

2021 ANNUAL MANAGEMENT PLAN

CRYSTAL LAKE HATCHERY

Southern Southeast Regional Aquaculture Association

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 Southern Southeast Regional Aquaculture Association (SSRAA) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. SSRAA 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 SSRAA. This policy applies to all hatchery operations covered under the AMP.

1.0 Executive Summary

1.1 Introduction

Crystal Lake Hatchery (CLH) is operated by Southern Southeast Regional Aquaculture Association (SSRAA) under contract with ADF&G, Division of Sport Fish. The CLH is located 17.5 miles south of Petersburg, just off Mitkof Highway near the City of Petersburg's hydroelectric power plant. Crystal Lake, at an altitude of 1,300 feet, supplies water to the power plant. The water then passes to the hatchery before flowing into lower Crystal Creek. The City of Petersburg is responsible for reliably supplying the hatchery with water flows as described in their FERC license to operate.

The CLH has four Chinook salmon projects:

Crystal Creek Chinook salmon: This program provides adult Chinook salmon returns to local sport and commercial fisheries in the Petersburg area, as well as providing Andrew Creek broodstock for the Crystal Creek, City Creek, and Anita Bay Chinook salmon programs. The production goal for this program is the release of 600,000 Andrew Creek stock Chinook salmon smolt at Crystal Creek.

Anita Bay Chinook salmon: This program provides adult Chinook salmon returns to local sport and commercial fisheries in the Wrangell area. The production goal of this program is the release of 450,000 Andrew Creek stock Chinook salmon smolt at Anita Bay.

Neets Bay Chinook salmon: This program provides adult Chinook salmon returns to local sport and commercial fisheries in the Ketchikan area, as well as a cost recovery opportunity for SSRAA in the Neets Bay terminal harvest area (THA). The production goal of this program is the release of 300,000 Chickamin River stock Chinook salmon smolt at Neets Bay.

City Creek Chinook salmon: This program will provide adult Chinook salmon to the local sport and commercial fisheries in the Petersburg area. The production goal of this program is to release 200,000 Andrew Creek stock Chinook salmon smolt.

The CLH also has a coho salmon program. The hatchery releases up to 200,000 coho salmon smolt annually into Crystal Creek.

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

In response to input from Pacific Salmon Treaty stakeholders, SSRAA purchased an Autofish Marking Trailer to allow an increase in the tag rate from 10% to 20% and a 100% mark (fin-clip) rate for all Chinook salmon produced by SSRAA. The increased tagging will provide the tools for reducing the uncertainty factor associated with the number of Alaska hatchery Chinook harvested. The 100% clip rate provides fishery managers a powerful tool for in-season real-time management decisions. SSRAA will be utilizing an Autofish marking trailer at CLH this year to allow adipose clipping of 100% starting with all brood year 2020 Chinook and 20% CWT as well.

1.3 *New permits or permit amendments*

None.

1.4 *Expected Returns*

| Species, Run | Release Location | Total Return | Common Property Harvest | Return to Hatchery | Broodstock Needed | Available for Cost Recovery |
|----------------|------------------|--------------|-------------------------|--------------------|-------------------|-----------------------------|
| Coho salmon | Crystal Creek | 6,300 | 3,800 | 2,500 | 150 | 2,350 |
| Chinook salmon | Crystal Creek | 3,000 | 1,400 | 1,600 | 1,000 | 600 |
| Chinook salmon | Anita Bay | 11,000 | 11,000 | 0 | 0 | 0 |
| Chinook salmon | Neets Bay | 11,400 | 5,500 | 5,900 | 0 | 2,750 |

1.5 *Production Summary*

| Program Name | Brood Year | Planned Release Date | Number to Release | Life Stage | Type of Mark, % Marked |
|------------------------------|------------|----------------------|-------------------|------------|------------------------|
| Crystal Creek coho salmon | 2019 | 5/2021 | 130,000 | Smolt | CWT, 9% |
| Crystal Creek Chinook salmon | 2019 | 5/2021 | 560,000 | Smolt | CWT, 10% |
| Anita Bay Chinook salmon | 2019 | 5/2021 | 380,000 | Smolt | CWT, 10% |
| Neets Bay Chinook salmon | | | 0 | Smolt | |

| | | | | | |
|---|------|--------|---------|-------|----------|
| City Creek Chinook salmon | | | 0 | Smolt | |
| Port Saint Nicholas Chinook salmon ¹ | 2019 | 5/2021 | 420,000 | Smolt | CWT, 10% |

¹Permitted to PSNH. The PSN program will move to the SSRAA AMP in 2022.

In 2021 CLH plans to take 140,000 coho salmon eggs and 2.5 million Chinook salmon eggs. The CLH is a backup egg source of Andrew Creek stock Chinook salmon eggs for both Northern Southeast Regional Aquaculture Association (NSRAA) and Douglas Island Pink and Chum, Inc. (DIPAC).

1.6 *Current Permitting*

CLH is operated by SSRAA under contract with ADF&G and not subject to a private non-profit hatchery permit. The *Statewide Stocking Plan for Recreational Fisheries* outlines the CLH program objectives and release numbers and locations. The current CLH operating plan capacity is 250,000 coho salmon eggs and four million Chinook salmon eggs.

2.0 **Fall Coho Salmon Production**

2.1 *Program details*

The program was established to mitigate losses to Crystal Creek spawning habitat associated with operations of the Blind Slough Hydroelectric project, run by the City of Petersburg. In addition, this program provides adult coho salmon returns to local sport, personal use, and commercial fisheries in the Petersburg area. The releases also ensure a sustainable broodstock for future hatchery releases.

Eggs are collected from coho salmon adults returning to CLH each fall. Up to 200,000 yearling coho salmon smolt produced from the collected eggs are released each May into Crystal Creek.

At least 20,000 smolt are marked with a coded wire tag (CWT) and a clipped adipose fin. Tagged fish are recovered at the rack and through port sampling performed by ADF&G.

2.2 *Egg Takes*

| Program Name | Ancestral Stock | Egg Take Site | Primary or Alternate Source? | Current Year Egg Goal | Permitted Maximum |
|---------------------------|------------------------|----------------------|-------------------------------------|------------------------------|--------------------------|
| Crystal Creek coho salmon | Crystal Creek | CLH | Primary | 140,000 | 250,000 |
| Totals | | | | 140,000 | 250,000 |

2.3 *Broodstock capture method*

Coho salmon returning to CLH are hatchery-produced fish from Crystal Creek stock. Adult returns to CLH enter adult holding ponds through a fish ladder.

2.4 *Spawning*

Adult fish are dispatched with a blow to the head. Females are incision spawned into a bucket. Milt from two males is added to each bucket of eggs. An activator/extender solution is added to aid in fertilization. The buckets are then transported to the hatchery building and placed in incubator trays.

2.5 *Egg-take Schedule*

Egg takes occur in mid-October through early-December.

2.6 *Carcasses*

The number of carcasses generated from egg takes can be limited by the number of fish allowed into the holding pond. Carcasses will be given away to commercial fishermen for bait or transported to a local processor for disposal.

2.7 *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 |
|--------------------------|-------------------|---------------------|--------------------------|-------------------|-------------------------------|
| Crystal Lake coho salmon | 2019 | 5/21 | 120,000 | smolt | 16.7%,CWT |

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 |
|--------------------------|-------------------|-----------------------------|-------------------|--------------------------------|--------------------------------|
| Crystal Lake coho salmon | 2020 | 130,000 | Eyed eggs | CWT @ 20,000 fish | 120,000 5/2022 |

2.9 *Operational diagram*

2.10 *Fish transport permits*

| FTP # | Egg take, transport, or release? | Transport From → To | Maximal #, Life Stage | Expires |
|--------------|---|----------------------------|-------------------------------|----------------|
| 08J-1013 | Egg take & release | CLH to Crystal Creek | 250,000 eggs 200,000 smolt | 8/31/28 |

3.0 **Chinook salmon**

3.1 *Program details*

CLH has four Chinook salmon programs.

Crystal Creek Chinook salmon: This program provides adult Chinook salmon returns to local sport and commercial fisheries in the Petersburg area. The Crystal Creek release of Andrew Creek stock Chinook salmon provides sustainable returns for production at CLH and Anita Bay. The annual production goal of 600,000 Chinook salmon smolt is released into Crystal Creek at a target weight of 20 grams. Smolt released in 2021 will be marked with CWTs at a rate of 20%. Tags are recovered at the rack and through ADF&G port sampling efforts.

Anita Bay Chinook salmon: This program provides adult Chinook salmon returns to local sport and commercial fisheries in the Wrangell area. Each spring, 500,000 Andrew Creek stock Chinook salmon smolt are transported to saltwater net pens in Anita Bay for short-term rearing and release. When extremely cold water at CLH is anticipated to limit growth, Chinook salmon fry are transferred to NBH in October for interim freshwater rearing. NBH does not experience the same extreme cold-water conditions that CLH sometimes experiences, therefore warmer rearing water at NBH allows for better growth than would be possible at CLH in years of extremely cold water. The following spring, smolt are transported from NBH to net pens in Anita Bay for rearing and release. The saltwater net pens are positioned so the freshwater influence of several creeks at the upper end of the bay ensures proper imprinting. Smolt released in 2021 will be marked with CWTs at a rate of 10%. Tags are recovered through ADF&G port sampling efforts. Extremely poor egg survival of BY19 Andrew Creek eggs at CLH resulted in a shortfall at CLH and as a result a one-time FTP was granted to allow the use of Chickamin River Ancestral Stock eggs for the Anita Bay release. The resultant fish were reared at CLH in 2020 and will be released at Anita Bay in 2021.

Neets Bay Chinook salmon: The SSRAA Board has directed Chinook production away from Neets Bay in recent years in response to the restrictions necessitated by the struggling wild stocks in Behm canal. In 2021 the last of the NBH chinook will be moved to PSNH for netpen rearing and release and this program will be referred to as the PSN Chinook Salmon Program in the future and reported on the SSRAA AMP.

City Creek Chinook salmon: This program will provide adult Chinook salmon to the sport and commercial fisheries in the Petersburg area. The intent of the program is to provide diversification to the areas sport harvest opportunities and to evaluate survival rates from a saltwater netpen release. It is expected that smolt released from a saltwater netpen will survive at a much higher rate than the fish released directly from CLH which suffers from extended regimes of cold water. In April, up to 200,000 Andrew Creek stock smolt will be transported from CLH to the City Creek net pen site for rearing, imprinting and release in late May. Smolt will be marked with CWTs at a minimum rate of 20% or 30,000 smolt. Tags will be recovered through ADF&G port sampling efforts. In 2019 CLH was not able to produce enough eggs to provide for the City Creek release and there will be no release in 2021.

3.2 *Egg Takes*

| Program Name | Ancestral Stock | Egg Take Site | Primary or Alternate Source? | Current Year Egg Goal | Permitted Maximum |
|---|------------------------|--------------------------|-------------------------------------|------------------------------|--------------------------|
| Crystal Creek Chinook salmon | Andrew Creek | CLH | Primary | 1,000,000 | 3,000,000 |
| Anita Bay Chinook salmon | Andrew Creek | CLH | Primary | 600,000 | 3,000,000 |
| City Creek Chinook salmon | Andrew Creek | CLH | Primary | 150,000 | 3,000,000 |
| Crystal Creek, Anita Bay, and City Creek | Andrew Creek | Macaulay Salmon Hatchery | Alternate | 0 | 1,400,000 |
| Crystal Creek, Anita Bay, and City Creek | Andrew Creek | Medvejie Creek Hatchery | Alternate | 0 | 1,000,000 |
| Crystal Creek, Anita Bay, and City Creek | Andrew Creek | Hidden Falls Hatchery | Alternate | 0 | 1,000,000 |
| Port Saint Nicholas ¹ Chinook salmon | Chickamin River | WLH | Primary | 550,000 | 7700,000 |
| Totals | | | | 2,300,000 | 4,000,000 |

¹Permitted to PSNH. The PSN program will move to the SSRAA AMP in 2022.

3.3 *Broodstock capture method*

Broodstock for the Crystal Creek, City Creek, and Anita Bay Chinook salmon programs are collected at CLH. Chinook salmon returning to CLH are an enhanced run of Andrew Creek stock. Adult returns enter holding ponds through a fish ladder.

Broodstock for the Neets Bay Chinook salmon project are collected at WLH. Chinook salmon returning to WLH are an enhanced run of Chickamin River stock. Adults enter holding ponds through a fish ladder.

3.4 *Spawning*

Eggs for the Crystal Creek and Anita Bay Chinook salmon programs are collected at CLH. Adult fish are dispatched with a blow to the head. Females are incision spawned into a bucket. Milt from two males is added to each bucket of eggs. An activator/extender solution is added to aid in fertilization. The buckets of eggs are immediately transported to the hatchery building and placed in incubator trays. Eggs are disinfected with iodophor. Family tracking is used to control bacterial kidney disease.

Eggs for the Neets Bay Chinook salmon project are collected at WLH. The WLH uses a dry method of spawning where male and female gametes are mixed in a bucket. Eggs are rinsed and then water hardened for one hour in an iodophor bath. Family tracking is used to control bacterial kidney disease.

3.5 *Egg-take schedule*

Chinook salmon egg takes at CLH and WLH occur from early-August to early-September.

3.6 *Carcass disposal*

The number of carcasses generated from egg takes can be limited by the number of fish allowed into the holding pond. Carcasses will be given away to commercial fishermen for bait or transported to a local processor for disposal.

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

| Program Name | Brood Year | Planned Release Date | Number to Release | Life Stage | Type of Mark, Percent Marked |
|---|------------|----------------------|-------------------|------------|------------------------------|
| Crystal Creek Chinook salmon | 2019 | 5/2021 | 560,000 | Smolt | CWT, 10% |
| Anita Bay Chinook salmon | 2019 | 5/2021 | 380,000 | Smolt | CWT, 10% |
| Port Saint Nicholas Chinook salmon ¹ | 2019 | 5/2021 | 420,000 | Smolt | CWT, 10% |

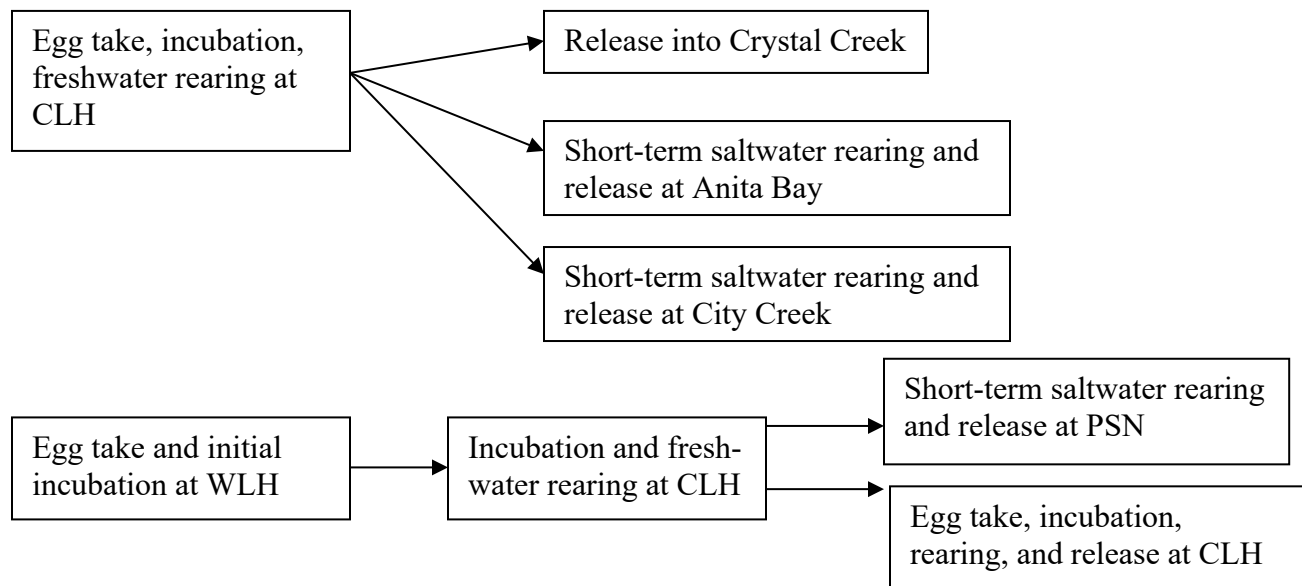
¹Permitted to PSNH. The PSN program will move to the SSRAA AMP in 2022.

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

| Program Name | Brood Year | Number Live (January 1) | Life Stage | Number to Release, Date |
|---|------------|-------------------------|------------|-------------------------|
| Crystal Creek Chinook salmon | 2020 | 650,000 | Sac fry | 600,000 5/2022 |
| Anita Bay Chinook salmon | 2020 | 500,000 | Sac fry | 450,000 5/2022 |
| Port Saint Nicholas Chinook salmon ¹ | 2020 | 510,000 | Sac fry | 500,000 5/2022 |
| City Creek Chinook salmon | 2020 | 130,000 | Sac fry | 110,000 5/2022 |

¹Permitted to PSNH. The PSN program will move to the SSRAA AMP in 2022.

3.9 *Operational diagram*



3.10 *Fish transport permits***Andrew Creek stock**

| FTP Number | Egg take, transport, or release? | Transfer From To | Maximal Number, Life Stage | Expires |
|------------|----------------------------------|-------------------------|----------------------------|------------|
| 03J-1006 | Egg take, release | CLH to Crystal Creek | 3,000,000 eggs | 6/30/2027 |
| 08J-1021 | Egg take, transport | Macaulay to CLH | 1,400,000 eggs | 12/31/2023 |
| 01J-1007 | Egg take, transport | Medvejie to CLH | 1,000,000 eggs | 12/31/2021 |
| 01J-1002 | Transport, release | CLH to Anita Bay | 500,000 smolt | 5/31/2028 |
| 08J-1018 | Transport, release | CLH to NBH to Anita Bay | 500,000 smolt | 12/31/2022 |
| 12J-1020 | Egg take, transport | Hidden Falls to CLH | 1,000,000 eggs | 8/14/2022 |
| 13J-1003 | Transport, release | CLH to City Creek | 200,000 smolt | 2/28/2028 |
| 14J-1026 | Transport | CLH to WLH to CLH | 1,500,000 eggs | 8/30/2024 |

Chickamin River stock

| FTP Number | Egg take, transport, or release? | Transfer From To | Maximal Number, Life Stage | Expires |
|------------|----------------------------------|-------------------------|----------------------------|-----------|
| 14J-1015 | Transport, release | WLH to CLH to Neets Bay | 520,000 fry | 4/30/2024 |
| 15J-1021 | Egg take, transport, release | WLH to CLH to NBH | 1,000,000 eggs | 6/30/2025 |
| 20J-1012 | Transport, release | CLH to Anita Bay | 300,000 fry | 6/1/2021 |
| 20J-1032 | Transport, release | CLH to NBH to Anita Bay | 300,000 fry | 10/1/2021 |

¹ Port Saint Nicholas fish transport permit.

4.0 Harvest Management4.1 *Harvest Areas*Terminal Harvest Areas

5 AAC 33.370. District 1: Neets Bay Hatchery Salmon Management Plan.

5 AAC 33.381. District 6: Wrangell Narrow-Blind Slough Terminal Harvest Area Management Plan.

5 AAC 33.383. District 7: Anita Bay Terminal Harvest Area Management Plan

Special Harvest Areas

5 AAC 40.043. Neets Bay Special Harvest Area - Behm Canal.

4.2 *Projected return this year*

| Species, Run | Release Location | Total Return | Common Property Harvest | Return to Hatchery | Broodstock Needed | Available for Cost Recovery | Terminal/ Sport Harvest |
|----------------|------------------|--------------|-------------------------|--------------------|-------------------|-----------------------------|-------------------------|
| Coho salmon | Crystal Creek | 6,300 | 3,800 | 2,500 | 150 | 2,350 | 0 |
| Chinook salmon | Crystal Creek | 3,000 | 1,400 | 1,600 | 1,000 | 600 | 0 |
| Chinook salmon | City Creek | 1,000 | 0 | 0 | 0 | 0 | 1,000 |
| Chinook salmon | Anita Bay | 11,000 | 11,000 | 0 | 0 | 0 | 0 |
| Chinook salmon | Neets Bay | 11,400 | 5,500 | 5,900 | 0 | 2,750 | 0 |

4.3 *Common property fisheries management***Commercial Fisheries**Coho salmon

Coho salmon returning to CLH are harvested by the commercial troll fishery during the spring and summer seasons after June 1st as well as the commercial drift gillnet fishery in Central Southeast Alaska waters. Terminal commercial gillnet fisheries have not occurred since 1996 and are not expected to occur unless the return is very large.

Chinook salmon

5 AAC 33.381. DISTRICT 6: WRANGELL NARROW-BLIND SLOUGH TERMINAL HARVEST AREA MANAGEMENT PLAN.

5 AAC 33.383. District 7: ANITA BAY TERMINAL HARVEST AREA MANAGEMENT PLAN provides the framework for establishing common property seine, gillnet and troll fisheries within the THA. The fishing ratio between seine and gillnet fleets and fishing start dates are determined by the Alaska Board of Fisheries. SSRAA, in conjunction with ADF&G, produces a fishing schedule every spring. The Anita Bay THA initial opening will be delayed until June 1. Beginning 5:00 a.m. Monday June 1 commercial fishing will be open concurrently for troll, drift gillnet and purse seine gear. Commercial fishing with troll gear will close at 11:59 p.m. Sunday July 12. Commercial fishing with drift gillnet and purse seine gear will close 12:00 noon Friday June 12 and a rotational fishing schedule will begin at 12:00 noon Saturday June 13. For full 2020 information and schedule of fishing by gear group see Anita Bay Terminal Harvest Area Advisory Announcement issued April 17, 2020.

<https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareasoutheast.salmon>

Personal Use Fishery

A personal use coho salmon fishery occurs annually within the Wrangell Narrows-Blind Slough THA. The fishery generally starts mid-August, is restricted to fishing on Fridays, and is open for four to five consecutive Fridays. The possession and annual limit is 25 coho salmon per household. Personal use fishermen must obtain a permit and must have a valid sport fishing license.

Sport fisheries

Coho salmon

The sport bag and possession limits for coho salmon will be the same as the Southeast Alaska regional limits, 6 coho salmon per day, and 12 in possession. Snagging of coho salmon is not permitted during the summer in Blind Slough.

Chinook salmon

During 2021, the retention of Chinook salmon is prohibited in the majority of marine waters within the Petersburg/Wrangell area from April 1 through June 14, 2021. On June 1, 2021 the sport bag and possession limits for Chinook salmon in the Wrangell Narrows-Blind Slough THA will be established by emergency order (EO) effective through July 31, 2021 in accordance with the Wrangell Narrows-Blind Slough THA Management Plan. After this period, Chinook salmon regulations for the marine waters of Wrangell Narrows will reflect the most current Southeast Alaska regional Chinook salmon regulations. The freshwaters of Blind Slough will remain open to Chinook salmon harvest year round, as described in regulation, unless more restrictive action is necessary to achieve broodstock goals.

On June 1, 2021 opportunity to harvest Chinook salmon will open in Anita Bay with bag, possession and annual limits identical to the most current Southeast Alaska regional Chinook salmon regulations.

On June 15, 2021 the opportunity to harvest Chinook salmon will open in the City Creek terminal area. Chinook salmon regulations will be established by EO effective from June 15 through July 14. During this time, the bag and possession limit will be one Chinook salmon of any size and nonresident annual limits will continue to apply. After this period, Chinook salmon regulations will revert to the most current Southeast regional Chinook salmon regulations. In the 2021 season the boundaries of the City Creek terminal area are described as the marine waters adjacent to City Creek between a marker on the Mitkof Island shore, at 56° 47.83' N. lat., 132° 51.57' W. long. to 56° 48.30' N. lat., 132° 51.50' W. long. to 56° 49.77' N. lat., 132° 55.78' W. long. (navigation buoy) and back to the Mitkof Island shore at Hungry Point (56° 49.36' N. lat., 132° 56.38' W. long.) and includes the freshwaters of City Creek.

On June 15 the sport bag and possession limit for Chinook salmon in Neets Bay will be established by EO effective through August 14, 2021. During this time, the Chinook salmon bag and possession limit will be one Chinook salmon 28 inches or greater in length and the nonresident annual limit will continue to apply. After this period, Chinook salmon regulations in Neets Bay will revert to the most current Southeast Alaska regional Chinook salmon regulations.

4.4 *Cost-recovery harvest management*

SSRAA's long-term goal is to have 75% of all fish produced harvested in common property fisheries, with the remaining 25% harvested by SSRAA to cover operating expenses. We have exceeded this goal for the past several years, in large part because of better than average survival to adult of SSRAA chum releases and perhaps even more importantly the increased value of salmon in the marketplace. Though this remains our goal, we annually adjust our cost-recovery goal related to operational and capital expenses even if it exceeds this goal, or if it falls short.

5.0 APPROVAL

Recommendation for Approval: Crystal Lake Hatchery Annual Management Plan, 2021.

David Landis, General Manager, SSRAA 6/14/2021

Paul Salomone, Area Management Biologist, Div. of Commercial Fisheries 5/27/2021

Patrick Fowler, Area Management Biologist, Div. of Sport Fish 6/14/2021

Judy Lum, Regional Supervisor, Div. of Sport Fish 5/27/2021

Lowell Fair, Regional Supervisor, Div. of Commercial Fisheries 5/27/2021

Lorraine Vercessi, PNP Hatchery Program Coordinator, Div. of Commercial Fisheries 6/14/2021

Approval:

The 2021 Annual Management Plan for Crystal Lake Hatchery is hereby approved.

Tom Taube, Deputy Director, Division of Sport Fish 6/15/2021

Peter Bangs, Assistant Director, Division of Commercial Fisheries 6/15/2021