATION

None.

7.1 APPROVAL

Recommendation for Approval: Port Armstrong Hatchery Annual Management Plan, 2019

Bart Watson, Armstrong Keta, Inc. 6/14/2019

Troy Tydingco, Area Management Biologist, Division of Sport Fish 6/13/2019

Eric Coonradt, Area Management Biologist, Division of Commercial Fisheries 6/14/2019

Judy Lum, Regional Supervisor, Division of Sport Fish 6/13/2019

Lowell Fair, Regional Supervisor, Division of Commercial Fisheries 6/13/2019

Lorraine Vercessi, PNP Hatchery Program Coordinator, Div. of Commercial Fisheries 6/12/2019

Approval:

The 2019 Port Armstrong Hatchery Annual Management Plan is hereby approved:

Tom Taube, Deputy Director, Division of Sport Fish 6/17/2019

Peter Bangs, Assistant Director, Division of Commercial Fisheries 6/14/2019

APPENDICES

□ Maps:

Figure 1. Location of Port Armstrong SHA in Southeast Alaska.

Figure 2. Location of Port Hebert SHA-THA in Southeast Alaska.

Figure 3. Location of Port Lucy SHA-THA in Southeast Alaska.

Port Armstrong SHA

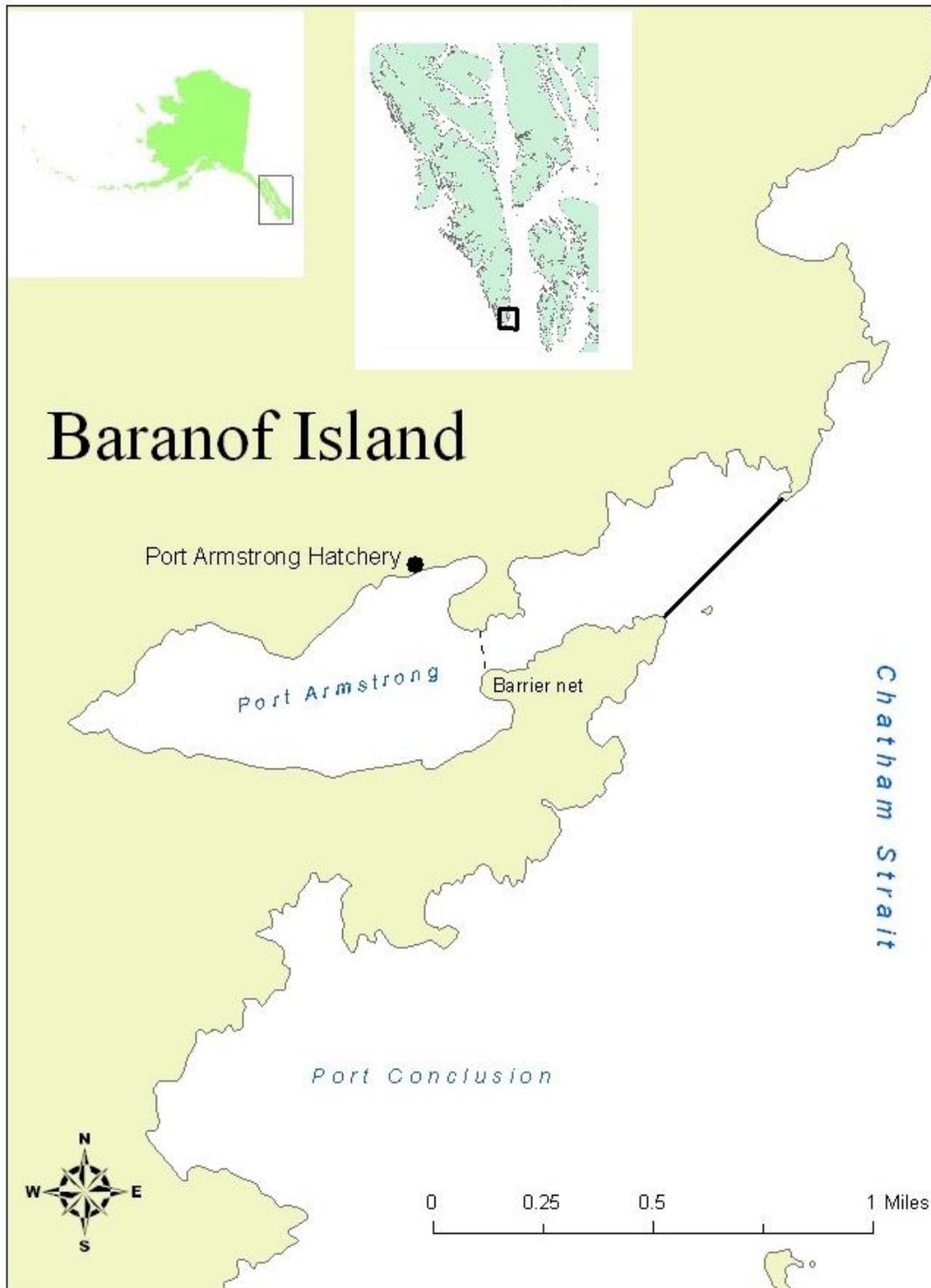


Figure 1.-Location of Port Armstrong SHA in Southeast Alaska

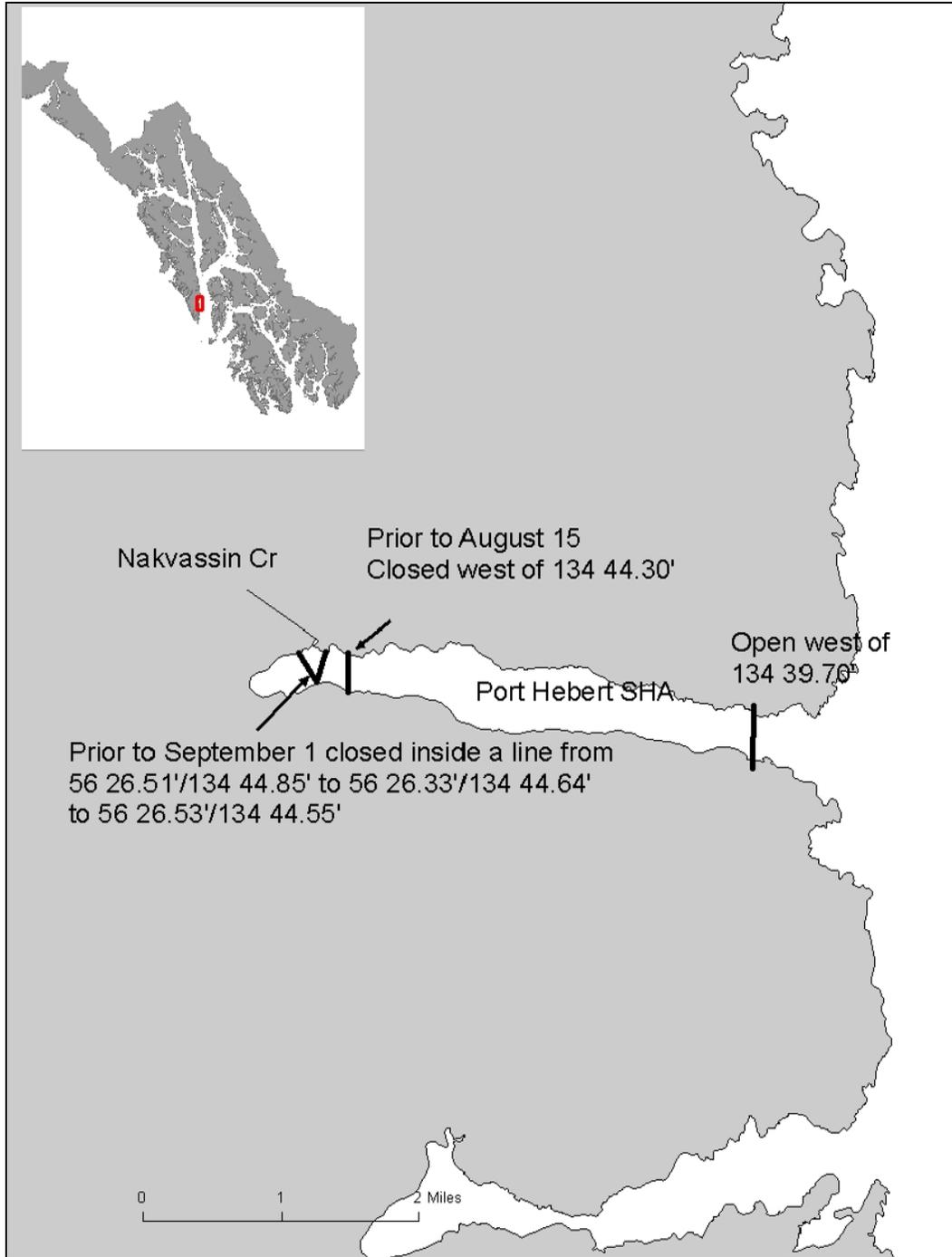


Figure 2.—Location of Port Herbert Special Harvest Area—Terminal Harvest Area in Southeast Alaska.

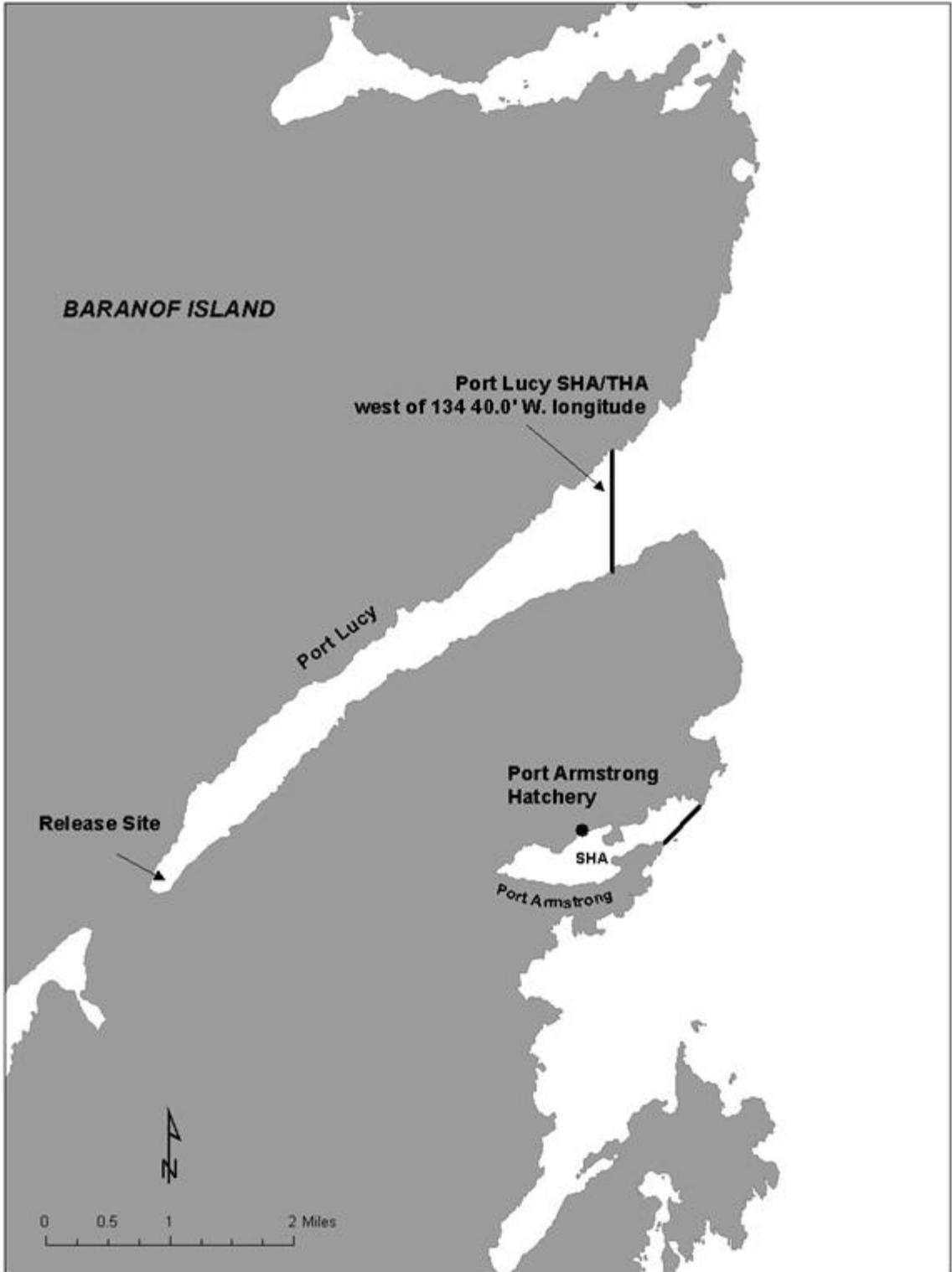


Figure 3.—Location of Port Lucy Special Harvest Area—Terminal Harvest Area in Southeast Alaska.