

## 2020 ANNUAL MANAGEMENT PLAN

### WALLY NOERENBERG HATCHERY

#### Prince William Sound Aquaculture Corporation

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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 Prince William Sound Aquaculture Corporation (PWSAC) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. PWSAC 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 PWSAC. This policy applies to all hatchery operations covered under the AMP. by a new annual management plan in the following year.

### I. OPERATIONAL PLAN

#### 1.1 Egg-Take Goals by Species

**Chum Salmon:** The chum salmon egg-take goal is 153 million (131 million plus 22 million permitted for AFK per section 1.8). Broodstock requirements of 100,500 females and 100,500 males, assuming:

- (a) Average fecundity of 2,110 eggs/female
- (b) 1/1 female to male ratio
- (c) 15% holding mortality
- (d) 15% green/over-mature spawners

**Pink Salmon:** The pink salmon egg-take goal is 148 million. Broodstock requirements are 141,500 females and 141,500 males, assuming:

- (a) Average fecundity of 1,450 eggs/female
- (b) 1/1 female to male ratio
- (c) 15% holding mortality
- (d) 15% green/over-mature spawners

If the required broodstock for pink salmon egg-take goal at Wally Noerenberg Hatchery (WNH) is not available for returning fish to the hatchery, PWSAC will consult with ADF&G staff to implement broodstock collection in order to conduct an egg-take at Armin F. Koernig Hatchery (AFK) to collect up to 148 million additional green eggs in order to reach the WNH goal. After eyeing at AFK, eggs will be transferred to WNH for rearing and release.

If the required broodstock for pink salmon egg-take goal at AFK is not available for returning fish to the hatchery, PWSAC will consult with ADF&G staff to implement broodstock collection in order to conduct an egg-take at WNH to collect up to 162 million additional green eggs in order to reach the AFK goal. After eyeing at WNH, eggs will be transferred to AFK for rearing and release.

**Coho Salmon:** The coho salmon egg-take goal is 4.0 million eggs. Broodstock requirements are 1,350 females and 1,350 males assuming:

- (a) Average fecundity of 4,100 eggs/female
- (b) 1/1 female to male ratio
- (c) 15% holding mortality
- (d) 15% green/over-mature spawners

If the required broodstock for the coho salmon egg-take goal is not available from returning fish to the hatchery, PWSAC will confer with VFDA on the feasibility of obtaining eggs or confer with ADF&G about conducting an egg take at the Mile-18 location (broodstock source) in Cordova or conduct an egg take at the remote release location in Cordova (Fleming Spit Pond) to make up the balance of the goal. Mile-18 and Corbin Creek stocks will not be mixed at WNH.

## 1.2 Broodstock

The expected broodstock collection schedules for chum and pink salmon are derived from historic run timing curves for Wally Noerenberg Hatchery (WNH). The chum and pink salmon curves are an aggregate of all years (chum salmon 1987–2016; pink salmon 2006–2016 even years) SHA hatchery harvests and Esther Subdistrict commercial fishery catch data from ADF&G Annual Management Reports and preliminary inseason estimates. The adult return summary includes the projected total return, hatchery escapement schedule, and fish available for common property fishery harvest (Table 3).

To ensure that run timing is proportionally represented in broodstock, a hatchery escapement schedule that includes the broodstock acquisition schedule will be implemented based on run-timing percentages, by date, in the AMP tables to establish a hatchery escapement goal by week. These goals will be measured according to the total number of fish estimated in the hatchery SHAs.

If inseason catch data indicate the run is earlier or later than the historical run curve would suggest, then PWSAC must consult with the department prior to altering the hatchery escapement schedule, accordingly, to match the actual run.

The hatchery escapement exclusion zone (HEEZ), outlined in section 3.4, protects potential broodstock fish staging directly in front of the hatchery from being harvested in common property fisheries. These fish include those that will eventually become broodstock along with those needed to ensure a high quality, efficient and successful egg collection process.

Any fish collected beyond those utilized as broodstock will be sold for cost recovery to fund PWSAC's salmon fisheries enhancement program. Historically, PWSAC has carried forward revenues from the hatchery raceway fish sales and full-utilization programs to the following year

as a reduction in the cost recovery revenue goal calculation. This provides benefits to the commercial common property fisheries (CCPF) with an increased PWSAC salmon harvest and potentially an earlier timed CCPF.

A portion of the SHA hatchery escapement is kept separate by means of a barrier net near the mouth of Esther Creek. Brood fish will be collected by volitional entry through the fishway leading to the brood holding pond.

### 1.3 Egg-take Schedule and Data Reporting

Ultimately, the egg-take schedule depends upon broodstock recruitment and maturation rate of the broodstock in salt and fresh water. The table below summarizes an anticipated egg-take schedule based on the average historical egg-take percent completion 1996–2016. All data associated with egg take and broodstock collection will be provided to the department by November 1 each year. Data will be provided in electronic format (Excel file) and include all the categories presented in the template attached as Table 7. Data to be collected specifically includes the numbers of green and over-ripe females from the broodstock and associated cost recovery.

**Anticipated Egg-take Schedule**

<b>Percent Complete</b>	<b>Chum Salmon</b>	<b>Pink Salmon</b>	<b>Coho Salmon</b>
25%	July 7	August 29	October 19
50%	July 13	September 3	October 27
75%	July 18	September 7	November 4
100%	July 27	September 15	November 11

For a complete listing of PWSAC hatchery egg-take schedules, see Table 4. For a complete listing of PWSAC’s egg-take goals, see Table 2.

### 1.4 Egg Transport and Carcass Disposal Plans

Approximately 22 million green chum salmon eggs will be allowed to develop to the eyed-egg stage, and then transported off-station to Armin F. Koernig Hatchery (AFK) for incubation, rearing, and release.

If the required broodstock for pink salmon egg-take goal at Wally Noerenberg Hatchery (WNH) is not available for returning fish to the hatchery, PWSAC will consult with ADF&G staff to implement broodstock collection in order to conduct an egg-take at Armin F. Koernig Hatchery (AFK) to collect up to 148 million additional green eggs in order to reach the WNH goal. After eyeing at AFK, eggs will be transferred to WNH for rearing and release.

If the required broodstock for pink salmon egg-take goal at AFK is not available for returning fish to the hatchery, PWSAC will consult with ADF&G staff to implement broodstock collection in order to conduct an egg-take at WNH to collect up to 162 million additional green eggs in order to reach the AFK goal. After eyeing at WNH, eggs will be transferred to AFK for rearing and release.

Approximately 50,000 BY20 king salmon eyed eggs will be transferred from the William Jack

Hernandez Sport Fish Hatchery to WNH to complete the incubation cycle. The resultant fry will emerge volitionally into a freshwater raceway and reared at WNH. In May 2022, the smolt will be transported to saltwater net pens in Chenega Cove on the south end of Chenega Island. The king salmon smolt will be reared for approximately two weeks and released.

During egg take PWSAC may sell broodstock carcasses and inviable eggs if a market is available. The carcass of a salmon from which milt or eggs are extracted for lawful use as broodstock may be disposed of in accordance with Alaska Department of Environmental Conservation (DEC) requirements. If carcasses are not sold, inviable eggs and carcasses will be disposed of in accordance with Alaska Department of Environmental Conservation (DEC) requirements. If an additional broodstock carcass disposal log is required by ADF&G, all disposals will be logged on the carcass disposal form and reported to the department within 30 days after egg take and disposals are completed.

### 1.5 Incubation Plans

The following tables contain egg take goals, incubation plans, and estimated releases for brood year 2020 (BY20) chum salmon, pink salmon, and coho salmon.

#### Chum Salmon Production Summary

Program Name	Egg Take Site	Current Year Green Egg/Fry Goal	Eyed Eggs	Fry/Smolt Released <sup>1</sup>	Permitted Maximum
WNH Chum Salmon	WNH	84,000,000	76,500,000	73,000,000	111 million green eggs
Port Chalmers Chum Salmon	WNH	47,000,000	42,400,000	40,500,000	41 million fry
AFKH Chum Salmon <sup>2</sup>	WNH	22,000,000	20,000,000	- <sup>3</sup>	34 million green eggs

<sup>1</sup> Release goals assume that egg-take goals and standard survivals are achieved. If egg-take goals are not achieved or survivals are lower than anticipated, remote release transport and rearing logistics may be impacted, and release goals may be altered through an amendment to this plan.

<sup>2</sup> Approximately 20 million chum salmon will be transferred to the AFK hatchery at the eyed-egg developmental stage.

<sup>3</sup> Fry release provided in AFK Hatchery AMP.

#### Pink Salmon Production Summary

Program Name	Egg Take Site	Current Year Green Egg/Fry Goal	Eyed Eggs	Fry/Smolt Released <sup>1</sup>	Permitted Maximum
WNH Pink Salmon	WNH	148,000,000	140,000,000	134,000,000	148 million green eggs
WNH Pink Salmon	AFKH <sup>1</sup>	0	140,000,000	134,000,000	148 million green eggs
AFKH Pink Salmon	WNH	162,000,000	153,000,000	- <sup>2</sup>	162 million green eggs

<sup>1</sup> If the required broodstock for egg-take goals at WNH is not available, up to 148 million green eggs may be taken at AFKH and transferred to WNH at the eyed-egg development stage for release at Lake Bay.

<sup>2</sup> Fry release provided in AFK Hatchery AMP

### Coho Salmon Production Summary

Program Name	Egg Take Site	Current Year Green Egg/Fry Goal	Eyed Eggs	Fry/Smolt Released	Permitted Maximum
WNH Coho Salmon <sup>1</sup>	WNH	4,000,000	3,800,000	3,500,000	4,000,000 green eggs
Whittier Coho Salmon <sup>1</sup>	WNH	- <sup>2</sup>	- <sup>2</sup>	100,000	100,000 smolt
Crab Bay/Chenega Cove Coho Salmon <sup>1</sup>	WNH	- <sup>2</sup>	- <sup>2</sup>	50,000	50,000 smolt
Fleming Spit Coho Salmon	WNH	- <sup>2</sup>	- <sup>2</sup>	100,000	100,000 smolt

<sup>1</sup> Mile-18 and Corbin Creek stock are both permitted at WNH with Corbin Creek stock releases limited to WNH and the Whittier and Crab Bay terminal areas.

<sup>2</sup> Permitting allows for a total of 4 million green eggs at WNH with releases permitted for numbers of smolt.

The above tables were generated with the following assumptions:

- (a) survival from green to eyed stage of:
  - 94.5% for pink salmon
  - 91.5% for chum salmon
  - 95.0% for coho salmon
- (b) survival from eyed stage to emergence of:
  - 96.0% for pink, chum, and coho salmon
- (c) survival from emergence to fed fry of:
  - 99.5% for pink salmon
  - 99.0% for chum salmon
  - 97.0% for coho salmon
- (d) survival from fed fry to smolt release of 99.5% for coho.

All eggs will be incubated at WNH. During the fall incubation period, 100% of pink, chum, Chinook and coho salmon production will be thermally otolith-marked at the eyed-egg stage. See section 4.1 for more details.

#### 1.6 Rearing and Release Plans

**Pink Salmon:** Pink salmon fry will emerge non-volititionally from incubators, pass via separate flume and then into saltwater rearing pens. The saltwater net pen rearing complex consists of 16 12.2m x 12.2m x 3.0m rearing pens. Maximum loading densities will be 11 kg/m<sup>3</sup>.

Approximately 128.5 million pink salmon will be released at WNH in 2020. Based on the predicted outmigration curve and zooplankton bloom timing, all of the pink salmon fry will be reared for an average of six weeks and released in two groups into the zooplankton bloom.

**Chum Salmon:** Chum salmon fry destined to be released in Lake Bay will emerge non-

volitionally from incubators, pass via separate flume, and then into saltwater rearing pens. The Lake Bay saltwater net pen rearing complex consists of 32 12.2m x 12.2m x 3.0m rearing pens. Maximum loading densities will be 11 kg/m<sup>3</sup>.

Approximately 124.4 million chum salmon fry will be released in three locations in 2020. Approximately 73.3 million will be released at WNH, 32.2 million at Port Chalmers, and 18.9 million at AFK.

The AFK saltwater net pen rearing complex consists of ten 12.2m x 12.2m x 3.0m rearing pens. Maximum loading densities will be 11 kg/m<sup>3</sup>.

Based on the predicted outmigration curve and zooplankton bloom timing, all of the chum salmon fry will be reared for an average of 12 weeks in saltwater net pens and released in one group per release site at a target size of 1.8 grams.

**Coho Salmon:** Approximately 2.1 million brood year 2018 (BY18) coho salmon smolt will be released in three locations in 2020. Approximately 1.85 million will be released at WNH, 100,000 at Cordova, 100,000 at Whittier, and 50,000 at Chenega Cove. The coho salmon will be reared in raceways at WNH. At WNH, the smolt will be transferred to saltwater pens for 4 to 12 weeks prior to release. The smolt released at Cordova, Whittier and Chenega Cove will receive at least 14 days of saltwater rearing at their release location. Maximum rearing densities will be 50 kg/m<sup>3</sup> in fresh water and 11 kg/m<sup>3</sup> in salt water. All coho salmon smolt will be released in mid-May with a target size of 15 grams.

**Coho Salmon:** Approximately 3.6 million BY19 coho salmon fry will begin feeding in the raceways in mid-June 2020 and approximately 1.8 million will remain there until the spring of 2021. The other approximately 1.8 million will be passed through a flume, and then into saltwater rearing pens in late September 2020.

**Chinook Salmon:** There will be zero BY18 king salmon smolt released in Chenega Cove in 2020.

For a complete listing of PWSAC's estimated 2020 releases see Table 5.

### 1.7 Fry Transport Methods

#### **Coho Salmon:**

All coho salmon smolt will be transported by barge in eight 600-gallon stainless steel tanks with supplemental oxygen at 100–200% saturation. The water source used during transport will be Esther Lake, with the addition of NaCl and potassium chloride (KCl) to achieve a five ppt saline solution. The saline solution helps to reduce stress to the fish during transport. Maximum transfer densities will be 120kg/m<sup>3</sup>.

### 1.8 Permitted Capacity

WNH was issued PNP Hatchery Permit #20 in 1983. It is permitted to incubate 148 million pink salmon eggs, 131 million chum salmon eggs, 4 million coho salmon eggs, and 4 million king salmon eggs. An additional 34 million chum salmon eggs permitted for AFK may be taken and incubated at WNH annually.

### Fish Transport Permit Summary

FTP Number	Expiration Date	Stock	Purpose
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#### PINK SALMON

96A-0048	6/30/21	Larsen, Ewan, and Galena Creek	Allows the egg take, incubation, and resultant release of 148 million eggs at WNH.
16A-0059	4/30/26	Larsen, Ewan, and Galena Creek	Allows for backup egg take of 148 million green eggs at AFK, transport to WNH for incubation and release.

#### CHUM SALMON

94A-0006	6/30/20	Wells River/ Bear Trap	Allows transport of 41 million fry for release at Port Chalmers.
16A-0056	4/30/26	Wells River/ Bear Trap	Allows the egg take of up to 131 million green eggs, incubation, and release of resultant progeny of 111 million eggs at WNH.

#### COHO SALMON

17A-0050	04/30/27	Mile 18 Copper River Delta	Allows transport and release of 100,000 smolt at Fleming Spit, Cordova.
98A-0053	6/30/19	Mile 18 Copper River Delta	Allows transport and release of 100,000 smolt at Whittier, near a freshwater outlet.
99A-0049	6/30/20	Mile 18 Copper River Delta	Allows transport and release of 50,000 smolt at Crab Bay, Evans Island.
99A-0073	12/31/20	Mile 18 Copper River Delta	Allows for the backup egg take at Fleming Spit of 1.18 million eggs for WNH. Eggs will be incubated, reared, and resultant progeny released at WNH.
18A-0038	8/30/28	Mile 18 Copper River Delta	Allows for the egg take, incubation, rearing and release of 4.0 million eggs at WNH.
16A-0062	4/30/26	Mile 18 Copper River	Allows for the backup egg take and transport of 2.0 million eggs from Mile 18.
19A-0028	6/30/23	Mile 18 Copper River	Allows transport and release of 50,000 smolt at Chenega Cove, Chenega Island
16A-0061	4/30/26	Corbin Creek	Allows for the backup egg take and transport of 4.0 million eggs from Solomon Gulch Hatchery to WNH.
19A-0017	6/30/23	Corbin Creek	Allows for the transfer and release of 100,000 smolt from WNH at Whittier, near a freshwater outlet.
19A-0018	6/30/23	Corbin Creek	Allows transport and release of 50,000 smolt at Crab Bay, Evans Island

#### KING SALMON

19A-0038	12/31/23	WJHSFH/ Ninilchik River	Allows transport of up to 50,000 eyed eggs from WJHSFH to WNH for incubation and freshwater rearing and smolt release at Chenega Cove, Chenega Island.
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11A-0061	6/30/21	WJHSFH/ Ship Creek	Allows transport of up to 50,000 eyed eggs from WJHSFH to WNH for incubation and freshwater rearing and smolt release at Crab Bay, Evans Island.
19A-0027	6/30/23	WJHSFH/ Ship Creek	Allows transport of up to 50,000 eyed eggs from WJHSFH to WNH for incubation and freshwater rearing and smolt release at Chenega Cove, Chenega Island.

## II. DONOR STOCK MANAGEMENT

If the required broodstock for the coho salmon egg-take goal is not available from returning fish to the hatchery, PWSAC will confer with VFDA on the feasibility of obtaining eggs or confer with ADF&G about conducting an egg take at the Mile-18 location (broodstock source) in Cordova or conduct an egg take at the remote release location in Cordova (Fleming Spit Pond) to make up the balance of the goal. Mile-18 and Corbin Creek stocks will not be mixed at WNH.

## III. HATCHERY RETURN MANAGEMENT

PWSAC operates five facilities: AFK, Cannery Creek Hatchery (CCH), Gulkana Hatchery (GH), Main Bay Hatchery (MBH), and WNH. The corporation generates revenues for annual operations from a 2% enhancement tax and from the sale of hatchery-produced salmon returning to the facilities.

In 1997, the PWSAC Board of Directors (BOD) elected to have corporate cost recovery based upon revenue goals specific to the seine and gillnet salmon fisheries rather than a goal of harvesting a fixed percentage of the returning adults. This results in each gear group paying for the enhanced production from which they benefit. PWSAC calculates these revenue goals by allocating production costs between the seine-caught and gillnet-caught salmon fisheries.

On March 5, 2020, the PWSAC BOD approved the annual corporate budget for Fiscal Year 2021 detailing potential sources of revenue and expenditures. The pink, WNH chum and MBH sockeye salmon cost-recovery revenue goals are \$7,102,413 and \$5,348,778 and \$450,000 respectively. Additional revenue may be generated through PWSAC's raceway fish sales during its egg take full utilization program.

PWSAC uses preseason assumptions for the number of returning fish, price per pound, and average adult weight to calculate the total projected value of returning hatchery-produced salmon. Based on these assumptions, PWSAC estimates that approximately 21% of the total value of the enhanced run will be required to meet the revenue goal in the Fiscal Year 2021 financial plan.

**Pink Salmon Returns:** The AFK, CCH, and WNH pink salmon runs will be managed collectively through openings and closures of respective hatchery subdistricts. Managing the enhanced pink salmon runs in aggregate may result in site-specific common property fisheries (CPF) contribution rates being above or below the approximate target of an 77% CPF pink salmon harvest.

**WNH Chum and MBH Sockeye Salmon Runs:** The WNH chum salmon and the MBH



sockeye salmon runs will be managed collectively through openings and closures of respective hatchery subdistricts. The collective management will occur concurrently for the WNH chum salmon and MBH salmon revenue goal. If inseason, PWSAC, in consultation with the department, determines that the WNH chum salmon corporate escapement may not be met, cost-recovery harvest at MBH may be increased to achieve the balance of the revenue goal. Managing the runs in aggregate may result in site-specific CPF contribution rates being above or below the approximate targets of 49% and 93% for the WNH chum and MBH sockeye salmon harvest, respectively.

AFK Hatchery and Port Chalmers remote-release chum salmon runs are expected to have a 100% CPF harvest.

Reduction of CPF opportunity in respective hatchery subdistricts may be necessary to ensure corporate escapement objectives are met. PWSAC will work closely with local ADF&G management biologists to achieve the seine and gillnet fisheries revenue goals as rapidly as possible to allow for orderly and consistent CPF.

### 3.1 Hatchery Fish Migration Routes and Timing

**Chum Salmon:** WNH chum salmon donor stocks were originally selected to contribute primarily to the early drift gillnet fishery in the Coghill District, and to the mixed seine and drift gillnet fishery later in the season.

In 2005, the Alaska Board of Fisheries revised regulation 5 ACC 24.370 to utilize WNH and Port Chalmers chum salmon fisheries as a means of correcting exvessel value allocation disparities between the purse seine and drift gillnet fleets. The 2014–2018 five-year average value percentages calculated by ADF&G for each gear type are 52.3% drift gillnet, 47.7% purse seine, and 5.4% set gillnet. As a result, the purse seine gear group will have exclusive access to the Port Chalmers Subdistrict through July 30 this season. WNH chum salmon released off-station at AFK will be harvested by the purse seine fleet in the AFK terminal harvest area (THA) and SHA between June 1 and July 20.

**Pink Salmon:** WNH pink salmon stock originated from the AFK Hatchery pink salmon stock. The timing and distribution of the two hatchery returns appear to be very similar. A percentage of WNH pink salmon are expected to be harvested by seiners in the Southwestern District, as well as in Perry Passage, Culross Passage, and other areas in the Northern District. Pink salmon are also expected to be harvested by both purse seiners and drift gillnetters in the Esther Subdistrict and by drift gillnetters and set gillnetters in the Eshamy District.

**Coho Salmon:** WNH coho salmon are present in the fishery from early August through September. Although some fish are undoubtedly intercepted in the southern areas of Prince William Sound, substantial portions of the coho salmon run are expected to be harvested by purse seine and drift gillnet fishermen in the Esther Subdistrict. There is no direct cost recovery from coho salmon; however, incidental catch of coho salmon during later pink salmon cost recovery and brood collection can amount up to 20% of the run.

The Esther and Perry Island subdistricts are shown in Figures 1–2.

### 3.2 Special Harvest Area

The boundaries of the hatchery SHA and the THA are illustrated in Figure 3. The SHA is used by the hatchery operator to harvest hatchery fish for cost recovery. The THA is normally closed to commercial and subsistence fishing and provides a buffer between the hatchery SHA and open waters of the Esther Subdistrict.

The SHA is defined as the waters of Lake Bay north of 60°47.56'N lat (5 AAC 24.368(d)). The THA includes all waters inside of a line from Hodgkin Point at 60° 46.93' N. lat., 148° 02.10' W. long. to Esther Light at 60° 47.14' N. lat., 148° 06.02' W. long., excluding the waters of the Wally Noerenberg Hatchery SHA (5 AAC 24.368(c)). All latitude and longitude coordinates are based on the North American Datum of 1983.

During periods when the Esther Subdistrict closure is in effect to provide protection to cost-recovery fish, the department is willing to permit cost-recovery operations in waters outside of the regulatory SHA/THA boundaries to maintain fish quality. While the department views PWSAC achieving its revenue goals using existing hatchery subdistricts in a timely and efficient manner as beneficial for maintaining fish quality and providing for increased common property fishing opportunity outside of those districts, there is concern over the harvest of wild stock salmon outside of the SHA. When the Esther Subdistrict is open to the CPF, the SHA will not be expanded.

The SHA shall be opened and closed to commercial fishing by emergency order (EO). Sport fisheries will be managed in accordance with regulations as provided in 5 AAC 47 – 5 AAC 75. Emergency orders may be issued to liberalize or restrict sport fisheries based on achievement of broodstock goals.

The following requirements must be adhered to for permitted cost-recovery operations to be conducted outside the regulatory SHA/THA boundaries:

- PWSAC will agree to pay all costs associated with sampling, otolith preparation, and reading of otoliths from permitted cost-recovery harvest(s).
- PWSAC will notify the department with reasonable time prior to any cost-recovery operations to request an emergency order (EO) permitting the activity and to provide notice for scheduling of sampling personnel.
- All EOs issued to permit cost-recovery operations will be for discrete dates.
- Cost-recovery harvest(s) from these areas will not be mixed with any other harvest at any time until after sampling. No sorting of cost-recovery harvest(s) is permitted until after sampling.
- No further EOs permitting cost-recovery operations outside the SHA will be issued until the previous harvest has been evaluated for wild stock interception.

- The department may discontinue permitted cost-recovery operations outside the SHA at any time.

### 3.3 Hatchery Returns

#### 3.3.1 On-Station Returns

**Chum Salmon:** PWSAC’s anticipated 2020 run of chum salmon to WNH is 2,550,000 assuming a 3.68% marine survival (Table 1). Assuming a broodstock goal of 201,000 fish, and approximately 1,097,000 chum salmon sold for cost recovery, the total hatchery harvest will be approximately 51% of the run.

**Chum Salmon Projected Run Summary**

Total Return	Broodstock	Cost Recovery	Hatchery Harvest	CPF Harvest
2,550,000	201,000	1,097,000	1,298,000	1,252,000
<b>% of Total</b>	<b>8%</b>	<b>43%</b>	<b>51%</b>	<b>49.1%</b>

**Chum Salmon Projected Run and Age Composition Summary**

BY	Fry Released	Anticipated Marine Survival	Anticipated Total BY Return	Return Age	2019 Projected Run	% of Total
2014	81,000,000	0.56 %	457,287	Age-6	8,000	0.3%
2015	71,700,000	5.70 %	4,089,670	Age-5	1,131,000	44.3%
2016	67,100,000	2.97%	1,990,820	Age-4	1,313,000	51.5%
2017	73,200,000	2.97%	2,171,804	Age-3	101,000	3.9%
				<b>Total</b>	<b>2,550,000</b>	<b>100.0%</b>

Historical average return age composition: 2% age-6, 28% age-5, 65% age-4, and 5% age-3.

**Pink Salmon:** PWSAC’s anticipated 2020 adult return of pink salmon to WNH is 4,600,000 fish, assuming 3.38% marine survival (5 even-year average) from the BY18 fry release of 135.6 million (Table 1). Assuming a broodstock goal of 283,000 fish and approximately 731,000 pink salmon sold for cost recovery, the hatchery harvest will be approximately 22% of the return.

**Pink Salmon Projected Return Summary**

Total Return	Broodstock	Cost Recovery	Hatchery Harvest	CPF Harvest
4,600,000	283,000	731,000	1,014,000	3,586,000
<b>% of Total</b>	<b>6%</b>	<b>16%</b>	<b>22%</b>	<b>78%</b>

**Coho Salmon:** PWSAC’s expected 2020 return of coho salmon to WNH is 115,000 fish, assuming a marine survival of 7.01% (Lake Bay Mile 18 average) from the BY17 smolt release of 1.64 million (Table 1). Assuming the hatchery harvest rate will be insignificant (interception during pink salmon cost recovery) and a broodstock goal of 2,700 fish, approximately 98% of the coho salmon will be available for the CPF.

**Coho Salmon Projected Return Summary**

<b>Total Return</b>	<b>Broodstock</b>	<b>Cost Recovery</b>	<b>Hatchery Harvest</b>	<b>CPF Harvest</b>
115,000	2,700	-0-	2,700	112,300
<b>% of Total</b>	<b>2%</b>	<b>0%</b>	<b>2%</b>	<b>98%</b>

3.3.2 Off-Station Returns

**Chum Salmon:** PWSAC’s expected 2020 run of chum salmon to Port Chalmers is 810,000, assuming a 2.13% marine survival (Table 1). All fish will be harvested by the CPF. The expected 2020 run of chum salmon to Sawmill Bay is covered under a separate plan (AFK Hatchery Annual Management Plan).

**Port Chalmers - Chum Salmon Projected Run Summary**

<b>Total Return</b>	<b>Broodstock</b>	<b>Cost Recovery</b>	<b>Hatchery Harvest</b>	<b>CPF Harvest</b>
810,000	-0-	-0-	-0-	810,000
<b>% of Total</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>

**Chum Salmon Projected Run and Age Composition Summary**

<b>BY</b>	<b>Fry Released</b>	<b>Anticipated Marine Survival</b>	<b>Anticipated Total BY Return</b>	<b>Return Age</b>	<b>2020 Projected Run</b>	<b>% of Total</b>
2014	-0-	0.00%	-0-	Age-6	-0-	0%
2015	38,300,000	5.70%	2,183,100	Age-5	743,000	91.7%
2016	34,900,000	0.28 %	97,720	Age-4	59,000	7.3%
2017	40,420,000	0.50%	201,867	Age-3	8,000	1.0%
				<b>Total</b>	<b>810,000</b>	<b>100.0%</b>

Historical average return age composition: 1% age-6, 34% age-5, 61% age-4, and 4% age-3.

**Coho Salmon:** PWSAC’s total expected 2020 return of coho salmon to Chenega Bay, Cordova and Whittier is 17,500 assuming a marine survival of 7.01% (Mile 18 Lake Bay average) from the BY17 smolt releases of 150,000 (Table 1). All Chenega Bay, Cordova and Whittier-released fish are designated to be harvested in all common property fisheries. If the required broodstock for the coho salmon egg-take goal is not available from fish returning to the hatchery, PWSAC will confer with VFDA on the feasibility of obtaining eggs or confer with ADF&G about conducting an egg take at the remote Mile-18 location (broodstock source) in Cordova or conduct an egg take at the remote release location in Cordova (Fleming Spit Pond) to make up the balance of the goal. Mile-18 and Corbin Creek stocks will not be mixed at WNH.

**Chenega Bay - Coho Salmon Projected Return Summary**

<b>Total Return</b>	<b>Broodstock</b>	<b>Cost Recovery</b>	<b>Hatchery Harvest</b>	<b>Common Property Fisheries Harvest</b>
3,500	-0-	-0-	-0-	3,500
<b>% of Total</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>

**Cordova - Coho Salmon Projected Return Summary**

<b>Total Return</b>	<b>Broodstock</b>	<b>Cost Recovery</b>	<b>Hatchery Harvest</b>	<b>Common Property Fisheries Harvest</b>
7,000	-0-	-0-	-0-	7,000
<b>% of Total</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

**Whittier - Coho Salmon Projected Return Summary**

<b>Total Return</b>	<b>Broodstock</b>	<b>Cost Recovery</b>	<b>Hatchery Harvest</b>	<b>Common Property Fisheries Harvest</b>
7,000	-0-	-0-	-0-	7,000
<b>% of Total</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>

3.4 Separation of Hatchery Escapement

The hatchery escapement goals summarized in the table below are the midpoints of the special harvest area (SHA) escapement goal ranges, to provide for the broodstock and cost-recovery requirements based on these variables; sex ratio of fish available for broodstock, fecundity, holding mortality percentage, immature and over-mature spawner percentage, average fish size, and price per pound.

**SHA Escapement Goals Summary**

<b>Species</b>	<b>Hatchery Escapement Goal</b>	<b>SHA Escapement Goal Range</b>
Chum Salmon	1,298,000	1,121,000 – 1,518,000
Pink Salmon	1,014,000	878,000 – 1,194,000

In 2013, PWSAC designated a Hatchery Escapement Exclusion Zone (HEEZ) within the WNH SHA. The HEEZ consists of the waters of the SHA north of a latitude line at 60°47.78'N.

3.5 Special Management Strategies

Effective management of mixed-stock fisheries is difficult. It is the intent of ADF&G to provide stated PWSAC corporate escapement goals by species. Achieving the target revenue goal will depend upon the timing and magnitude of PWSAC salmon runs, average fish size, and price per pound PWSAC receives. It will also depend upon precise inseason assessment of both wild and hatchery run strengths. Depending upon the precision of inseason run assessment, the actual percentages of PWSAC total runs by species, which are provided for corporate escapement, may fall above or below the stated goals. If precise and timely stock identification data are available,

ADF&G will use them to manage the fisheries inseason for an allocation of PWSAC-produced pink, chum, and sockeye salmon between the CPF and PWSAC. Pink salmon will be managed for PWSAC corporate escapement after July 20. Sockeye and chum salmon will be managed for PWSAC corporate escapement by stock.

Performance of the hatchery run is evaluated by comparison of daily harvest rates to a predicted run entry table. In addition, daily sex ratios in the hatchery harvest predict, by a regression equation, the fraction of the run that has returned to date. PWSAC will provide these two types of data from the cost-recovery harvest to ADF&G management staff on a daily basis during the season so the area management biologist can make estimates of the number of salmon remaining in the run. Once egg-take operations commence at the hatchery, progress towards the hatchery's final goal could determine future SHA openings dependent upon SHA fish abundance estimates. PWSAC will provide daily estimates of fish abundance inside the barrier seine (if applicable), within the HEEZ, and in the SHA outside of the HEEZ, along with egg take progress updates to ADF&G management staff.

If corporate escapement problems occur at the hatchery, commercial CPF restrictions will be made in the Esther and/or Perry Island subdistricts based upon the magnitude of the shortfall and stage of the run.

PWSAC will submit written management recommendations to the department with clear justifications as to how the recommendations support achieving cost recovery and/or broodstock collection goals. Each recommendation, in the form of a brief email, will include, but not be limited to, current cost-recovery harvest data, HEEZ and outer SHA estimates, actual and anticipated run entry, and actual and anticipated cost-recovery progress. Each recommendation will also include a summary of actual and anticipated hatchery escapement and broodstock collection progress as it relates to the weekly goals established in this AMP. For this reporting, hatchery escapement will be defined as fish in the HEEZ and outer SHA, both upstream and downstream of the barrier net, as appropriate. Fish in the raceways or brood holding ponds will be defined as broodstock.

To ensure accurate and clear reporting, the AMP Adult Run Summary table from the AMP for each hatchery and species will be submitted to the department when requested, as well as with written management recommendations.

It will be the responsibility of the PWSAC staff, with written consent of the PWSAC Executive Committee, to advise ADF&G of any desired inseason adjustments to the preseason corporate escapement goals, and/or significant changes to the preseason management strategy. Recognizing the imprecision of preseason forecasts and inseason assessment of wild stock and hatchery contribution estimates, ADF&G will assess PWSAC's requested changes based upon the best available information. If, based on the assessment of ADF&G, the total hatchery run will be less than or greater than the original PWSAC forecasted return, then ADF&G will adjust openings, as necessary, to best provide for wild stock, corporate escapement, and CPF harvests. Total hatchery and wild stock runs will be estimated after a thorough postseason analysis of all available data. Postseason estimates may not coincide with ADF&G's or PWSAC's inseason estimates.

**Chum Salmon:** During the chum salmon run, the Esther and Granite Bay subdistricts are managed to attain chum salmon broodstock, cost-recovery objectives, and wild salmon escapement into Coghill District. If these objectives are on track, time and/or areas open to fishing may be expanded. If sockeye salmon escapement into Coghill Lake is weak and/or cost recovery and broodstock objectives are behind projections, restrictions in the Esther and/or Granite Bay subdistricts will be necessary. Given a shortfall in either wild or corporate escapement, fishing time and/or area in the Esther Subdistrict may be reduced. If management of the Esther Subdistrict is not achieving either wild or corporate escapement, fishing time and/or area in the Granite Bay Subdistrict may be reduced.

**Pink Salmon:** Because there is no way of isolating hatchery fish from wild stocks in waters of the general purse seine districts, these districts can only be opened and closed as the wild stock run strength will allow. When the hatchery return can withstand a higher exploitation rate than the returning wild stocks, hatchery fish that are not intercepted in the mixed stock areas of the general districts continue into the Esther Subdistrict and waters of Lake and Quillian bays. Wild stock pink salmon escapement shortfalls have occurred several times in the Coghill District since 1988. Beginning in 1994, CPF openings in the Esther Subdistrict have been restricted to within one and a half miles of Esther Island to minimize harvest of weak pink salmon stocks destined for Port Wells. Recommendations discussed by the Salmon Harvest Task Force have included closing those waters west of Lake Bay to seine harvests during weak wild stock returns to provide a greater corridor for wild fish transiting the Esther Subdistrict.

The principal tool available to manage the hatchery pink salmon return is EO manipulation of the Esther and Perry Island subdistricts (figures 1–2). Closure of the subdistricts during the regular season can be used to decrease interception of hatchery fish to assure that the corporation can achieve its cost recovery and broodstock objectives. When it is apparent that a large hatchery surplus exists in the Esther or Perry Island subdistricts, efforts will be made to provide fishing time in such a manner to prevent a large buildup of fish from occurring and to allow for a timely harvest of the highest quality fish possible.

**Coho Salmon:** No special management action is anticipated for coho salmon, although fish entering the SHA will be available for PWSAC harvest. It is likely that a weekly fishing schedule in the Esther Subdistrict will be established for the coho salmon return. This schedule will be continued into mid-September to provide for harvest of coho salmon returning to the hatchery. Duration of openings may be modified dependent upon run performance.

### 3.6 Sport Fish Harvest

Sport fisheries will be managed in accordance with regulations as provided in 5 AAC 47 – 5 AAC 75. Emergency orders may be issued to liberalize or restrict sport fisheries based on achievement of broodstock goals.

A growing sport fishery has developed targeting chum, pink, and coho salmon in the WNH THA and SHA. Minor conflicts with cost-recovery operations and the integrity of the barrier net have occurred in the past. In an effort to protect WNH broodstock, the Alaska Board of Fisheries (BOF) has designated that the area within 100 feet of the WNH broodstock holding pen is closed to sport fishing (5 AAC 55.023(3)).

WNH coho salmon returning to Chenega Bay, Cordova, and Whittier release locations are expected to contribute to local sport fisheries. The locations were chosen to enhance sport fishing opportunities. These locations have been designated by the BOF as THAs, which allow for the sport harvest of up to six coho salmon instead of three, as is the case in the remaining portions of Prince William Sound.

### 3.7 Subsistence Harvest

The WNH facility is within the Prince William Sound general subsistence area. Alaska residents may harvest fish for subsistence use using the legal gear type for the Coghill District.

### 3.8 Avoidance of Nontarget Species

Numerical abundance of stocks of fish other than WNH stocks of salmon is insignificant in the WNH THA and SHA. No particular problems are expected to occur.

## **IV. EVALUATION STUDIES**

### 4.1 Otolith Marking

During the fall incubation period (September–December 2020), 100% of the pink, chum, and coho will be marked at the eyed-egg stage. The table below summarizes the 2020 thermal otolith mark–assignment by the ADF&G Mark, Tag, and Age Lab (MTAL). Voucher samples are collected and submitted along with data per the ADF&G MTAL sampling protocol.

<b>Species</b>	<b>Number of Anticipated Eyed Eggs</b>	<b>Thermal Otolith Mark</b>	<b>Intended Release Location</b>
Chum Salmon	73,300,000	4,3nH	WNH, Lake Bay
Chum Salmon	32,200,000	1,3n,2H	WNH or Port Chalmers
Chum Salmon	0	3,3,4H	WNH or Port Chalmers
Pink Salmon	133,140,000	8H	WNH, Lake Bay
Pink Salmon	0	8H3	WNH, Lake Bay
Coho Salmon	1,850,000	3H	WNH, Lake Bay Cordova, Whittier, Chenega Cove
King Salmon	0	2,4H	Chenega Cove

### 4.2 Otolith Recovery in Returning Adults

The recovery of otoliths from returning adult salmon will occur this year. Recovery efforts will be directed at the CPF and cost recovery and will be performed by field personnel at processing locations.



Otolith mark data will be used by ADF&G and PWSAC to measure fishery contribution and marine survival of salmon. ADF&G will provide PWSAC preliminary otolith mark–recovery data from fishery samples by December 1, and any additional otolith data from straying studies and other projects by April 1. Similarly, PWSAC will provide ADF&G independently-collected otolith mark–recovery data by April 1 each year. These data are to be the individual specimen otolith mark results.

## V. ATTACHMENTS

FIGURE 1. Coghill Fishery Management District

FIGURE 2. Esther and Granite Bay Subdistricts

FIGURE 3. WNH THA, SHA, and HEEZ

TABLE 1. 2020 PWSAC Hatchery Return Forecast Summary

TABLE 2. 2020 Planned Egg Takes

TABLE 3. 2020 WNH Chum Salmon Adult Return Summary  
2020 WNH Pink Salmon Adult Return Summary

TABLE 4. 2020 Hatchery Egg Take Schedules

TABLE 5. 2020 PWSAC Estimated Salmon Releases

TABLE 6. 2021 PWSAC Estimated Salmon Releases

TABLE 7. Egg-take Data Template For Each Species at Each Hatchery

## VI. APPROVAL

### **Recommendation for Approval: Wally Noerenberg Hatchery Annual Management Plan, 2020**

Tommy Sheridan, PWSAC, General Manager 6/11/2020

Jay Baumer, Area Management Biologist, Division of Sport Fish 6/4/2020

Jeremy Botz, Area Management Biologist, Division of Commercial Fisheries 6/4/2020

Tom Vania, Regional Supervisor, Division of Sport Fish 6/4/2020

Bert Lewis, Regional Supervisor, Division of Commercial Fisheries 6/4/2020

Ethan Ford, Regional Resource Development Biologist, Div. of Commercial Fisheries 6/4/2020

Lorraine Vercessi, PNP Hatchery Program Coordinator, Div. of Commercial Fisheries 6/5/2020

**The 2020 Wally Noerenberg Hatchery Annual Management Plan is hereby approved:**

Tom Taube, Deputy Director, Division of Sport Fish 6/16/2020

Peter Bangs, Assistant Director, Division of Commercial Fisheries 6/17/2020

Figure 1. Coghill Fishery Management District

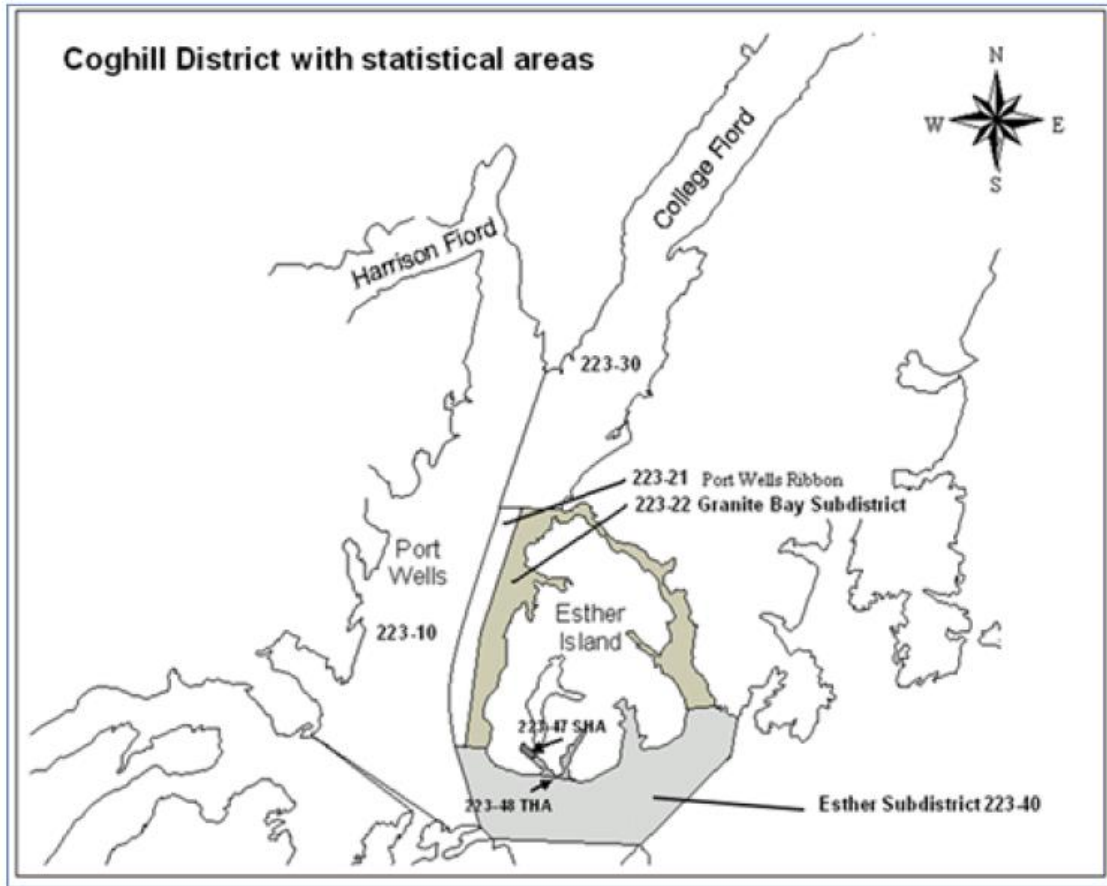


Figure 2. Esther and Granite Bay Subdistricts

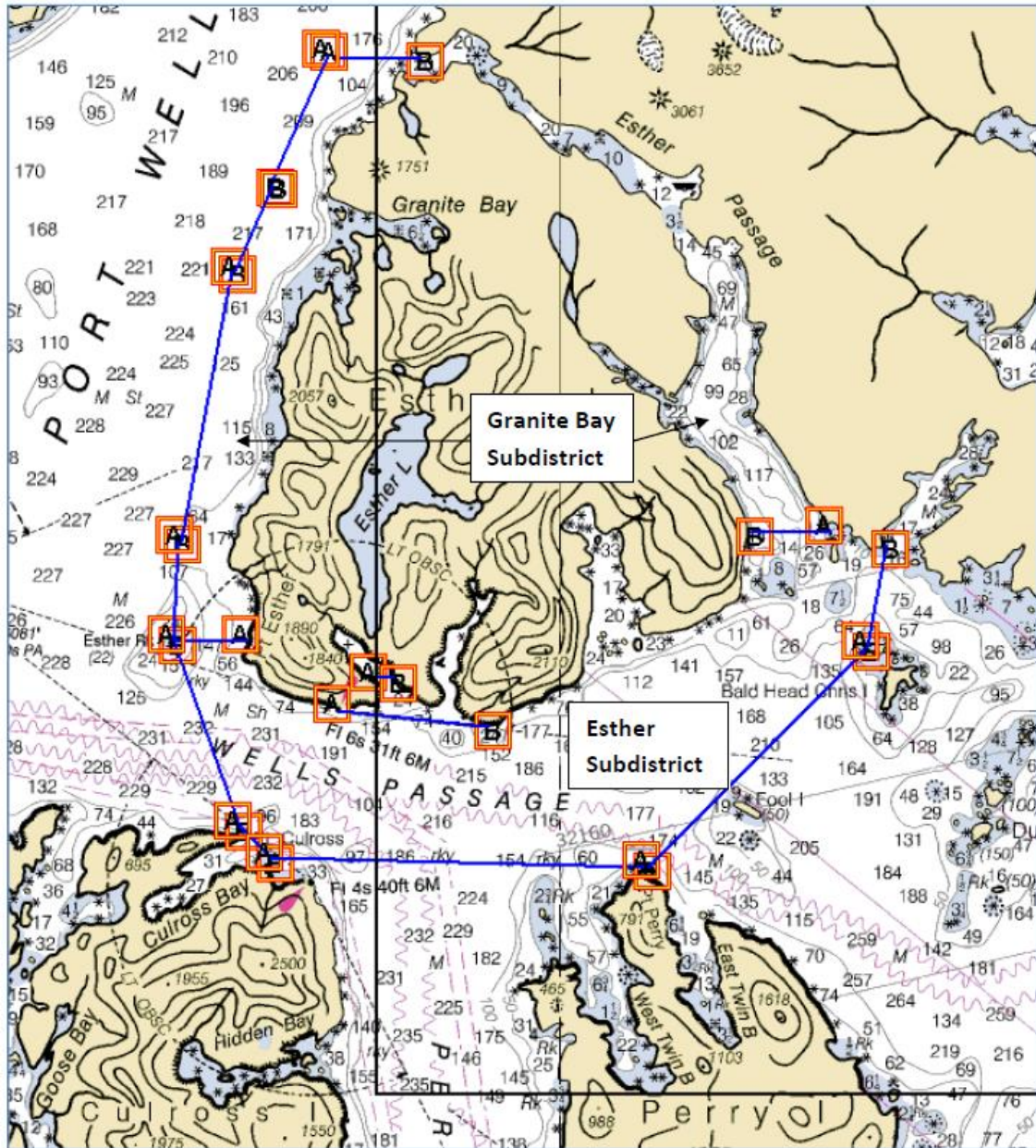




TABLE 1. 2020 PWSAC Hatchery Return Forecast

PRINCE WILLIAM SOUND AQUACULTURE CORPORATION  
2020 HATCHERY RETURN FORECAST

SITE/ LOCATION	SPECIES	RUN TIME	ADULT RETURN ESTIMATE			EST. MARINE SURVIVAL
			LOW	POINT	HIGH	

**RETURNS TO THE HATCHERIES**

AFK	PINK	JUL 19 - SEP 05	1,200,000	5,800,000	10,400,000	3.68%
	CHUM	JUN 1 - JUL 27	410,000	500,000	590,000	2.03%

CCH	PINK	JUL 23 - SEP 07	2,200,000	4,200,000	6,300,000	4.13%

WNH	PINK	JUL 19 - SEP 05	2,100,000	4,600,000	7,100,000	3.38%
	CHUM	JUN 1 - JUL 27	2,240,000	2,550,000	2,860,000	3.68%
	COHO	AUG 01 - SEP 20	68,000	115,000	163,000	7.01%

MBH	COGHILL SOCKEYE	JUN 15 - AUG 01	935,000	1,061,000	1,186,000	10.27%

GH - Fry to Adult Survival

GH	CROSSWIND LAKE SOCKEYE		93,000	104,000	115,000	1.05%
	PAXSON LAKE - GI SOCKEYE		35,200	39,500	43,800	0.84%
	PAXSON LAKE - GII SOCKEYE		6,800	7,600	8,300	0.58%
	SUMMIT LAKE SOCKEYE		0	0	0	0.00%

**RETURNS TO REMOTE RELEASE LOCATIONS**

PORT CHALMERS	CHUM	JUN 1 - JUL 27	680,000	810,000	950,000	2.13%

CORDOVA	COHO	AUG 01 - SEP 20	4,100	7,000	9,900	7.01%

WHITTIER	COHO	AUG 01 - SEP 20	4,100	7,000	9,900	7.01%

CHENEGA	COHO	AUG 01 - SEP 20	2,100	3,500	5,000	7.01%

CHENEGA	CHINOOK	MAY 25 - JULY 10	400	560	720	1.49%

**TOTAL PWSAC RETURNS**

	PINK		5,500,000	14,600,000	23,800,000	3.73%
	CHUM		3,330,000	3,860,000	4,400,000	2.61%
	COHO		78,300	132,500	187,800	7.01%
	CHINOOK		400	560	720	1.49%
	MBH - SOCKEYE - PWS		935,000	1,061,000	1,186,000	10.27%
	GH - SOCKEYE - COPPER RIVER		135,000	151,100	167,100	0.62%

TABLE 2. 2020 Planned Egg Takes

PRINCE WILLIAM SOUND AQUACULTURE CORPORATION

2020 EGG-TAKE GOALS

SPECIES	HATCHERY	ORIGINAL DONOR STOCK	EGG-TAKE LOCATION	EGG-TAKE GOAL
CHUM	WALLY NOERENBERG	WELLS RIVER	WNH	153,000,000
SOCKEYE	MAIN BAY	COGHILL LAKE	MBH	12,400,000
	GULKANA I	GULKANA RIVER	GHI	35,000,000
	GULKANA II	GULKANA RIVER	GHII	1,750,000
	TOTAL			49,150,000
PINK	ARMIN F. KOERNIG	LARSEN, EWAN, GALENA	AFK	190,000,000
	CANNERY CREEK	CANNERY CREEK	CCH	187,000,000
	WALLY NOERENBERG	LARSEN, EWAN, GALENA	WNH	148,000,000
	TOTAL			525,000,000
COHO	WALLY NOERENBERG	MILE 18	WNH	4,000,000
TOTAL PWSAC				731,150,000



TABLE 3. 2020 WNH Stock Adult Return Summary.

ADULT RETURN SUMMARY																								
RETURN:	2,550,000																							
BROODSTK:	201,000		0.079																					
FISH SALES:	1,097,000		0.430																					
HAT. TOTAL:	1,298,000		0.509																					
CPF TOTAL:	1,252,000																							
% EXPLOIT.:	49.1% CPF																							
	50.9% PWSAC																							
ADULT RETURN SUMMARY																								
HATCHERY:	WNH																							
SPECIES:	CHUM																							
YEAR:	2020																							
HATCHERY ESCAPEMENT SCHEDULE																								
RUN-TIMING PERCENTAGES				SHA HATCHERY ESCAPEMENT ESTIMATES				HATCHERY ESCAPEMENT SCHEDULE				C.P.F. HARVEST				TOTAL RETURN								
Date	Projected % Cum.	Projected % Female	Actual % Cum.	Actual % Female	Fishway Estimate	INSIDE Barrier Seine Estimate	HEEZ Estimate	OUTSIDE HEEZ Estimate	Proj. Cum.	Proj. Daily	Act. Cum.	Act. Daily	Proj. Cum.	Proj. Daily	Act. Cum.	Act. Daily	Proj. Cum.	Proj. Daily	Act. Cum.	Act. Daily	Proj. Cum.	Proj. Daily	Act. Cum.	Act. Daily
23-May	0.0%							0	0	0			0	0	0		0	0	0		0	0	0	0
24-May	0.0%							0	0	0			0	0	0		0	0	0		0	0	0	0
25-May	0.8%							1,640	1,640	0			19,168	19,168	0		0	0	0		20,808	20,808	0	0
26-May	1.4%							2,734	1,093	0			31,947	12,779	0		0	0	0		34,681	13,872	0	0
27-May	1.8%							3,611	878	0			42,205	10,258	0		0	0	0		45,817	11,136	0	0
28-May	2.1%							4,274	662	0			49,943	7,738	0		0	0	0		54,217	8,400	0	0
29-May	2.5%							4,936	662	0			57,681	7,738	0		0	0	0		62,617	8,400	0	0
30-May	3.0%							5,128	1,192	0			71,616	13,935	0		0	0	0		77,744	15,127	0	0
31-May	4.2%							8,410	2,292	0			98,281	25,665	0		0	0	0		106,691	28,947	0	0
1-Jun	5.7%							11,536	3,126	0			134,816	36,535	0		0	0	0		146,352	39,662	0	0
2-Jun	7.0%							14,067	2,531	0			164,397	29,580	0		0	0	0		178,464	32,112	0	0
3-Jun	8.3%							16,737	2,670	0			195,604	31,207	0		0	0	0		212,341	33,877	0	0
4-Jun	10.2%							20,602	3,864	0			240,762	45,158	0		0	0	0		261,363	49,022	0	0
5-Jun	12.7%							25,496	4,854	0			297,489	56,728	0		0	0	0		322,945	61,582	0	0
6-Jun	15.0%							30,215	4,759	0			353,111	55,621	0		0	0	0		383,326	60,380	0	0
7-Jun	17.7%	24.8%						35,645	5,430	0			416,573	63,463	0		0	0	0		452,219	68,893	0	0
8-Jun	21.0%	24.1%						42,182	6,537	0			492,968	76,395	0		0	0	0		535,151	82,932	0	0
9-Jun	23.9%	25.0%						48,043	5,860	0			561,452	68,484	0		0	0	0		609,494	74,344	0	0
10-Jun	26.6%	26.0%						53,458	5,416	0			624,742	63,290	0		0	0	0		678,200	68,705	0	0
11-Jun	29.2%	27.2%						58,744	5,286	0			686,519	61,778	0		0	0	0		745,264	67,064	0	0
12-Jun	32.3%	27.6%						64,861	6,117	0			758,002	71,463	0		0	0	0		822,863	77,599	0	0
13-Jun	34.9%	28.7%						70,211	5,350	0			820,520	62,518	0		0	0	0		890,731	67,868	0	0
14-Jun	37.3%	30.4%						75,021	4,810	0			876,735	56,215	0		0	0	0		951,756	61,025	0	0
15-Jun	40.4%	33.6%						81,243	6,222	0			949,448	72,713	0		0	0	0		1,030,691	78,935	0	0
16-Jun	43.1%	35.7%						86,656	5,414	0			1,012,713	63,265	0		0	0	0		1,099,369	68,679	0	0
17-Jun	45.2%	38.7%						90,801	4,145	0			1,061,157	48,443	0		0	0	0		1,151,958	52,589	0	0
18-Jun	45.9%	40.9%						92,342	1,541	0			1,079,164	18,008	0		15,952	10,378	0		1,171,607	19,549	0	0
19-Jun	46.4%	43.9%						93,194	851	0			1,089,114	9,950	0		0	0	0		1,182,308	10,801	0	0
20-Jun	46.6%	44.5%						93,619	426	0			1,094,089	4,975	0		0	0	0		1,187,708	5,401	0	0
21-Jun	46.6%	43.8%						93,765	145	0			1,095,786	1,697	0		0	0	0		1,189,550	1,842	0	0
22-Jun	46.8%	42.2%						94,055	290	0			1,097,000	1,214	0		2,180	2,180	0		1,193,235	3,684	0	0
23-Jun	46.9%	43.0%						94,345	290	0			1,097,000	0	0		5,574	3,394	0		1,196,919	3,684	0	0
24-Jun	47.4%	43.7%						95,233	888	0			1,097,000	0	0		135,769	37,638	0		1,338,255	40,859	0	0
25-Jun	48.1%	43.7%						96,719	1,486	0			1,097,000	0	0		33,314	17,362	0		1,227,033	18,848	0	0
26-Jun	48.9%	45.0%						98,205	1,486	0			1,097,000	0	0		50,676	17,362	0		1,245,881	18,848	0	0
27-Jun	49.2%	47.0%						98,948	743	0			1,097,000	0	0		59,357	8,681	0		1,255,304	9,424	0	0
28-Jun	49.6%	49.9%						99,625	678	0			1,097,000	0	0		67,277	7,920	0		1,263,902	8,597	0	0
29-Jun	50.9%	52.6%						102,265	2,640	0			1,097,000	0	0		98,131	30,854	0		1,297,396	33,494	0	0
30-Jun	52.0%	54.0%						105,486	3,221	0			1,097,000	0	0		605,660	104,601	0		1,948,353	113,552	0	0
1-Jul	54.8%	56.8%						110,093	4,607	0			1,097,000	0	0		189,612	53,842	0		1,396,705	58,449	0	0
2-Jul	57.1%	57.2%						114,817	4,724	0			1,097,000	0	0		244,815	55,203	0		1,456,632	59,927	0	0
3-Jul	60.5%	58.6%						121,667	6,850	0			1,097,000	0	0		324,868	80,052	0		1,543,534	86,902	0	0
4-Jul	63.9%	57.6%						128,470	6,803	0			1,097,000	0	0		404,369	79,502	0		1,629,839	86,305	0	0
5-Jul	68.0%	58.2%						136,743	8,274	0			1,097,000	0	0		501,059	96,689	0		1,734,802	104,963	0	0
6-Jul	72.9%	57.9%						145,694	8,951	0			1,097,000	0	0		605,660	104,601	0		1,848,353	113,552	0	0
7-Jul	76.2%	63.6%						153,200	7,506	0			1,097,000	0	0		693,384	87,724	0		1,943,584	95,231	0	0
8-Jul	79.6%	60.7%						160,031	6,831	0			1,097,000	0	0		773,218	79,834	0		2,030,250	86,665	0	0
9-Jul	82.3%	63.4%						165,418	5,386	0			1,097,000	0	0		836,168	62,949	0		2,098,585	68,336	0	0
10-Jul	86.0%							172,837	7,419	0			1,097,000	0	0		922,871	86,703	0		2,192,708	94,122	0	0
11-Jul	89.6%							180,171	7,334	0			1,097,000	0	0		1,008,580	85,709	0		2,285,751	93,043	0	0
12-Jul	92.7%							186,422	6,251	0			1,097,000	0	0		1,081,635	73,055	0		2,365,057	79,306	0	0
13-Jul	94.9%							190,793	4,371	0			1,097,000	0	0		1,132,719	51,084	0		2,430,912	55,455	0	0
14-Jul	96.3%							193,574	2,781	0			1,097,000	0	0		1,165,216	32,497	0		2,455,790	35,277	0	0
15-Jul	97.6%							196,225	2,651	0			1,097,000	0	0		1,196,202	30,986	0		2,489,427	33,638	0	0
16-Jul	98.8%							198,632	2,407	0			1,097,000	0	0		1,224,329	28,127	0		2,519,961	30,533	0	0
17-Jul	99.4%							199,883	1,251	0			1,097,000	0	0		1,238,947	14,618	0		2,535,830	15,869	0	0
18-Jul	99.8%							200,590	707	0			1,097,000	0	0		1,247,212	8,265	0		2,544,802	8,972	0	0
19-Jul	99.9%							200,817	226	0			1,097,000	0	0		1,249,857	2,645	0		2,547,674	2,872	0	0
20-Jul	100.0%							201,000	183	0			1,097,000	0	0		1,252,000	2,143	0		2,550,000	2,326	0	0
21-Jul	100.0%							201,000	0	0			1,097,000	0	0		1,252,000	0	0		2,550,000	0	0	0
22-Jul	100.0%							201,000	0	0			1,097,000	0	0		1,252,000	0	0		2,550,000	0	0	0
23-Jul	100.0%							201,000	0	0			1,097,000	0	0		1,252,000	0	0		2,550,000	0	0	0
24-Jul	100.0%							201,000	0	0			1,097,000	0	0		1,252,000	0	0		2,550,000	0	0	0
25-Jul	100.0%							201,																



TABLE 4. 2020 PWSAC Hatchery Egg Take Schedules

PRINCE WILLIAM SOUND AQUACULTURE CORPORATION

EGG-TAKE SCHEDULE

		DATE																			
SITE	SPECIES	30-Jun	07-Jul	14-Jul	21-Jul	28-Jul	04-Aug	11-Aug	18-Aug	25-Aug	01-Sep	08-Sep	15-Sep	22-Sep	29-Sep	06-Oct	13-Oct	20-Oct	27-Oct	03-Nov	
AFK	PINK									24-Aug			15-Sep								
CCH	PINK									24-Aug			17-Sep								
GH I	SOCKEYE								15-Aug										15-Oct		
GH II	SOCKEYE						25-Jul		10-Aug												
MBH	SOCKEYE MBH-COGHILL						01-Aug		20-Aug												
WNH	CHUM	01-Jul					01-Aug														
	PINK									24-Aug			15-Sep								
	COHO																	19-Oct		11-Nov	

TABLE 5. 2020 PWSAC Estimated Salmon Releases

**2020 ANTICIPATED SALMON RELEASES**

SPECIES	HATCHERY	ORIGINAL DONOR STOCK	BROOD YEAR	RELEASE LOCATION	ESTIMATED FRY/ SMOLT RELEASE
CHUM	WALLY NOERENBERG	WELLS RIVER	2019	WNH	73,300,000
			2019	PORT CHALMERS	32,200,000
			2019	AFK	18,900,000
			TOTAL		124,400,000
SOCKEYE	MAIN BAY	COGHILL LAKE	2018	MBH	11,000,000
			GULKANA I	GULKANA RIVER	2019
	GULKANA RIVER	2019		SUMMIT LAKE	0
	GULKANA RIVER	2019		CROSSWIND LAKE	10,000,000
	GULKANA II	GULKANA RIVER		2019	PAXSON LAKE
	TOTAL		27,000,000		
PINK	ARMIN F. KOERNIG	LARSEN, EWAN, GALENA	2019	AFK	128,500,000
			2019	CCH	89,000,000
	WALLY NOERENBERG	LARSEN, EWAN, GALENA	2019	WNH	133,140,000
			TOTAL		350,640,000
COHO	WALLY NOERENBERG	MILE 18	2018	WNH	1,850,000
		MILE 18	2018	CORDOVA	100,000
		MILE 18	2018	WHITTIER	100,000
		MILE 18	2018	CHENEGA	50,000
		TOTAL		2,100,000	
CHINOOK	WALLY NOERENBERG	SHIP CREEK	2018	CHENEGA	0
				GRAND TOTAL	504,140,000

TABLE 6. 2021 PWSAC Estimated Salmon Releases

**2021 ANTICIPATED SALMON RELEASES**

SPECIES	HATCHERY	ORIGINAL DONOR STOCK	BROOD YEAR	RELEASE LOCATION	ESTIMATED FRY/SMOLT RELEASE
CHUM	WALLY NOERENBERG	WELLS RIVER	2020	WNH	73,200,000
			2020	PORT CHALMERS	40,800,000
			2020	AFK	19,100,000
SOCKEYE	MAIN BAY	COGHILL LAKE	2019	MBH	11,600,000
	GULKANA I	GULKANA RIVER	2020	PAXSON LAKE	4,687,000
			2020	SUMMIT LAKE	6,000,000
			2020	CROSSWIND LAKE	10,000,000
	GULKANA II	GULKANA RIVER	2020	PAXSON LAKE	1,300,000
			<b>TOTAL</b>	<b>33,587,000</b>	
PINK	ARMIN F. KOERNIG	LARSEN, EWAN, GALENA	2020	AFK	171,600,000
	CANNERY CREEK	CANNERY CREEK	2020	CCH	168,800,000
	WALLY NOERENBERG	LARSEN, EWAN, GALENA	2020	WNH	133,600,000
			<b>TOTAL</b>	<b>474,000,000</b>	
COHO	WALLY NOERENBERG	CORBIN CREEK	2019	WNH	3,270,000
			2019	CORDOVA	0
			2019	WHITTIER	100,000
			2019	CHENEGA	50,000
CHINOOK	WALLY NOERENBERG	SHIP CREEK	2019	CHENEGA	45,900
				<b>GRAND TOTAL</b>	<b>644,152,900</b>



