

2019 Annual Management Plan
Snettisham Hatchery
Douglas Island Pink and Chum, 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 the Douglas Island Pink and Chum (DIPAC) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. DIPAC 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 DIPAC. This policy applies to all hatchery operations covered under the AMP.

1.0 Executive Summary

1.1 Introduction

In 1979, the State of Alaska constructed Snettisham Hatchery (SNT). The hatchery was originally intended to produce chum, Chinook, and coho salmon for common property fisheries. In 1988, the State of Alaska began a sockeye salmon program. As the sockeye salmon program grew, other production was discontinued or moved to other locations. In 1996, Douglas Island Pink and Chum, Inc. (DIPAC) was issued private nonprofit (PNP) hatchery permit #39 for SNT. DIPAC operates SNT exclusively as a sockeye salmon facility. The sockeye salmon production at SNT can be broken into two categories: A) Alaska Production – sockeye salmon reared for release at the hatchery, as well as supporting several lake-stocking programs in Southeast Alaska, and B) Transboundary River (TBR) Production – incubate and thermal mark eggs for several TBR drainages in British Columbia. Alaska production falls under standard hatchery protocols and is addressed in Section A of this management plan. TBR production is part of the Pacific Salmon Treaty; details such as permitted capacity, egg-take goals, egg-take guidelines, and stocking locations fall under review by the Pacific Salmon Commission (PSC) and are subject to change. TBR production information can be found in Section B of this plan and should be considered “for informational purposes only.”

1.2 New This Year (production, harvest management, culture techniques, etc.)

No program changes are planned for this year.

1.3 New permits or permit amendments

All fish transport permits (FTPs) are current for 2019. No new programs are anticipated at this time.

1.4 Expected Returns

Return Site	Common Property Harvest	Terminal Area Harvest	Total Return
Sweetheart Lake	7,800	0	7,800
Snettisham Hatchery	113,900	116,200	230,100

1.5 Production Summary

Snettisham Hatchery has six incubation modules, each capable of incubating 2.5 to 3.0 million sockeye salmon eggs for lake-stocking programs. There are a total of 12 incubation/rearing modules that can be utilized for the smolt-rearing program; two large modules provide space for 16 start-tanks and 10 smaller modules provide an additional 32 start-tanks. Facility capacity is as follows:

Alaska Production			
Source	Species	Modules	Maximum Egg Number
Snettisham Hatchery (Speel Lake stock)	sockeye salmon	10–12	12,500,000 ^a
Crescent Lake	sockeye salmon	outside modules	3,000,000
Speel Lake	sockeye salmon	outside modules	5,000,000
Transboundary Production			
Source	Species	Modules	Maximum Egg Number
Tahltan Lake	sockeye salmon	2	6,000,000
Tatsamenie Lake	sockeye salmon	2	5,000,000
Little Trapper Lake	sockeye salmon	1	1,000,000
King Salmon Lake	sockeye salmon	1	250,000
Total		16–18	32,750,000

^a Includes 600,000 fry released at Sweetheart Lake

1.6 Current Permitting

The permitted capacity at SNT is 33,500,000 sockeye salmon green eggs for all projects. The release at SNT is the equivalent of 12.5 million eggs; however, the current operating limit is 9.0 million smolts, which is equivalent to approximately 10.3 million green eggs, assuming low mortality due to infectious hematopoietic necrosis virus (IHNV). The SNT basic management plan calls for a review of this egg take limitation to be conducted annually during drafting of the *Snettisham Hatchery Annual Management Plan*. Snettisham Hatchery sockeye salmon stock will be used to stock Sweetheart Lake with up to 600,000 unfed fry. If escapement levels are not reached in Speel Lake, ADF&G may arrange to have SNT take up to 5.0 million sockeye salmon eggs for back-planting into Speel Lake. Additionally, up to 3.0 million sockeye salmon eggs may be collected for back-planting into Crescent Lake, if necessary.

Snettisham Hatchery also incubates eggs for a joint fisheries enhancement program between Canada and the U.S. The maximum number of eggs to be incubated is defined in the Pacific Salmon Treaty.

Section A: Alaska Production

2.0 Snettisham Hatchery sockeye salmon

2.1 Program details

The egg-take goal is 11.8 million sockeye salmon eggs. The egg-take goal provides enough eggs to produce 9 million smolt for release at SNT, 0.6 million fry for Sweetheart Lake stocking, and provides a contingency amount of eggs to mitigate potential IHNV losses. If actual IHNV losses are less than the contingent amount, surplus will be discarded to meet release goals. The SNT sockeye salmon broodstock was developed using Speel Lake stock. Speel Lake is a backup brood source for SNT.

Adult sockeye salmon returns to SNT support common property harvests (including the Sweetheart Creek personal use fishery), cost-recovery harvest, and broodstock for the hatchery. Since 1997, enough broodstock have returned to the hatchery to meet the egg-take goal. It is anticipated the egg-take goal will be reached again this year.

2.2 Egg takes

Program Name	Ancestral Stock	Egg-take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Snettisham sockeye salmon	Speel Lake	Snettisham Hatchery, 111-33	Primary	11,800,000	12,500,000

2.3 Broodstock capture method

Returning broodstock are captured in the hatchery fish ladder, graded for quality, sorted by sex, and held in segregated raceways until fully mature.

2.4 Spawning

Individual fish are dispatched with a blow to the head. Gamete collection, fertilization, water hardening, and disinfection are done in accordance with ADF&G sockeye salmon culture protocol. Fertilized eggs are placed in Kitoi boxes. Emergent fry volitionally emigrate to fry start-tanks to begin rearing.

2.5 *Egg-take schedule*

Egg takes occur in late-September through early-October.

2.6 *Carcass disposal*

Broodstock carcasses will be collected at the end of each egg take and transported to a minimum depth of 70 fathoms in Speel Arm for disposal.

2.7 *Planned releases this calendar year of previous brood year’s production*

In 2019, SNT has designated 530,400 brood year 2018 (BY18) unfed sockeye salmon fry for planting into Sweetheart Lake. These fish will contribute to commercial fisheries and the Sweetheart Creek personal use fishery. Target dates for stocking unfed fry into Sweetheart Lake are May 15 to June 15.

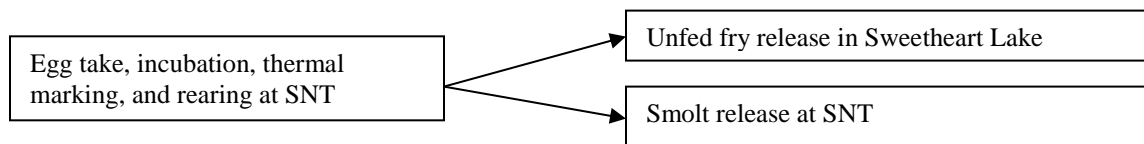
In 2019, SNT has designated more than 9.0 million BY16 sockeye salmon smolt for release at the hatchery. In 2010, a pilot study was initiated using SNT sockeye salmon to evaluate and compare the marine survival rates of short-term saltwater rearing versus the standard practice of a direct release from the hatchery. In 2011, the study was expanded to also include direct releases into the saltwater, as well as transporting smolt to the Port Snettisham entrance by vessel for release. In 2019 the study will continue with the same four release groups. Each release group will have a different otolith thermal mark.

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % to Mark
Sweetheart Lake	2018	May 19–June 19	530,400	Unfed fry	100% TM
SNT Direct Hatchery	2017	May 19–June 19	644,000	Smolt	100% TM
Total Smolt			1,174,400		

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release (Date)
Snettisham Hatchery	2018	9,402,100	Alevin	100% TM	9,000,000 (2020)

2.9 *Operational diagram*



2.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from To	Maximum #, Life Stage	Expires
07J-1021	Egg take and release	SNT to SNT	12,500,000 green egg, 9,000,000 smolt	6/30/2027
05J-1014	Transport and release	SNT to Sweetheart Lake	600,000 fry	6/30/2027

3.0 Speel Lake sockeye salmon

3.1 *Program details*

An adult weir will be installed at Speel Lake to aid in determination of sockeye salmon escapement. The Speel Lake sockeye salmon escapement goal is 4,000–9,000 adults. Weir counts should be provided to the Juneau area CF management biologist, or a designee, on at least a weekly basis. A goal of 800 age-weight-length (AWL) samples will be taken throughout the run timing.

If Speel Lake escapement is below 4,000 adults for two consecutive years, DIPAC will consult with ADF&G about possible enhancement/mitigation projects to increase returns to Speel Lake. Up to 5 million eggs may be collected at Speel Lake and reared at SNT. No more than 50% of the escapement to Speel Lake can be used for broodstock. No egg-take will occur if escapement is less than 400 fish. Progeny of the Speel Lake eggs are to be released at Speel Lake or at SNT.

3.2 *Egg-takes*

Program Name	Ancestral Stock	Egg-take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Speel Lake sockeye salmon	Speel Lake	Speel Lake, 111-33	Primary	0	5,000,000

3.3 *Broodstock capture method*

Ripe adults will be captured at the weir.

3.4 *Spawning*

Egg-takes are conducted at the lake and fertilized eggs are transported to SNT.

3.5 *Egg-take schedule*

Egg takes will occur as fish ripen, approximately mid-September to mid-October.

3.6 *Carcass disposal*

This is a remote egg take. All carcasses will be disposed of in Speel Lake.

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

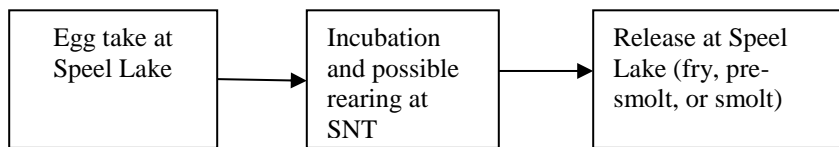
Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Speel Lake sockeye salmon	None	None	0	None	None

Release timing depends on the life stage at release. Pre-smolt releases will be in October or November. Smolt releases take place from May 15 to June 15.

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
Speel Lake sockeye salmon	None	0	None	None	0

3.9 *Operational diagram*



3.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from To	Maximum #, Life Stage	Expires
07J-1022	Egg take, transport, and release	Speel Lake to SNT to Speel Lake	5,000,000 eggs	6/30/2027

4.0 Crescent Lake sockeye salmon

4.1 *Program details*

There is no escapement goal for Crescent Lake. In 2011, hydroacoustic monitoring of Crescent Lake escapement was discontinued due to the poor quality of data produced. ADF&G monitors escapement through aerial surveys. Harvest management actions used to protect Speel Lake sockeye salmon

returns also protect Crescent Lake returns. Sockeye salmon eggs may be collected at Crescent Lake for back planting, if necessary. Limnology studies done by ADF&G indicate zooplankton abundance may limit sockeye salmon growth, which means back planting smolt or presmolt will have higher adult returns than planting fry. Crescent Lake stock has been used for fry plants into Sweetheart Lake.

4.2 *Egg takes*

Program Name	Ancestral Stock(s)	Egg-take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Crescent Lake sockeye salmon	Crescent Lake	Crescent Lake 111-35	Primary	0	3,000,000

4.3 *Broodstock capture method*

It is not anticipated that broodstock will be captured this year based on recent sockeye salmon returns to Crescent Lake.

4.4 *Spawning*

Egg takes will be conducted at the lake and fertilized eggs will be transported to SNT.

4.5 *Egg-take schedule*

Egg takes will occur as fish ripen, approximately mid-September to mid-October.

4.6 *Carcass disposal*

Crescent Lake is a remote salmon egg-take site. Carcass disposal will occur in the lake or stream.

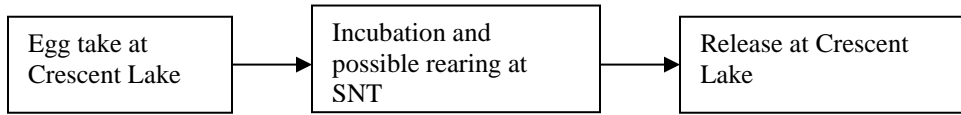
4.7 *Planned releases this calendar year of previous brood year's production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Crescent Lake sockeye salmon	None	None	0	None	None

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % Mark	Number to Release, Date
Crescent Lake sockeye salmon	None	0	None	none	0

4.9 *Operational diagram*



4.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from To	Maximum #, Life Stage	Expires
07J-1020	Egg take, transport, and release	Crescent Lake to SNT to Crescent Lake	3,000,000 eggs	6/30/2027

5.0 Harvest Management

5.1 *Special harvest area (SHA)*

The Speel Arm Special Harvest Area (SHA) is described in regulation 5 AAC 40.032(a)(4) as the waters of Speel Arm north of 58°03.42' N. lat. (a point ≈0.5 nautical miles south of Bogart Point, Figure 1). The commissioner shall open and close, by emergency order, fishing periods during which the hatchery permit holder may harvest salmon within the special harvest area.

5.2 *Projected sockeye salmon return this year*

Site	Common Property Harvest	Terminal Harvest	Total Return
Sweetheart Lake	7,800	0	7,800
Snettisham Hatchery	113,900	116,200	230,100

5.3 *Common property fisheries management*

5 AAC 33.378. District 11: Port Snettisham Hatchery Management Plan.

(a) The intent of this management plan is to provide basic guidelines for managing enhanced sockeye salmon production from Port Snettisham.

(b) The department shall manage returns from the Snettisham enhancement program to ensure in order of priority:

(1) Sustainable production of wild sockeye salmon from Crescent and Speel Lakes.

(2) Management of Snettisham enhanced sockeye salmon returns may not prevent achieving escapement goals or Pacific Salmon Treaty harvest sharing agreements for Taku River salmon stocks.

(3) Assessment programs shall be conducted frequently during harvest and annually to estimate Snettisham wild sockeye salmon stock escapements and contributions of enhanced sockeye salmon to the District 11 commercial fisheries.

(4) Common property harvests in the SHA shall be conducted by limiting time and area to protect the wild sockeye salmon runs.

Commercial fisheries

In 2019, ADF&G anticipates taking the following management measures in District 11 during the fishing season, although inseason assessment of run sizes will dictate which measures are employed and to what extent. Management of the Stephens Passage area will focus on conservation of Snettisham wild stock sockeye salmon runs, particularly during July. ADF&G plans to implement a 6-inch minimum mesh size restriction in Section 11-B south of Circle Point to limit harvest rates on wild stock sockeye salmon runs, while allowing harvest of hatchery-produced chum salmon returning to Limestone Inlet. The mesh restriction is expected to be relaxed in early August. Port Snettisham will remain closed inside a line from Point Anmer to Point Styleman through late July or early August. Commercial openings inside Port Snettisham may occur after this time if wild stock escapements are developing adequately.

Commercial openings in the Speel Arm SHA will depend on sockeye salmon escapement into Speel Lake and DIPAC's progress toward broodstock goals. Fishery management decisions for this area will be made jointly by ADF&G and DIPAC.

Personal Use Fishery:

In 2019, a personal use fishery will be allowed in Sweetheart Creek to offer the public an opportunity to harvest sockeye salmon and to promote a more complete harvest of the limited returns expected at this site. As a result, the personal use fishery will be open 7 days per week from June 1 to October 31. The fishery will occur in waters of Sweetheart Creek upstream from an ADF&G regulatory marker located near the stream mouth.

Sport Fishery:

In 2019, sport fishing for Chinook salmon will be closed in the waters of District 11, Sections 12-B, 15-B and 15-C from April 15 through June 14. During this closure Chinook salmon may not be targeted or retained. This will not impact the sport fishery for sockeye salmon. During the rest of the year sport fisheries will be managed as described in codified regulations for these waters. The department may use emergency order authority to address issues as they arise in season.

5.4 *Cost-Recovery Harvest Management:*

For the 2019 fishing season, DIPAC management has no cost-recovery goal for sockeye salmon returns to SNT. DIPAC's chum salmon cost recovery is expected to fulfill the budgetary needs of the SNT smolt program. A limited area in the SHA near the mouth of the Speel River will be closed to fishing for a portion or all of the season to allow a milling area for wild stock Speel Lake returns; the boundaries of the area may be modified depending on results of stock identification sampling. Fish may be harvested 7 days per week after they enter the terminal freshwater area north of the south end of the airstrip at SNT. The number of harvest days per week in the remainder of the SHA may be limited to provide for Speel Lake wild stock escapement needs. The hatchery operator harvesting salmon within the SHA is exempt from the provisions of 5 AAC

33.310. Fishing seasons and periods for net gear. Notwithstanding 5 AAC 33.330, all types of legal gear may be used for this activity.

6.0 **Additional Information**

6.1 *Donor Stock Management*

Port Snettisham Sockeye Salmon

Returning Snettisham sockeye salmon will be harvested by drift gillnet gear in Section 11-B. With the exception of the Speel Arm SHA, Port Snettisham is expected to remain closed during the month of July and portions of Port Snettisham may remain closed into August to protect wild stock sockeye salmon returning to Speel and Crescent Lakes. Common property fishery openings in Port Snettisham may occur after this time if wild stock escapements are developing adequately. Common property openings inside the Speel Arm SHA may occur if a surplus to DIPAC's cost-recovery and broodstock requirements of hatchery-produced sockeye salmon is identified and wild stock escapements are developing adequately; fishery management decisions for the Speel Arm SHA will be made jointly by the ADF&G and DIPAC.

6.2 *Marking objectives*

All sockeye salmon will be otolith marked. Hatchery water temperatures are manipulated to create mark patterns on the otoliths of the fish to aid in assessment of project success, management of enhanced returns, and compilation of harvest-sharing performance. Each sockeye salmon release group will have a different mark (except as noted above) for future identification and discrimination from natural stocks. Determination of otolith mark patterns is made each year by the ADF&G otolith lab, through consultation with a small group including representatives of the lab, DIPAC, and department biologists. A well-defined and identifiable otolith mark is critical to evaluation of various programs, and the otolith lab supervisor will define the marking parameters (e.g., temperature change, cycle times, time of initiation of mark, etc.). Every reasonable effort will be made to accommodate concerns of the hatchery operator.

Mark-recovery programs are operated to provide contribution estimates by release group in Districts 6, 8, and 11 drift gillnet fisheries, Canadian in-river fisheries on the Taku and Stikine Rivers, and cost-recovery fisheries in Port Snettisham. Sampling of sockeye salmon spawners is also conducted at fry plant locations and nearby sites to assess contribution of release groups to escapements. Sample sizes for mark-recovery efforts are determined through consultation with ADF&G otolith lab staff, fishery managers, stock assessment biologists, and hatchery staff. Such data allows hatchery managers to assess the success and harvest contributions of their program and provides information to managers on effects of management actions and contributions of wild stocks and hatchery stocks, which is important for comparison with historical data for management of wild stocks.

6.3 *Facility Summary*

See attached tables for sockeye salmon summary information.

Section B: Transboundary River Production

7.0 Tahltan Lake (Canada)

7.1 *Program details*

This program is part of a joint U.S./Canada sockeye salmon fisheries enhancement plan on the transboundary Stikine and Taku Rivers. The Transboundary Technical Committee (TTC) to the PSC reviews all aspects of the Tahltan and Tuya Lakes projects. A Stikine Enhancement Production Plan (SEPP) is prepared annually by the TTC and approved by the Transboundary Panel (Table 12). Tahltan Lake is used as an egg source for fry back-planting into Tahltan Lake and fry out-planting into Tuya Lake. Canada conducts egg takes and transports fertilized eggs to SNT, where the eggs are incubated and otolith marked over the winter months. The fry are transported back to the recipient lakes and released. Canada conducts studies of freshwater survival and monitors zooplankton populations and limnologic conditions in the lakes.

7.2 *Egg takes*

Program Name	Ancestral Stock	Egg-take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Tahltan Lake sockeye salmon	Tahltan Lake	Tahltan Lake, Canada	Primary	5,000,000	6,000,000

7.3 *Broodstock capture method*

Broodstock will be captured by the Canadians. The primary method of collection is beach seining. Fish are sorted into holding pens and held until ripe.

7.4 *Spawning*

The egg takes will be conducted by the Canadians and fertilized eggs will be transported to SNT.

7.5 *Egg-take schedule*

Egg takes will occur as fish ripen. Tahltan Lake sockeye salmon tend to ripen in late August through early September.

7.6 *Carcass disposal*

Tahltan Lake is a remote location. Carcasses are disposed of in the lake.

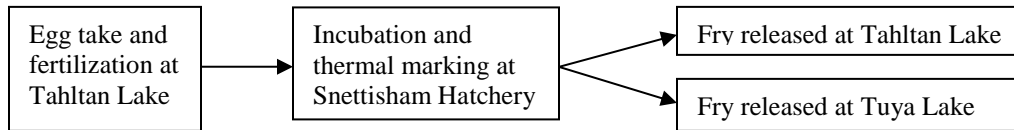
7.7 *Planned releases this calendar year of previous brood year's production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Tahltan Lake	2018	May 15–May 25	2,111,500	Fry	TM, 100%
Tuya Lake	None	None	0	None	None

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
Tahltan Lake sockeye salmon	None	N/A	None	None	0

7.9 *Operational diagram*



7.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from To	Maximal #, Life Stage ¹	Expires
97J-1015	Egg take, transport, and release	Tahltan Lake to SNT to Tahltan Lake	6,000,000 eggs	6/30/2027
97J-1016	Egg take, transport, and release	Tahltan Lake to SNT to Tuya Lake	6,000,000 eggs	6/30/2027

¹ 6 million eggs may be collected at Tahltan Lake; the resultant fry are released in one or both of the two lakes.

8.0 Tatsamenie Lake (Canada)

8.1 *Program details*

This program is part of a joint U.S./Canada sockeye salmon fisheries enhancement plan on the transboundary Stikine and Taku Rivers. The TTC reviews all aspects of the Tatsamenie Lake project. A Taku Enhancement Production Plan (TEPP) is prepared annually by the TTC and approved by the Transboundary Panel (Table 12). Tatsamenie Lake is an approved egg source for a fry back-planting program in Tatsamenie Lake. Canada conducts egg takes and transports fertilized eggs to SNT, where eggs are incubated and otolith marked over the winter months. The fry are transported back to Tatsamenie Lake and released. Canada conducts studies of freshwater survival and monitors zooplankton populations and limnologic conditions in the lakes.

8.2 *Egg takes*

The egg take will be conducted by the Canadians and fertilized eggs will be transported to SNT.

Program Name	Ancestral Stock	Egg-take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Tatsamenie Lake sockeye salmon	Tatsamenie Lake	Tatsamenie Lake (Canada)	Primary	3,000,000 (up to 50% of estimated available broodstock)	6,000,000

8.3 *Broodstock capture method*

Broodstock capture will be conducted by the Canadians. The primary collection site will be the weir. Broodstock will be held in pens until ripe.

8.4 *Spawning*

The egg takes will be conducted by the Canadians. Fertilized eggs will be transported to SNT.

8.5 *Egg take schedule*

Egg takes will be conducted by the Canadians as the fish ripen. Generally, Tatsamenie Lake sockeye salmon ripen in mid- to late-September.

8.6 *Carcass disposal*

Tatsamenie Lake is a remote location. Carcasses will be disposed in the lake.

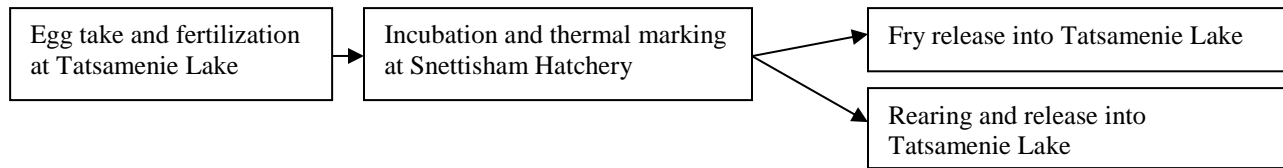
8.7 *Planned releases this calendar year of previous brood years' production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Tatsamenie Lake sockeye salmon	2018	May 15 to May 25	1,875,400	fry	TM, 100%

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
Tatsamenie Lake sockeye salmon	None	N/A	None	None	0

8.9 *Operational diagram*



8.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from To	Maximal #, Life Stage	Expires
97J-1017	Egg take, transport, and release	Tatsamenie Lake to SNT to Tatsamenie Lake	6,000,000 eggs	6/30/2027

9.0 Trapper Lake (Canada)

9.1 *Program details*

This program is part of a joint U.S./Canada sockeye salmon fisheries enhancement plan on the transboundary Stikine and Taku Rivers. The TTC reviews all aspects of the Trapper Lake project. A TEPP is prepared annually by the TTC and approved by the Transboundary Panel (Table 12). Little Trapper Lake is an approved egg source for a fry back planting program in Trapper Lake. This program is an evaluation segment of the Trapper Lake Sockeye Access Improvement Project as supported by the Northern Fund of the PSC. Canada conducts egg takes and transports fertilized eggs to SNT, where the eggs are incubated and otolith marked over the winter months. The fry are to be transported to Trapper Lake and released. Canada conducts studies of freshwater survival, smolt outmigration, and monitors zooplankton populations and limnologic conditions in the lakes.

9.2 *Egg takes*

No egg takes occurred from 2008–2015 or in 2018. Future egg takes are contingent on approval of the Canadian permit to remove a fish passage barrier. The egg take goal would be 500,000 green eggs. Returning adults will be used to help assess the success of the barrier modification.

Program Name	Ancestral Stock	Egg-take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Trapper Lake sockeye program	Little Trapper Lake	Little Trapper Lake (Canada)	Primary	500,000 ¹	1,000,000

¹ Egg-take goal is contingent on barrier removal.

9.3 *Broodstock capture method*

Broodstock will be captured by the Canadians. The primary collection area is the weir. Fish will be held in pens until ripe.

9.4 *Spawning*

The egg takes will be conducted by the Canadians and fertilized eggs will be transported to SNT.

9.5 *Egg take schedule*

Eggs will be taken as the fish ripen.

9.6 *Carcass disposal*

Little Trapper Lake is a remote location. Carcasses will be disposed in the lake.

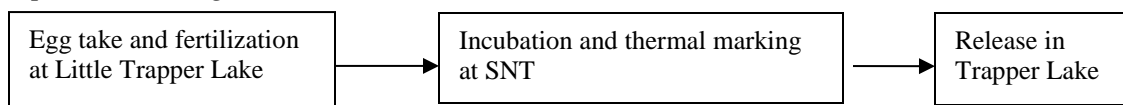
9.7 *Planned releases this calendar year of previous brood years' production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Trapper Lake sockeye salmon	None	None	0	None	None

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
Trapper Lake sockeye salmon	None	N/A	None	None	0

9.9 *Operational diagram*



9.10 *Fish transport permits*

FTP #	Egg take, transport or release	Transport from To	Maximum #, Life Stage	Expires
16J-1007	Egg take, transport, and release	L. Trapper Lake to SNT to Trapper Lake	1,000,000 eggs	5/30/2026

10.0 King Salmon Lake (Canada)

10.1 *Program details*

This program is part of a joint U.S./Canada sockeye salmon fisheries enhancement plan on the transboundary Stikine and Taku rivers. The TTC reviews all aspects of the King Salmon Lake project. A TEPP is prepared annually by the TTC and approved by the Transboundary Panel (Table 11). King Salmon Lake is an approved egg source for a fry back-planting program in King Salmon Lake. Canada conducts egg takes and transports fertilized eggs to SNT, where the eggs are incubated over the winter months. Hatchery water temperatures are manipulated to create mark patterns on the otoliths of the fish to aid in assessment of project success, management of enhanced returns, and compilation of harvest-sharing performance. The fry are to be transported to King Salmon Lake and released. Canada conducts studies of freshwater survival, smolt outmigration, and monitors zooplankton populations and limnological conditions in the lakes.

10.2 *Egg takes*

Program Name	Ancestral Stock	Egg-Take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
King Salmon Lake sockeye salmon	King Salmon Lake	King Salmon Lake (Canada)	Primary	250,000	250,000

10.3 *Broodstock capture method*

Broodstock will be captured by the Canadians.

10.4 *Spawning*

Egg takes will be conducted by the Canadians. Fertilized eggs will be transferred to SNT.

10.5 *Egg take schedule*

Eggs will be collected as fish ripen.

10.6 *Carcass disposal*

King Salmon Lake is a remote location. Carcasses will be disposed in the lake.

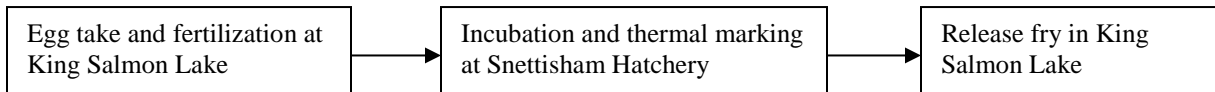
10.7 *Planned releases this calendar year of previous brood years' production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
King Salmon Lake sockeye salmon	None	None	0	None	None

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

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
King Salmon Lake sockeye salmon	None	N/A	None	None	0

10.9 *Operational diagram*



10.10 *Fish transport permits*

FTP #	Egg take, transport or release	Transport from To	Maximum #, Life Stage	Expires
18J-1006	Egg take, transport, and release	King Salmon Lake to SNT to King Salmon Lake	250,000 green eggs	6/30/2028

11.0 Harvest Management

11.1 *Projected return this year*

Projected return estimates for Taku and Stikine Rivers projects are produced by ADF&G and Canadian Department of Fisheries and Oceans, published in the current year *TTC Management Plan* after this management plan has been completed. TTC Management Plans may be found at the following address: http://www.psc.org/publications_tech_techcommitteereport.htm#TCDS

11.2 *Donor stock management of Stikine and Taku River sockeye salmon*

Harvest management strategies for Taku and Stikine Rivers sockeye salmon stocks are developed in U.S./Canada Treaty negotiations and within the TTC of the PSC.

12.0 APPROVAL

Recommendation for Approval:

Eric Prestegard, Executive Director, DIPAC 5/23/2019

Dan Teske, Area Management Biologist, Division of Sport Fish 5/24/2019

Dave Harris, Area Management Biologist, Division of Commercial Fisheries 5/24/2019

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

Lowell Fair, Regional Supervisor, Division of Commercial Fisheries 6/12/2019

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

Approval:

Tom Taube, Deputy Director, Division of Sport Fish 6/13/2019

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

13.0 ATTACHMENTS

Tables

- Table 1.–Required sockeye salmon planting levels for Speel Lake prior to the utilization of this stock for other fisheries enhancement projects, 2019.
- Table 2.–Release summary for Snettisham Hatchery sockeye smolt.
- Table 3.–Transport summary for Tahltan Lake enhanced sockeye.
- Table 4.–Transport summary for Tuya Lake River enhanced sockeye.
- Table 5.–Transport summary for Tatsamenie Lake enhanced sockeye.
- Table 6.–Transport summary for Little Trapper Lake enhanced sockeye.
- Table 7.–Transport summary for King Salmon Lake enhanced sockeye.
- Table 8.–Release summary for enhanced sockeye in Speel Lake.
- Table 9.–Release summary for enhanced sockeye in Crescent Lake.
- Table 10.–Release summary for enhanced sockeye in Sweetheart Lake.
- Table 11.–2019 TEPP and SEPP outline.

Figures

Figure 1.–Speel Arm Special Harvest Area.

Table 1.–Required sockeye salmon planting levels for Speel Lake prior to the utilization of this stock for other fisheries enhancement projects, 2019.

For the following naturally-spawning escapements, stocking of Speel Lake at one of the prescribed levels is required before the Speel Lake stock may be used for alternative purposes.

Naturally Spawning Escapement ¹	<u>Speel Lake Planting Schedule</u>	
	Presmolt	Smolt
400–1,000	133,000	80,000
1,001–2,000	117,000	70,000
2,001–3,000	83,000	50,000
3,001–4,000	50,000	30,000
> 4,000	none	none

¹ The naturally-spawning escapement is the estimated number of fish that are available to spawn in the wild. It is determined by taking the estimated escapement to the system, minus any utilized for egg takes and mortalities associated with egg take activities.

Table 2: Release summary for Snettisham Hatchery sockeye salmon.

Brood Year	Broodstock Source	Green Eggs*	Eyed Eggs*	Green to Eye Survival*	Smolt Released	Green to Smolt Survival*	Release Date	Size (g)	Release Strategy	Otolith Mark
1992	Speel Lake	2,730,709	2,169,484	79.4%	1,116,756	73.5%	6/6-10/94	5.5	Freshwater	5,3H/5H3
					<u>889,823</u>	<u>73.5%</u>	6/6-10/94	5.5	Saltwater	3,3H/3H3
					2,006,579	73.5%				
1993	Speel Lake	1,596,945	1,323,423	82.9%	507,000	53.9%	6/6-10/95	12.2	Freshwater	3,3n,3H5
					<u>353,000</u>	<u>53.9%</u>	6/6-10/96	11.6	Saltwater	3,3n,4H5
					860,000	53.9%				
1994**	Speel Lake	1,130,000	1,028,178	91.0%	202,996	45.5%	5/31/96	11.1	Freshwater	3,2n,4H
	Sweetheart Lake	<u>257,808</u>	<u>155,513</u>	<u>60.3%</u>	<u>174,475</u>	<u>45.5%</u>	6/1/96	12.0	Saltwater	3,2n,3H
		1,387,808	1,183,691	85.3%	377,471	45.5%				
(**Part of combined production of Speel & Sweetheart stock eggs that included releases at Snettisham & Speel Lake. (See also Table 7).)										
1995	Speel Lake	3,065,454	2,615,664	85.3%	No release - HN outbreak					
1996	Speel Lake	1,754,435	1,624,334	92.6%	1,484,145	84.6%	5/20/98	9.5	Early/Large	3,3nH
		<u>1,714,478</u>	<u>1,649,281</u>	<u>96.2%</u>	<u>1,580,886</u>	<u>92.2%</u>	6/10/98	9.6	Late/Large	4,4H
		3,468,913	3,273,615	94.4%	3,065,031	88.4%				
1996	Snettisham	1,868,836	1,649,520	88.3%	1,288,987	69.0%	6/10/98	5.8	Late/Small	4,3H
		<u>1,758,040</u>	<u>1,651,840</u>	<u>94.0%</u>	<u>1,275,781</u>	<u>72.6%</u>	5/19/98	6.1	Early/Small	4,4nH
		3,626,876	3,301,360	91.0%	2,564,768	70.7%				
1997	Snettisham	1,639,375	1,571,408	95.9%	768,528	46.9%	5/21/99	11.7	Early/Large	3,3H
		1,717,345	1,642,711	95.7%	1,387,277	80.8%	5/20/99	8.1	Early/Small	4,4H
		1,520,079	1,435,948	94.5%	1,265,774	83.3%	6/8/99	9.7	Late/Large	3,4nH
		<u>1,563,334</u>	<u>1,486,972</u>	<u>95.1%</u>	<u>1,608,385</u>	<u>102.9%</u>	6/7/99	6.4	Late/Small	4,3nH
		6,440,133	6,137,039	95.3%	5,029,964	78.1%				
1998	Snettisham	1,795,231	1,710,471	95.3%	828,959	46.2%	5/27/00	10.3	Late/Large	3,4H
		1,773,266	1,707,929	96.3%	1,319,936	74.4%	5/27/00	6.3	Late/Small	4,4nH
		1,802,072	1,753,317	97.3%	1,653,871	91.8%	5/17/00	10.5	Early/Large	4,3H
		<u>1,763,288</u>	<u>1,702,424</u>	<u>96.5%</u>	<u>1,382,674</u>	<u>78.4%</u>	5/17/00	6.5	Early/Small	3,3nH
		7,133,857	6,874,141	96.4%	5,185,440	72.7%				
1999	Snettisham	1,865,003	1,653,809	88.7%	1,598,234	85.7%	5/28/01	9.7	Early/Large	3,3nH
		1,914,582	1,652,151	86.3%	1,343,106	70.2%	5/28/01	5.9	Early/Small	4,4H
		1,852,232	1,653,381	89.3%	1,331,263	71.9%	6/14/01	9.8	Late/Large	3,4nH
		<u>1,800,448</u>	<u>1,654,101</u>	<u>91.9%</u>	<u>532,923</u>	<u>29.6%</u>	4/29/01	5.2	Late/Small	4,3nH
		7,432,265	6,613,442	89.0%	4,805,526	64.7%				
2000	Snettisham	1,627,088	1,564,580	96.2%	1,436,522	88.3%	5/29/02	10.4	Early/Large	3,3nH3
		1,571,282	1,526,968	97.2%	1,474,866	93.9%	5/29/02	6.4	Early/Small	4,4nH
		1,579,659	1,530,419	96.9%	1,467,652	92.9%	6/7/02	9.7	Late/Large	3,4H
		<u>1,597,354</u>	<u>1,547,938</u>	<u>96.9%</u>	<u>1,481,947</u>	<u>92.8%</u>	6/7/02	6.1	Late/Small	4,3H
		6,375,382	6,169,906	96.8%	5,860,987	91.9%				

continued....

Table 2: continued.

Brood Year	Broodstock Source	Green to Eye		Smolt	Green to Smolt		Release Date	Size (g)	Release Strategy	Otolith Mark
		Green Eggs*	Eyed Eggs*	Survival*	Released	Survival*				
2001	Snettisham	1,689,481	1,650,141	97.7%	1,060,943	62.8%	5/28/03	11.6	Early/Large	3,3H
		1,693,645	1,650,145	97.4%	1,592,117	94.0%	5/28/03	6.4	Early/Small	4,4H
		1,701,490	1,650,073	97.0%	1,576,685	92.7%	6/9/03	12.0	Late/Large	3,4nH
		<u>1,723,414</u>	<u>1,650,065</u>	<u>95.7%</u>	<u>1,585,885</u>	<u>92.0%</u>	6/9/03	6.3	Late/Small	4,3nH
		6,808,030	6,600,424	97.0%	5,815,630	85.4%				
2002	Snettisham	1,774,841	1,651,923	93.1%	1,490,555	84.0%	5/28/04	12.3		3,3nH3
		1,759,986	1,659,931	94.3%	1,518,802	86.3%	5/28/04	8.4	Early/Small	4,4nH
		1,746,968	1,672,133	95.7%	1,540,961	88.2%	6/9/04	12.3	Late/Large	3,4H
		<u>1,653,957</u>	<u>1,581,884</u>	<u>95.6%</u>	<u>1,421,716</u>	<u>86.0%</u>	6/9/04	8.4	Late/Small	4,3H
		6,935,752	6,565,871	94.7%	5,972,034	86.1%				
2003	Snettisham	1,765,614	1,498,735	84.9%	922,870	52.3%	5/29/05	13.3	Direct Hatchery	3,3H
		1,801,395	1,693,736	94.0%	1,069,297	59.4%	5/29/05	13.0	Direct Hatchery	4,4H
		1,858,918	1,752,882	94.3%	1,101,124	59.2%	5/31/05	12.9	Direct Hatchery	3,4nH
		<u>1,776,208</u>	<u>1,680,304</u>	<u>94.6%</u>	<u>1,052,486</u>	<u>59.3%</u>	5/31/05	13.3	Direct Hatchery	4,3nH
		7,202,135	6,625,657	92.0%	4,145,777	57.6%				
2004	Snettisham	10,812,732	10,386,838	96.1%	7,590,864	70.2%	5/29 - 5/31/06	10.1	Direct Hatchery	3,3nH
2005	Snettisham	9,371,974	8,518,381	90.9%	6,025,789	64.3%	6/4 - 6/6/07	10.4	Direct Hatchery	3,4nH
2006	Snettisham	10,907,354	10,586,751	97.1%	7,123,374	65.3%	6/6 - 6/7/08	8.0	Direct Hatchery	4n,3H
2007	Snettisham	9,931,028	8,938,212	90.0%	7,836,596	78.9%	6/11 - 6/12/09	8.4	Direct Hatchery	3,3nH
		<u>1,646,568</u>	<u>1,540,735</u>	<u>93.6%</u>	<u>731,237</u>	<u>44.4%</u>	6/11 - 6/12/09	8.4	Direct Hatchery	3,4nH
		11,577,596	10,478,947	91.8%	8,567,833	74.0%				
2008	Snettisham	9,740,249	9,208,104	94.5%	7,730,998	79.4%	5/24/10	9.7	Direct Hatchery	5H
		<u>1,552,601</u>	<u>1,489,242</u>	<u>95.9%</u>	<u>1,204,915</u>	<u>77.6%</u>	5/3 - 5/28/10	10.2	Saltwater Reared	3n,4H
		11,292,850	10,697,346	94.7%	8,935,913	79.1%				
2009	Snettisham	10,802,000	10,470,000	96.9%	7,140,000	66.1%	6/1-6/8/11	10.7	Direct Hatchery	3,2nH
		<u>1,711,000</u>	<u>1,666,000</u>	<u>97.4%</u>	<u>1,220,000</u>	<u>71.3%</u>	6/3/2011	10.5	Saltwater Reared	7H
		12,513,000	12,136,000	97.0%	8,360,000	66.8%				
2010	Snettisham	2,797,200	2,711,400	96.9%	2,571,300	91.9%	6/4/12	9.5	Direct Hatchery	4,4nH
		4,353,500	4,164,600	95.7%	3,856,300	88.6%	6/6-6/8/12	9.9	Direct Saltwater	3,3nH & 4,4nH
		1,435,500	1,357,100	94.5%	1,285,200	89.5%	6/10-6/13/12	9.6	Port Snett. Entrance	4n,3H
		<u>1,536,200</u>	<u>1,479,800</u>	<u>96.3%</u>	<u>1,284,400</u>	<u>83.6%</u>	6/7/12	9.6	Saltwater Reared	3,4nH & 4,3nH
		10,122,400	9,712,900	96.0%	8,997,200	88.9%				
2011	Snettisham	3,435,300	3,350,500	97.5%	3,203,000	93.2%	6/5/13	9.3	Direct Hatchery	4,6H
		3,438,500	3,349,500	97.4%	3,210,900	93.4%	6/5-6/7/13	10.2	Direct Saltwater	5H & 5,4nH
		1,382,900	1,342,500	97.1%	1,284,200	92.9%	6/11-6/14/13	9.9	Port Snett. Entrance	3n,4H
		<u>1,371,500</u>	<u>1,333,800</u>	<u>97.3%</u>	<u>1,276,000</u>	<u>93.0%</u>	6/6/13	9.6	Saltwater Reared	4n,4H
		9,628,200	9,376,300	97.4%	8,974,100	93.2%				

continued....

Table 2: continued.

Brood Year	Broodstock Source	Green to Eye		Smolt Released	Green to Smolt		Release Date	Size (g)	Release Strategy	Otolith Mark
		Green Eggs*	Eyed Eggs*		Survival*	Survival*				
2012	Snettisham	4,824,200	4,590,400	95.2%	4,374,000	90.7%	6/2/14	11.0	Direct Hatchery	5n,3H
		2,172,000	2,020,800	93.0%	1,932,200	89.0%	6/2-6/4/14	10.9	Direct Saltwater	3,2nH
		1,468,000	1,353,700	92.2%	1,288,700	87.8%	6/7-6/10/14	10.4	Port Snett. Entrance	7H
		<u>1,422,800</u>	<u>1,357,000</u>	<u>95.4%</u>	<u>1,283,400</u>	<u>90.2%</u>	6/5/14	12.6	Saltwater Reared	4,3nH
		9,887,000	9,321,900	94.3%	8,878,300	89.8%				
2013	Snettisham	4,723,800	4,294,000	90.9%	3,853,700	81.6%	5/27/2015	10.80	Direct Hatchery	4,6nH
		3,140,700	2,845,500	90.6%	2,565,500	81.7%	5/28 - 5/29/15	10.90	Direct Saltwater	3,3nH
		1,519,900	1,422,600	93.6%	1,283,900	84.5%	6/3 - 6/6/15	10.60	Port Snett. Entrance	3,7H
		<u>1,515,900</u>	<u>1,402,200</u>	<u>92.5%</u>	<u>1,276,500</u>	<u>84.2%</u>	5/29/2015	12.40	Saltwater Reared	4,4nH
		10,900,300	9,964,300	91.4%	8,979,600	82.4%				
2014	Snettisham	3,547,100	3,387,500	95.5%	3,214,400	90.6%	5/28/2016	11.5	Direct Hatchery	5,4nH
		2,875,500	2,731,700	95.0%	2,570,900	89.4%	5/28/2016	11.3	Direct Saltwater	5H
		1,417,200	1,370,400	96.7%	1,285,300	90.7%	6/1 - 6/3/16	10.8	Port Snett. Entrance	3n,4,3H
		<u>1,409,300</u>	<u>1,368,400</u>	<u>97.1%</u>	<u>1,284,700</u>	<u>91.2%</u>	5/29/2016	12.7	Saltwater Reared	4n,4H
		9,249,100	8,858,000	95.8%	8,355,300	90.3%				
2015	Snettisham	4,805,000	4,540,700	94.5%	3,758,300	78.2%	6/1 - 6/3/17	10.6	Direct Saltwater	5n,3H
		3,233,300	3,042,500	94.1%	2,381,500	73.7%	6/6 - 6/10/17	11.0	Port Snett. Entrance	3,2nH
		1,542,400	1,463,700	94.9%	1,254,200	81.3%	6/2	12.1	Saltwater Reared	7H
		<u>1,612,100</u>	<u>1,523,400</u>	<u>94.5%</u>	<u>643,700</u>	<u>39.9%</u>	6/1	11.0	Direct Hatchery	4,3nH
		11,192,800	10,570,300	94.4%	8,037,700	71.8%				
2016	Snettisham	4,671,916	4,643,967	99.4%	3,842,800	82.3%	5/31/2018	10.8	Direct Saltwater	3,3nH
		3,399,611	3,351,723	98.6%	2,560,000	75.3%	6/5 - 6/8/18	10.9	Port Snett. Entrance	3,6H
		1,808,078	1,803,241	99.7%	1,279,800	70.8%	5/30/2018	12.3	Saltwater Reared	4,6nH
		<u>1,543,010</u>	<u>1,543,010</u>	<u>100.0%</u>	<u>1,282,100</u>	<u>83.1%</u>	5/30/2018	10.6	Direct Hatchery	4,4nH
		11,422,614	11,341,940	99.3%	8,964,700	78.5%				
Totals / Averages		190,832,351	180,837,743	94.3%	147,170,799	75.3%				

*Beginning with the 2010 brood year, green & eyed egg numbers & survival rates are reported in relation to the number of eggs associated with the actual release. Not included are the number of eggs associated with culled IHN+ or excess production lots.

Table 3: Transport summary for Tahltan Lake hatchery-produced sockeye salmon.

Brood Year	Broodstock Source	Green to Eye		Green to Fry		Release Date	Size (g)	Otolith Mark	
		Green Eggs	Eyed Eggs	Survival	Fry Released				
1989	Tahltan Lk.	2,995,440	2,080,900	69.5%	1,041,744	34.8%	6/6-6/25/90	0.13	4H
1990	Tahltan Lk.	4,510,605	3,718,585	82.4%	3,584,658	79.5%	6/4-6/21/91	0.13	3H
1991	Tahltan Lk.	1,513,520	1,436,835	94.9%	1,415,459	93.5%	6/9-10/92	0.13	4H
1992	Tahltan Lk.	2,153,996	1,979,907	91.9%	1,947,207	90.4%	6/14-20/93	0.13	4H3
1993	Tahltan Lk.	968,752	916,408	94.6%	903,908	93.3%	6/24;28/94	0.13	6H5n
1994	Tahltan Lk.	1,418,013	1,316,682	92.9%	1,142,856	80.6%	6/26-7/3/95	0.13	6H
1995	Tahltan Lk.	3,007,955	2,725,043	90.6%	2,296,152	76.3%	6/15-25/96	0.12	H7
1996	Tahltan Lk.	3,168,947	2,924,351	92.3%	2,247,730	70.9%	6/16 - 6/27/97	0.14	6H
1997	Tahltan Lk.	2,700,359	2,191,515	81.2%	1,900,417	70.4%	6/7 - 6/13/98	0.12	H6
1998	Tahltan Lk.	1,997,918	1,820,107	91.1%	1,670,615	83.6%	5/29 - 6/2/1999	0.12	7H
1999	Tahltan Lk.	2,772,973	2,496,689	90.0%	2,228,339	80.4%	5/20 - 27/2000	0.13	H6
2000	Tahltan Lk.	2,387,590	2,196,254	92.0%	1,872,611	78.4%	5/25 & 6/6/2001	0.15	7H
2001	Tahltan Lk.	3,305,851	2,740,980	82.9%	2,532,920	76.6%	6/3 - 6/12/2002	0.15	H6
2002	Tahltan Lk.	2,779,807	2,574,888	92.6%	2,622,535	94.3%	5/21 - 28/2003	0.16	7H
2003	Tahltan Lk.	1,438,443	1,393,285	96.9%	1,378,464	95.8%	5/22 - 28/2004	0.13	6H
2003	Tahltan Lk.	1,222,232	998,463	81.7%	847,452	69.3%	5/20/2004	0.15	5,4H
2004	Tahltan Lk.	1,966,375	1,578,274	80.3%	1,226,478	62.4%	5/17 - 5/20/05	0.13	6H6
2005	Tahltan Lk.	1,808,767	1,441,984	79.7%	1,280,322	70.8%	6/2 - 6/7/06	0.14	4,2H
2006	Tahltan Lk.	2,954,490	2,681,930	90.8%	2,465,749	83.5%	5/31 - 6/4/07	0.12	3n,2H
2007	Tahltan Lk.	2,208,640	1,670,063	75.6%	1,539,675	69.7%	5/28 - 6/6/08	0.13	1,2n,3H
2008	Tahltan Lk.	2,398,069	2,034,614	84.8%	1,394,758	58.2%	5/31 - 6/6/09	0.15	1,4H
2009	Tahltan Lk.	2,607,000	2,020,000	77.5%	1,828,000	70.1%	5/18 - 5/19/10	0.15	5,2H
2010	Tahltan Lk.	3,097,000	2,552,000	82.4%	1,234,000	39.8%	5/25 - 5/26/11	0.13	4,3H
2011	Tahltan Lk.	3,383,000	2,887,800	85.4%	2,125,700	62.8%	5/29-5/30/12	0.15	3,2n,2H
2012	Tahltan Lk.	3,673,500	2,438,700	66.4%	1,349,400	36.7%	5/29-6/1/13	0.15	1,4H
2013	Tahltan Lk.	3,516,900	2,666,200	75.8%	2,066,000	58.7%	5/27-5/29/14	0.14	4,3H/6,3H
2014	Tahltan Lk.	3,897,800	2,944,700	75.5%	2,683,900	68.9%	5/18-5/23/15	0.16	3,2n,2H/2H3
2015	Tahltan Lk.	4,509,000	3,780,100	83.8%	3,399,500	75.4%	5/9-5/13/16	0.14	1,4H/1,4H4
2016	Tahltan Lk.	5,310,400	4,021,800	75.7%	3,136,400	59.1%	5/23,5/25-5/28/17	0.14	4,3H/3n,3H
2017	Tahltan Lk.	3,849,400	3,047,700	79.2%	2,634,200	68.4%	5/30,6/3,6/5/18	0.18	3,2n,2H
Totals / Averages		83,522,743	69,276,757	84.3%	57,997,149	71.8%		0.14	

Table 4: Transport summary for Tuya Lake hatchery-produced sockeye salmon.

Brood Year	Broodstock		Green to Eye		Green to Fry		Release Date	Size (g)	Otolith Mark
	Source	Green Eggs	Eyed Eggs	Survival	Fry Released	Survival			
1991	Tahltan Lk.	2,732,137	2,578,191	94.4%	1,632,083	59.7%	6/17-21/92	0.13	6H
1992	Tahltan Lk.	2,747,144	2,550,870	92.9%	1,990,370	72.5%	6/16-7/6/93	0.13	7H
1993	Tahltan Lk.	5,170,772	4,711,733	91.1%	4,690,833	90.7%	6/24,28,30	0.13	4H5n
1994	Tahltan Lk.	2,764,530	2,404,533	87.0%	2,267,443	82.0%	6/21,25-7/3/95	0.13	4H
1995	Tahltan Lk.	3,882,653	3,086,238	79.5%	2,473,742	63.7%	6/21 - 7/3/96	0.11	4,4H
1996	Tahltan Lk.	3,232,816	3,012,867	93.2%	2,610,838	80.8%	6/24 - 7/1/97	0.14	4H
1997	Tahltan Lk.	520,809	474,355	91.1%	432,651	83.1%	6/26/1998	0.12	H4
1998	Tahltan Lk.	2,024,284	1,856,122	91.8%	1,603,441	79.2%	6/21 - 7/2/1999	0.12	4H
1999	Tahltan Lk.	1,053,345	1,008,308	95.7%	866,530	82.3%	6/23 - 26/2000	0.12	H4
2002	Tahltan Lk.	1,270,656	1,149,224	90.4%	1,124,248	88.5%	6/12/2003	0.16	7H3
2003	Tahltan Lk.	2,730,376	2,530,384	92.7%	2,444,671	89.5%	6/16 - 6/20/2004	0.18	4H
2004	Tahltan Lk.	3,734,408	3,440,623	92.1%	2,751,541	73.7%	6/8 -6/15/05	0.14	6H4
2005	Tahltan Lk.	2,743,693	2,476,240	90.3%	2,137,548	77.9%	9/19 - 6/23/06	0.13	4H4
2006	Tahltan Lk.	1,409,801	1,291,719	91.6%	1,201,470	85.2%	6/19 - 6/20/07	0.13	3,3H
2007	Tahltan Lk.	1,851,648	1,584,206	85.6%	1,536,887	83.0%	6/15 - 6/16/08	0.15	2,1,3H
2008	Tahltan Lk.	987,881	843,202	85.4%	831,627	84.2%	6/14/09	0.14	6H
2009	Tahltan Lk.	1,860,000	1,478,000	79.5%	976,000	52.5%	6/2/10	0.15	3,4H
2010	Tahltan Lk.	2,852,000	2,335,000	81.9%	1,244,000	43.6%	6/10 - 6/12/11	0.15	3n,3H
2011	Tahltan Lk.	3,098,200	2,678,700	86.5%	1,596,300	51.5%	6/20-6/21/12	0.16	6H
2012	Tahltan Lk.	1,924,000	1,569,900	81.6%	755,300	39.3%	6/17-6/18/13	0.15	4n,3H
2013	Tahltan Lk.	700,900	516,900	73.7%	462,100	65.9%	6/12/14	0.15	3n,3H
2014 - 2018	Tahltan Lk.	No Eggtake							
Totals / Averages		49,292,054	43,577,315	88.0%	35,629,623	72.8%		0.14	

Table 5: Transport summary for Tatsamenie Lake hatchery-produced sockeye salmon.

Brood Year	Broodstock Source	Green Eggs	Eyed Eggs	Green to Eye		Green to Fry		Release Date	Size (g)	Release Strategy	Otolith Mark
				Survival	Fry Released	Survival	Released				
1990	L. Tatsamenie Lk.	984,681	762,965	77.5%	673,236	68.4%	6/22/91	0.17	Standard Release	3H	
1991	L. Tatsamenie Lk.	1,359,751	1,260,494	92.7%	1,231,894	90.6%	6/22,24,26/1992	0.15	Standard Release	4H3,4H4	
1992	L. Tatsamenie Lk.	1,486,091	1,275,238	85.8%	909,452	61.2%	7/9,14/1993	0.13	Standard Release	5H3,5H5	
1993	Tatsamenie Lk.	1,143,857	708,574	61.9%	520,947	45.5%	7/14/94	0.15	Standard Release	H5	
1994	Tatsamenie Lk.	1,228,541	984,165	80.1%	897,500	73.1%	7/18,21/1995	0.15	Standard Release	5H	
1995	Tatsamenie Lk.	2,406,707	2,028,504	84.3%	1,724,228	71.6%	6/16-25/1996	0.11	Standard Release	H5	
1996	Tatsamenie Lk.	4,933,509	4,188,259	84.9%	3,940,933	79.9%	6/16,27/1997	0.17	Standard Release	5H3,5H3	
1997	Tatsamenie Lk.	4,650,517	4,232,964	91.0%	3,596,593	77.3%	6/15,29/1998	0.14	Standard Release	H5	
1998	Tatsamenie Lk.	2,414,494	2,166,262	89.7%	751,043	73.3%	6/01,09/1999	0.15	Standard Release	4H5,5H3	
1999	Tatsamenie Lk.	461,436	435,104	94.3%	350,139	75.9%	6/1/00	0.15	Standard Release	H5	
2000	Tatsamenie Lk.	2,571,502	2,425,341	94.3%	1,054,092	90.2%	6/4,16/2001	0.18	Standard Release	5H	
					1,265,496					5H3	
2001	Tatsamenie Lk.	3,499,157	3,148,097	90.0%	727,425	63.8%	5/30,16/17/2002	0.16	Standard Release	H5	
					1,505,775					H5,3n	
2002	Tatsamenie Lk.	2,301,546	1,893,884	82.3%	911,378	58.8%	5/21,27/2003	0.17	Standard Release	4H3	
					442,035					4H3	
2003	Tatsamenie Lk.	1,292,852	1,190,095	92.1%	1,135,995	87.9%	5/24/04	0.17	Standard Release	5H	
		1,158,833	1,062,238	91.7%	1,004,962	86.7%	5/27/04	0.16	Standard Release	5H3	
2004	Tatsamenie Lk.	319,100	292,475	91.7%	261,279	81.9%	5/20/05	0.20	Standard Release	4H3,3	
		430,945	407,014	94.4%	366,778	85.1%	5/20/05	0.17	Standard Release	4H5n	
2005	Tatsamenie Lk.	942,571	873,063	92.6%	775,377	82.3%	6/1,6/8/06	0.18	Standard Release	4H3	
		868,086	822,142	94.7%	696,120	80.2%	6/1,6/8/06	0.17	Standard Release	4H5	
2006	Tatsamenie Lk.	2,283,456	2,101,447	92.0%	1,808,492	79.2%	5/31,6/7/07	0.16	North Release	2,1,2H	
		1,495,211	1,345,616	90.0%	1,103,734	73.8%	6/2,6/7/07	0.17	"Alternate" Release	2,2,1H	
		1,031,603	994,432	96.4%	792,910	76.9%	6/3,6/13/07	0.16	South Release	2,2,3H	
2007	Tatsamenie Lk.	1,544,101	1,345,057	87.1%	1,150,471	74.5%	5/28,6/5/08	0.16	North Release	2,3n,1H,2n,3H	
		1,670,237	1,494,297	89.5%	971,188	58.1%	6/6/08	0.16	Mid-lake Release	1,3n,2H	
		458,903	409,752	89.3%	400,365	87.2%	6/8/08	0.58	Extended Rearing	3,2n,1H	
2008	Tatsamenie Lk.	4,784,793	4,256,490	89.0%	3,756,252	78.5%	5/30,6/3/09	0.21	Standard Release	3,2H	
		116,985	116,985	100.0%	116,905	99.9%	6/6/09	0.43	Extended Rearing	3,3H	
2009	Tatsamenie Lk.	992,700	827,000	83.3%	506,000	51.0%	5/22/10	0.19	Standard Release	6,2H	
		231,400	216,400	93.5%	211,700	91.5%	6/10/10	0.62	Extended Rearing	3n,2H	
2010	Tatsamenie Lk.	1,677,700	1,539,700	91.8%	1,398,000	83.3%	5/29/11	0.18	Standard Release	2,1,2H	
		218,600	203,600	93.1%	198,000	90.6%	6/7/11	0.72	Extended Rearing	2,2,3H	
2011	Tatsamenie Lk.	1,927,800	1,752,300	90.9%	1,649,000	85.5%	5/25-5/29/12	0.21	Standard Release	3n,5H	
		261,800	245,300	93.7%	243,300	92.9%	6/12/12	0.57	Extended Rearing	6,2H	

continued....

Table 5: continued.

Brood Year	Broodstock Source	Green Eggs	Eyed Eggs	Green to Eye		Green to Fry		Release Date	Size (g)	Release Strategy	Otolith Mark
				Survival	Fry Released	Survival					
2012	Tatsamenie Lk.	1,599,900	1,530,300	95.6%	1,419,500	88.7%	5/30-6/1/13	0.19	Standard Release	3n,2H	
		236,000	223,300	94.6%	216,800	91.9%	6/9-6/10/13	0.65	Extended Rearing	3,3H	
2013	Tatsamenie Lk.	1,598,400	1,404,300	87.9%	1,136,400	71.1%	5/29-6/6/14	0.20	Standard Release	2,1,2H	
		213,800	190,300	89.0%	188,300	88.1%	6/11/14	1.12	Extended Rearing	2,2,3H	
2014	Tatsamenie Lk.	1,079,800	927,500	85.9%	730,600	67.7%	5/22/15	0.20	Standard Release	3n,5H	
		208,800	192,100	92.0%	187,000	89.6%	5/30/15	0.99	Extended Rearing	6,2H	
2015	Tatsamenie Lk.	523,800	407,800	77.9%	384,300	73.4%	5/14/16	0.18	Standard Release	3n,2H	
		206,700	177,400	85.8%	86,200	41.7%	5/27/16	0.48	Extended Rearing	3,3H	
2016	Tatsamenie Lk.	1,567,000	1,114,400	71.1%	1,018,700	65.0%	5/28-5/29/17	0.21	Standard Release	2,1,2H	
		206,000	187,100	90.8%	183,000	88.8%	6/19-6/20/17	0.80	Extended Rearing	2,2,3H	
2017	Tatsamenie Lk.	1,701,400	1,384,400	81.4%	1,263,500	74.3%	5/29,5/30,5/31/18	0.24	Standard Release	3n,5H	
		257,500	219,100	85.1%	214,300	83.2%	5/29,5/30/18	0.63	Extended Rearing	6,2H	
Totals / Averages		62,291,064	54,963,254	88.5%	46,077,594	77.3%		0.17	unfed		
								0.65	extended rearing		

Table 6: Transport summary for Little Trapper Lake hatchery-produced sockeye salmon.

Brood Year	Broodstock Source	Green Eggs	Eyed Eggs	Green to Eye % Survival	Fry Release	Green to Release Survival	Release Date	Size (g)	Otolith Mark
1990	L. Trapper Lk.	2,313,686	2,020,843	87.3%	933,791	40.4%	6/8-6/22/91	0.16	5H
1991	L. Trapper Lk.	2,952,934	1,862,662	63.1%	1,810,998	61.3%	6/5-6/11/92	0.16	H6 / 6H
1992	L. Trapper Lk.	2,520,953	2,054,881	81.5%	1,113,128	54.2%	6/13-22/93	0.15	7H3
1993	L. Trapper Lk.	1,173,660	950,853	81.0%	916,083	78.1%	6/16;24/94	0.16	5H5n
1994	L. Trapper Lk.	1,117,249	837,316	74.9%	773,375	69.2%	6/21,28 - 7/3/95	0.16	7H
1995 - 2005	L. Trapper Lk.	No eggtake							
2006	L. Trapper Lk.	1,109,386	994,747	89.7%	896,842	80.8%	6/19 - 6/20/07	0.19	6H
2007	L. Trapper Lk.	899,604	543,202	60.4%	353,175	39.3%	6/5/2007	0.18	4,2nH
2008 - 2015	L. Trapper Lk.	No eggtake							
2016	L. Trapper Lk.	270,700	231,300	85.4%	211,800	78.2%	5/29/2017	0.20	4,4n,3H
2017	L. Trapper Lk.	280,200	210,300	75.1%	187,700	67.0%	5/29/2018	0.28	4,2,3H
2018	L. Trapper Lk.	No eggtake							
Totals / Averages		12,638,372	9,706,104	77.6%	7,196,892	63.2%		0.18	

Table 7: Transport summary for King Salmon Lake hatchery-produced sockeye salmon.

Brood Year	Broodstock Source	Green Eggs	Eyed Eggs	Green to Eye % Survival	Fry Release	Green to Release Survival	Release Date	Size (g)	Otolith Mark
2012	King Salmon Lk.	232,100	207,900	89.6%	197,400	85.0%	6/2/2013	0.13	6,2H3
2013	King Salmon Lk.	No eggtake							
2014	King Salmon Lk.	204,000	182,100	89.3%	169,400	83.0%	5/23/2015	0.17	6,3H
2015 - 2018	King Salmon Lk.	No eggtake							
Totals / Averages		436,100	390,000	89.4%	366,800	84.0%		0.15	

Table 8: Release summary for hatchery-produced sockeye salmon in Speel Lake.

Brood Year	Broodstock		Green to Eye		Life Stage	Fish Released	Green to Release		Size (g)	Otolith Mark
	Source	Green Eggs	Eyed Eggs	Survival			Survival	Release Date		
1988	Speel Lake	295,245	251,400	85.1%	Fry	226,622	76.8%	6/25-7/02/89	0.18	5H
1993	Speel Lake	276,680	229,291	82.9%	Smolt	149,000	53.9%	5/26-29/95	10.4	3,3n,3nH5
1994*	Speel Lake	1,130,000	1,028,178	91.0%	Pre-smolts	253,750	45.5%	10/20/1995	2.40	3,2n,3nH
	Sweetheart Lake	257,808	155,513	60.3%	Pre-smolts					
(*Part of combined production of Speel & Sweetheart stock eggs that included releases at Snettisham & Speel Lake. See also Table 2).										
1995	Speel Lake	3,065,454	2,615,664	85.3%	No release - IHN outbreak					4,3nH
1996	Speel Lake	(Eggtake conducted but all production allocated to Snettisham releases. See Table 2.)								
1997-2018	Speel Lake	No eggtakes								
Totals / Averages		5,025,187	4,280,046	80.9%		629,372	58.7%			

Table 9: Release summary for hatchery-produced sockeye salmon in Crescent Lake.

Brood Year	Broodstock		Green to Eye		Life Stage	Fish Released	Green to Release		Size (g)	Release	
	Source	Green Eggs	Eyed Eggs	Survival			Survival	Release Date		Location	Otolith Mark
1989	Crescent Lake	547,054	394,271	72.1%	Fry	215,556	39.4%	6/08/90	0.23	Crescent Lake	6H
1990	Crescent Lake	813,298	526,876	64.8%	Fry	388,460	56.3%	6/23-30/91	0.20	Crescent Lake	9H
					Pre-smolt	69,193	56.3%	11/3/91	1.20	Crescent Lake	9H
1991	Crescent Lake	986,701	738,480	83.0%	Fry	551,556	62.6%	6/24-25/92	0.18	Crescent Lake	4,5H & 4H5
			80,970	83.0%	Smolt	65,717	62.6%	5/23-24/93	6.30	Crescent Lake	4,4,3H & 4,4H3
1994	Crescent Lake	127,000	95,704	75.4%	Pre-smolt	82,885	65.3%	10/20/92	1.55	Crescent Lake	4,3H & 4H3
	Crescent Lake	296,766	265,122	89.3%	Pre-smolt	234,080	78.9%	10/21/1995	3.70	Crescent Lake	H4,2n,3n
1996 - 2018	Crescent Lake	No eggtake									
Totals / Averages		2,770,819	2,101,423	77.9%		1,607,447	60.2%				

Table 10: Release summary for hatchery-produced sockeye salmon in Sweetheart Lake.

Brood Year	Broodstock Source	Green Eggs	Eyed Eggs	Green to Eye		Green to Release		Release Date	Size (g)	Otolith Mark
				Survival	Fry Released	Survival	Release Date			
1989	Speel Lake	3,698,485	3,017,158	81.6%	2,465,844	66.7%	6/15-6/27/90	0.20	8H	
1990	Speel Lake	2,337,735	2,098,948	89.8%	1,310,104	56.0%	7/15/91	0.20	7H	
1992	Crescent Lake	1,585,553	1,319,510	83.2%	766,908	48.4%	6/14/1993	0.21	3,5H	
1993	Crescent Lake	2,204,542	2,072,748	94.0%	1,739,605	78.9%	5/11,24/94	0.19	H4,4	
1995	Crescent Lake	1,059,036	870,519	82.2%	728,798	68.8%	6/7-6/13/96	0.18	4H	
1996	No eggtake									
1997	Snettisham	293,284	279,975	95.5%	275,801	94.0%	6/29/98	0.13	5,3H	
1998	Snettisham	536,259	519,346	96.8%	518,033	96.9%	7/2/99	0.13	5,3nH	
1999	Snettisham	544,588	522,207	95.9%	520,778	95.6%	6/1/00	0.15	5,3nH	
2000	Snettisham	540,234	521,514	96.5%	532,431	98.6%	6/1/01	0.16	5,3H	
2001	Snettisham	564,465	521,514	92.4%	510,062	90.4%	6/17/02	0.16	5,3nH	
2002	Snettisham	548,512	532,335	97.1%	525,790	95.9%	5/28/03	0.16	5,2H	
2003	Snettisham	562,142	529,988	94.3%	266,355	47.4%	5/27/04	0.13	5n,3H	
2004	Snettisham	573,190	541,488	94.5%	546,485	95.3%	5/17/05	0.15	5,3nH	
2005	Snettisham	507,680	485,591	95.6%	240,120	47.3%	6/9/06	0.13	5,2H	
2006	Snettisham	508,622	499,332	98.2%	486,630	95.7%	6/19/07	0.15	3,2nH	
2007	Snettisham	526,119	463,374	88.1%	453,437	86.2%	6/15/08	0.15	5,3nH	
2008	Snettisham	527,352	503,621	95.5%	482,000	91.4%	6/17/09	0.13	5,2H	
2009	Snettisham	556,000	533,000	95.9%	528,000	95.0%	6/3/10	0.14	2,5H	
2010	Snettisham	554,000	541,000	97.7%	544,000	98.2%	6/10/11	0.15	5,3nH	
2011	Snettisham	527,200	516,800	98.0%	499,600	94.8%	6/23/12	0.15	5,2H	
2012	Snettisham	579,600	550,300	94.9%	540,800	93.3%	6/17/13	0.14	2,5H	
2013	Snettisham	573,200	530,500	92.6%	492,100	85.9%	6/11/14	0.15	5,3nH	
2014	Snettisham	566,800	530,000	93.5%	514,800	90.8%	5/24/15	0.18	5,2H	
2015	Snettisham	543,200	508,900	93.7%	467,900	86.1%	5/14/16	0.14	2,5H	
2016	Snettisham	537,700	518,000	95.7%	508,653	94.6%	5/28/17	0.16	5,3nH	
2017	Snettisham	529,100	507,600	95.7%	487,900	92.2%	6/5/18	0.20	5,2H	
Totals / Averages		22,084,598	20,035,267	93.4%	16,952,934	84.0%		0.16		

Table 11.–2019 TEPP and SEPP final.

2019 Taku Enhancement Production Plan (TEPP) – Taku River Sockeye Salmon			
Enhancement Project	Activities	Expected Production	Technique to document production
Tatsamenie Lake	Egg Take: target of 50% of available adult brood stock (up to 3.0 million eggs ¹). Outplant: Progeny (fry) from 500,000 eggs will be held for in-lake “extended rearing” and fry from the remainder of the eggs will be for “direct release” into the lake.	8,670 adults from direct release (Survival Rate: 5.1% green egg to smolt, 6.8% smolt to adult) 2,541 adults from extended rearing (Survival Rate: 36.3% green egg to smolt, 1.4% smolt to adult) ²	Thermal mark
Trapper Lake	Egg Take: target of 500,000 eggs from Little Trapper Lake. Outplant: All fry to be “direct release” into Trapper Lake. Future program continuation/ expansion contingent on adult sockeye salmon passage remediation.	1,400 adults (Survival Rate: 4% green egg to smolt, 7% smolt to adult) ³	Thermal mark
King Salmon Lake	Egg Take: target of 250,000 (pending broodstock availability). Outplant: All fry to be “direct release” into King Salmon Lake.	5,250 adults (Survival Rate: 2.1% green egg – adult) ⁴	Thermal mark
		Expected Total Production 17,861	

¹ In 2019, adult sockeye salmon returns to Tatsamenie Lake are expected to be low. To increase overall survival, thus rebuilding returns from this year class, the egg-take goal has been increased from previous years Tatsamenie Lake sockeye salmon egg-take goals that targeted up to 30% of available broodstock to a maximum of 2.5 million eggs.

² Adult production estimates based on extended rearing program results from brood years 2008 through 2012.

³ Adult production estimates based on results of direct releases observed at Tatsamenie Lake due to lack of data specific to Trapper Lake.

⁴ Adult production estimate made from brood year 2012 survival rate.


Canada, Transboundary Panel Co-Chair

FEBRUARY 14, 2019
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2019 Stikine Enhancement Production Plan (SEPP) – Stikine River Sockeye Salmon			
Enhancement Project	Activities	Expected Production ²	Technique to document production
Tahltan Lake	Egg Take: target of 5.0 million eggs ¹ Guideline for last adult broodstock collection day is September 25 Outplant: All fry to be “direct release” into Tahltan Lake ³ .	70,560 adults resulting from direct release in Tahltan Lake. (Survival Rate: 72% green egg to fry, 28% fry to smolt, 7% smolt to adult)	Thermal mark
		Expected Total Production³ 70,560	

¹ Egg take target will be based on actual escapement into Tahltan Lake, and matching enhanced smolt production to expected wild smolt production.

² Survivals based on historical data starting with brood year 1989.

³ The Panel recognizes the result of this SEPP is unlikely to achieve 100,000 enhanced sockeye salmon as identified in Chapter 1, paragraph 3(a)(i)(C)(i) because: Canada is withdrawing Tuya Lake for stocking in 2020; biological constraints associated with enhancement of Tahltan Lake; the practicality and achievability of Tahltan Lake sockeye salmon egg takes; and there being no other identified enhancement projects.


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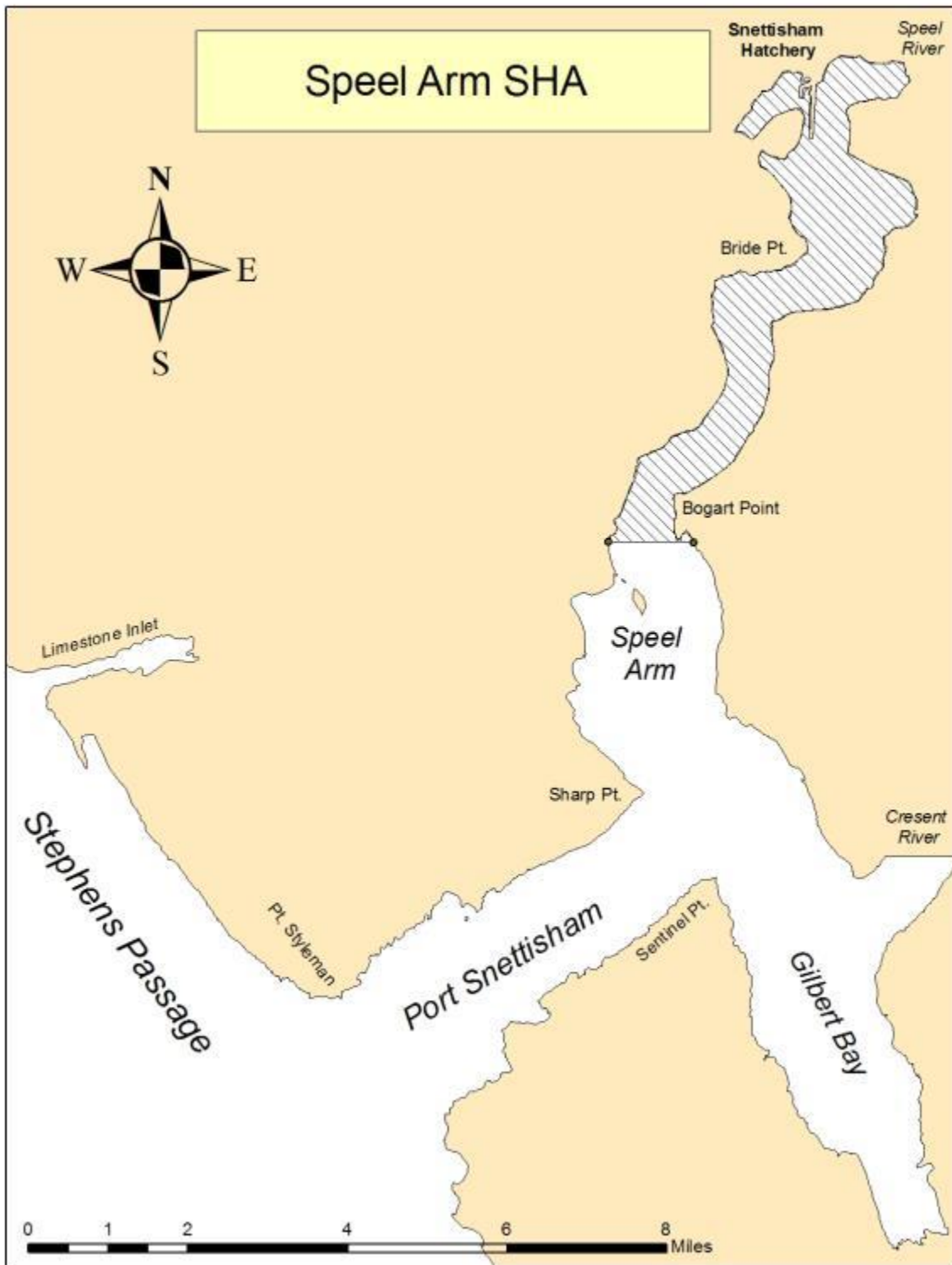


Figure 1.—Speel Arm Special Harvest Area.