

**2021 ANNUAL MANAGEMENT PLAN**  
**GUNNUK CREEK HATCHERY**  
NORTHERN 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. In season assessments and project alterations by Northern Southeast Regional Aquaculture Association (NSRAA) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. NSRAA 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 NSRAA. This policy applies to all hatchery operations covered under the AMP.

## **1.0 EXECUTIVE SUMMARY**

### *1.1 Background*

Gunnuk Creek Hatchery (GCH) is a private nonprofit facility, previously owned and operated by Kake Nonprofit Fisheries Corporation (KNFC) and currently owned by the Northern Southeast Regional Aquaculture Association (NSRAA). The hatchery is located in the city of Kake, on the northwest tip of Kupreanof Island. Gunnuk Creek (109-42-004) supplies the hatchery water via one 10-inch high-density polyethylene (HDPE) pipeline. Up to 5.0 cubic feet per second of water is available. In 2021, the Inside Passage Electric Cooperative completed the Gunnuk Creek Hydro Electric project. A 54" penstock supplies water to the new turbine building neighboring the Gunnuk Creek Hatchery facility. In addition to NSRAA's 10" penstock, the facility now has an 18" HDPE tap from the 54" tied into the facilities supply system.

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

In October 2020, NSRAA transported 10 million green chum eggs from Hidden Falls Hatchery (HFH) to the GCH. NSRAA plans to take 20 million green chum eggs at GCH in 2021. These eggs will be otolith marked and incubated at GCH and will be reared at and released from the Gunnuk Creek net pen site.

The GCH return in 2021 will be comprised of 3 and 4 year old chum. NSRAA plans to conduct egg takes at the facility for the first time. In 2020, returns to the hatchery were minimal and did not warrant an eggtake.1.3

*New permits or permit amendments needed this year*

## 2021 Gunnuk Creek Hatchery Annual Management Plan

All fish transport permits (FTP) are current for 2021. No new programs are anticipated at this time.

### 1.4 *Expected Returns*

Species	Release Location	Common Property Harvest	Other <sup>1</sup>	Total Return
Chum salmon	Southeast Cove SHA	158,000	0	158,000
Chum salmon	Gunnuk Creek SHA	0	77,000	77,000

<sup>1</sup> Includes cost recovery, broodstock, escapement, etc.

### 1.5 *Production Summary*

Program Name	Release Date	Life Stage	Planned Release Number
Gunnuk Creek chum salmon	May 2021	Fed fry	17,250,000
Southeast Cove chum salmon	May 2021	Fed fry	34,900,000

### 1.6 *Egg takes*

NSRAA plans to conduct an egg take at Gunnuk Creek Hatchery in 2021 on a return of 3 and 4 year old chum.

Species	Ancestral Stock(s)	Egg-take Site	Current Year Goal	Permitted Maximum
Chum salmon	Hidden Falls	GCH	20,000,000 <sup>1</sup>	65,000,000

<sup>1</sup> Alternate egg sources will be used if needed to meet maximum permitted capacity.

See Hidden Falls AMP for details on eggs taken at Hidden Falls and transferred to Southeast Cove or Gunnuk Creek Hatchery.

Species	Ancestral Stock(s)	Egg-take Site	Current Year Goal	Permitted Maximum
Chum salmon	Hidden Falls	HFH	45,000,000 <sup>1</sup>	65,000,000

<sup>1</sup> Alternate egg sources will be used if needed to meet maximum permitted capacity.

### 1.7 *Current permitting*

In 2018, NSRAA was issued PNP Hatchery Permit #50 to operate the GCH. The permitted capacity of GCH is 65 million green chum salmon eggs, 20 million green pink salmon eggs, and 500,000 green coho salmon eggs. Gunnuk Creek Hatchery may take additional chum salmon eggs for transport to Port Armstrong Hatchery or HFH, if requested.

There are no plans for coho or pink salmon production at this time.

HFH is permitted to release up to 200,000 Chinook salmon smolt at Gunnuk Creek. See

2021 Gunnuk Creek Hatchery Annual Management Plan

the HFH AMP for details about the Chinook program.

FTPs listed below are issued to Hidden Falls Hatchery:

FTP #	Ancestral Stock	Egg take, transport, or release	Transport from To	Maximal #, life stage	Expires
Chum Salmon					
17J-1019	Kadashan R	Transport, Release	HFH to GCH	20,000,000 fry	12/31/22
17J-1020	Kadashan R	Egg take	HFH <sup>1</sup>	65,000,000 eggs	12/31/22
16J-1004	Kadashan R	Egg take, Transport	GCH SHA to HFH	55,000,000 eggs	12/31/25
20J-1034	Kadashan R	Egg take, transport	GCH to HFH	101,000,000 eggs	12/31/30

<sup>1</sup> Eggs must be for GCH projects.

FTPs listed below are issued to Gunnuk Creek Hatchery:

FTP #	Ancestral Stock	Egg take, transport, or release	Transport from To	Maximal #, life stage	Expires
Chum Salmon					
19J-1020	Kadashan R	Egg take, Transport	HFH to GCH	65,000,000 eggs	12/31/29
20J-1005	Kadashan R	All	GCH	65,000,000 eggs 20,000,000 fry	12/31/29
20J-1006	Kadashan R	Transport, Release	GCH to SE Cove	55,000,000 fry	12/31/29

## 2.0 SUMMER RUN CHUM SALMON PRODUCTION

### 2.1 Egg Takes

Program Name	Ancestral Stock(s)	Egg-take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Gunnuk Creek chum salmon	Kadashan R	GCH	P	20,000,000 <sup>1</sup>	65,000,000
Southeast Cove chum salmon	Kadashan R	HFH	P	45,000,000 <sup>1</sup>	55,000,000
Species/Run Totals				65,000,000	65,000,000

<sup>1</sup> Alternate egg sources will be used if needed to meet maximum permitted capacity of 65 million green eggs.

2.2 *Broodstock capture method*

NSRAA will conduct its first egg take at GCH in 2021. Broodstock will volitionally enter Gunnuk Creek and make their way upstream to the facility location. There is an adjustable bar picket weir installed just upstream of the terminus of the fish ladder. Fish are held in raceways above the ladder until ready for spawning.

2.3 *Spawning*

Broodstock will be collected from the adult holding raceways, and eggs and sperm removed in an adjacent covered spawning area. Fertilization occurs in the spawning area; eggs are transported by elevator to the incubation room on the main hatchery level. There they are rinsed and then water-hardened in bulk R-48 type incubators. Broodstock carcasses are likely to be sold and will be iced and loaded on tenders. Attempts will be made to donate unsold carcasses prior to grinding or disposing of whole broodstock carcasses at ADEC approved disposal locations.

2.4 *Egg-take schedule*

Egg take will occur in late July through mid-August.

2.5 *Carcass disposal*

Carcass disposal is according to the DEC-approved plan. Broodstock carcass priority will be to sell to a processor, donate to local community, grind for discharge, whole carcass discharge, or, if multiple mechanical failures preclude accessing the marine disposal sites and the carcasses cannot be temporarily stored until mechanical failures are corrected to allow the third and fourth options, landfill disposal as last option. The likelihood of disposing of carcasses in the landfill is very low.

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

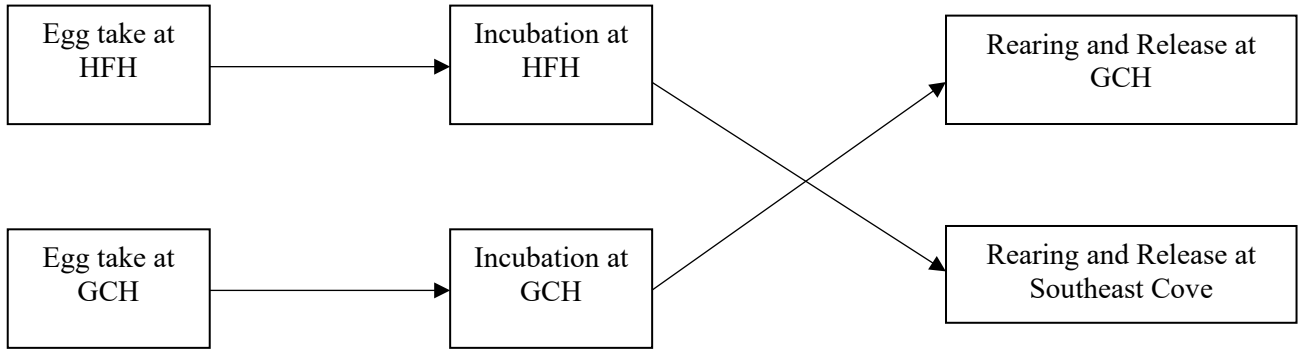
<b>Program Name</b>	<b>Brood Year</b>	<b>Release Date</b>	<b>Number to Release<sup>1</sup></b>	<b>Life Stage</b>	<b>Type of Mark, % Marked</b>
Gunnuk Creek SHA chum salmon	2020	May 2021	17,250,000	Fed fry	Otolith thermal- marked, 100%
Southeast Cove SHA chum salmon	2020	May 2021	34,900,000	Fed fry	Otolith thermal- marked 100%

<sup>1</sup> See chum salmon production table for more detail.

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

None.

2.8 *Operational diagram*



2.9 *Program details*

The purpose of the program is to provide chum salmon to the common property fishery in Frederick Sound and Chatham Strait, as well as broodstock and cost recovery for GCH.

The chum salmon program at GCH started in 1977. GCH has two chum salmon release sites, one at the hatchery, and one remote release site at Southeast Cove. All chum salmon production will be split 50/50 with a target size of 2 grams and 4 grams with releases occurring in late May to Early June.

**3.0 HARVEST MANAGEMENT**

3.1 *Special Harvest Areas*

Southeast Cove THA: Described in 5 AAC 33.387, *District 9: Southeast Cove Terminal Harvest Area Management Plan*. (Statistical Area 109-41)

Gunnuk Creek SHA: Described in 5 AAC 40.071, *District 9: Gunnuk Creek Special Harvest Area*. (Statistical area 109-40)

3.2 *Projected returns to special harvest area this year*

Species	Program	Projected Common Property Harvest	Other <sup>1</sup>	Total Projected Return, Current Year
Chum salmon	Southeast Cove SHA	158,000	0	158,000
Chum salmon	Kake SHA	0	77,000	77,000

<sup>1</sup> Includes cost recovery, broodstock, and escapement, etc.

### 3.3 *Common property fisheries management*

**Commercial fisheries:** In February 2012, Alaska Board of Fisheries supported establishing Southeast Cove SHA as a terminal harvest area (THA).

Weekly Sunday and Thursday seine openings may occur from the 3<sup>rd</sup> Sunday of June through the first Saturday in August. After the first Saturday in August, only cost recovery may occur in a very limited area due to run timing of local pink salmon stocks.

In 2021 the following harvest management strategy is being implemented:

**Seine:**

- Will open on Sundays and Thursday June 20 through August 1.

**Troll:**

- Troll opportunity will begin June 21 and end August 1. The SE Cove THA will be open for trolling all days when there are no common property seine openings.

**Sport fisheries:**

- Increased sport fishing effort may occur on salmon returning to GCH. The sport fishery will be managed by regional regulations described in codified for the waters defined by the Southeast Cove THA and Gunnuk Creek SHA. The department may use emergency order authority to address issues as they arise in-season.

### 3.4 *Cost-recovery harvest management*

Chum salmon: A moderate number of chum salmon are forecasted to return to Gunnuk Creek SHA in 2021. It is expected there will be surplus return to broodstock needs and some directed cost recovery harvest is expected to occur. No commercial openings will occur in the Gunnuk Creek SHA.

The SE Cove THA will be limited to cost recovery harvest after August 1 to minimize pink salmon interception during pink salmon management for the area. However, cost recovery is not anticipated in 2021.

2021 Gunnuk Creek Hatchery Annual Management Plan

**4.0 APPROVAL**

Recommendation for Approval: Gunnuk Creek Hatchery Annual Management Plan, 2021

Adam Olson, NSRAA 5/10/2021

Patrick Fowler, Area Management Biologist, Division of Sport Fish 5/12/2021

Paul Salomone, Area Management Biologist, Division of Commercial Fisheries 5/11/2021

Judy Lum, Regional Supervisor, Division of Sport Fish 5/13/2021

Lowell Fair, Regional Supervisor, Division of Commercial Fisheries 5/11/2021

Lorraine Vercessi, PNP Hatchery Program Coordinator, Div. of Commercial Fisheries 5/11/2021

**Approval:**

The 2021 Gunnuk Creek Hatchery Annual Management Plan is hereby approved:

Tom Taube, Deputy Director, Division of Sport Fish 6/7/2021

Peter Bangs, Assistant Director, Division of Commercial Fisheries 6/2/2021

LIST OF APPENDICES

Appendix	Page
1. Historical KNFC Production Tables	10-12

LIST OF FIGURES

Figure	Page
1. Location of Gunnuk Creek Hatchery and Southeast Cove Special Harvest Area (THA/SHA), in Southeast Alaska	13



2021 Gunnuk Creek Hatchery Annual Management Plan

**Appendix 1.–Production Tables.**

BY	Eggs Collected	Releases		Return Year	Cost Recovery		Common Property		Hatchery return
		Southeast Cove SHA	Kake SHA		Kake SHA	Southeast Cove	Kake SHA	Southeast Cove	
1978	10,000		3,000						
1979	16,000		1,000						
1980	129,000		0						
1981	0		0						
1982	831,000		608,000						
1983	1,070,000		55,000						
1984	2,000,000		1,982,000		2,851		900		5,322
1985	8,400,000		8,110,000		19,638		2,518		46,721
1986	10,930,000		10,825,000		29,033		912		49,270
1987	10,856,000		10,752,000		37,111		1,536		58,825
1988	10,216,000		9,880,000		41,245		18,233		95,395
1989	12,008,000		5,644,000		9,755		18,337		48,012
1990	14,305,000		7,054,000		10,467		14,610		72,471
1991	14,256,000		13,119,000		30,031		2,085		65,619
1992	16,495,000		15,073,000		291,041		40,203		557,828
1993	16,292,000		13,981,000		241,768		43,056		365,983
1994	21,046,000	8,198,485	6,260,447		98,407		73,858		369,637
1995	43,932,000	28,914,600	6,744,470		251,153		128,194		512,968
1996	51,742,000	36,244,635	6,177,285		519,795		168,737		835,524
1997	66,739,700	47,528,221	6,360,760		323,395		41,390		364,839
1998	54,237,000	36,156,200	6,522,900		203,449		0		203,449
1999	70,614,000	54,526,806	6,395,219	1999	70,538	229,210	10,581	34,382	344,711
2000	71,560,000	36,941,430	6,476,062	2000	186,544	429,053	62,675	122,650	800,922
2001	54,250,920	34,951,864	6,476,062	2001	84,383	228,615	9,896	25,956	348,850
2002	44,655,000	31,841,655	6,556,146	2002	58,948	243,830	25,600	104,323	432,701
2003	75,783,000	45,234,731	6,562,396	2003	105,414	1,219,839	11,813	135,538	1,472,604
2004	36,208,000	23,469,265	6,710,670	2004	54,708	596,561	21,883	197,861	871,013
2005	24,814,468	0	5,086,391	2005	42,283	79,025	16,952	0	138,260
2006	45,884,872	26,802,293	8,876,563	2006	76,895	145,375	32,332	62,556	317,158
2007	24,740,082	9,717,483	8,651,228	2007	31,364	25,523	13,161	10,769	80,817
2008	7,607,960	1,000,000	6,112,117	2008	6,942	2,579	1,041	387	10,949
2009	55,000,000	46,395,837	8,000,000	2009	8,492	2,092	3,385	837	14,806
2010	17,309,590	9,000,000	6,000,000	2010	3,000	200	19,479	22,000	44,679
2011	30,000,000	22,000,000	8,000,000	2011	209	7,120	61,463	18,512	18,783
2012	55,151,585	18,446,625	7,289,595	2012	100	22,000	33,001	32,345	67,441

Notes:

- 1978–1998 numbers from 2004 AMP; some return data missing thru 1988.
- 1980 - Eggs destroyed in 1980 due to septicemia brought on by ammonia toxicity.
- 1981 - Hatchery built.
- 1976–1979 - Operated under a scientific-educational permit with Kake School district. Few eggs and few records kept.
- 1984–1987, 2001, 2009, 2010 - Received some eyed eggs from Hidden Falls Hatchery and/or Port Armstrong Hatchery.
- 1999 - Present production numbers from web page. Web page reports returns by return year and does not break down to brood year.
- 2000 - Old dam failure.
- 2001–2006 - Hatchery on temporary pipeline intake.
- 2006–2007 - New Gunnuk Dam construction.
- 2008 - Hatchery online in new dam.
- 2010 - Very hot drought conditions affected return (creek very dry).

2021 Gunnuk Creek Hatchery Annual Management Plan

**Appendix 1 (continued).**

Pink salmon production Gunnuk Creek Hatchery (KNFC)

BY	Eggs Collected	Releases	Returns from Annual Report			% OS
		Kake SHA	Estimated CPH	Hatchery	Total BY Returns	
1976 <sup>a</sup>	0	0				
1977	30,000	5,000				
1978	0	0				
1979	0	0				
1980 <sup>b</sup>	16,000	0				
1981	0	0				
1982	1,018,000	270,000				
1983	1,044,000	103,000			1,000	1.0%
1984	0	0				0.0%
1985	3,300,000	3,066,000	6,000	17,830	56,000	1.8%
1986	3,076,000	2,874,000	10,000	28,235	43,330	1.5%
1987	4,498,000	4,160,000	6,000	33,293	58,041	1.4%
1988	4,486,000	4,193,000	45,000	68,400	194,655	4.6%
1989	5,992,000	3,883,000	64,900	52,654	155,090	4.0%
1990	7,170,000	6,422,000	91,840	32,169	150,855	2.3%
1991	5,981,000	5,597,000	14,000	4,900	40,310	0.7%
1992	6,029,000	5,486,000	139,415	65,590	268,825	4.9%
1993	2,267,000	1,996,000	16,900	940	33,800	1.7%
1994 <sup>c</sup>	Program discontinued					
2007 <sup>d</sup>	5,989,628	341,245	17,991	27,729	45,720	13.4%
2008	1,819,738	1,637,764	17,797	97,859	115,656	7.1%
2009	9,575,429	9,000,000	195,673	49,327	245,000	2.7%
2010	20,239,999	18,239,275	101,241	94,901	196,142	1.1%
2011	17,003,254	15,836,693				
2012	19,987,327	18,000,000				

<sup>a</sup> 1976–1999 operated as Science and Educational facility with the Kake School district. Few eggs collected and few records kept.

<sup>b</sup> All alevins were destroyed on demand of ADF&G due to bacterial septicemia brought on by ammonia toxicity.

<sup>c</sup> All data from 1976–1994 came from 2004 AMP.

<sup>d</sup> Bulk of fish released in the Southeast Cove SHA.

2021 Gunnuk Creek Hatchery Annual Management Plan

**Appendix 1 (continued).**  
**Coho salmon production**

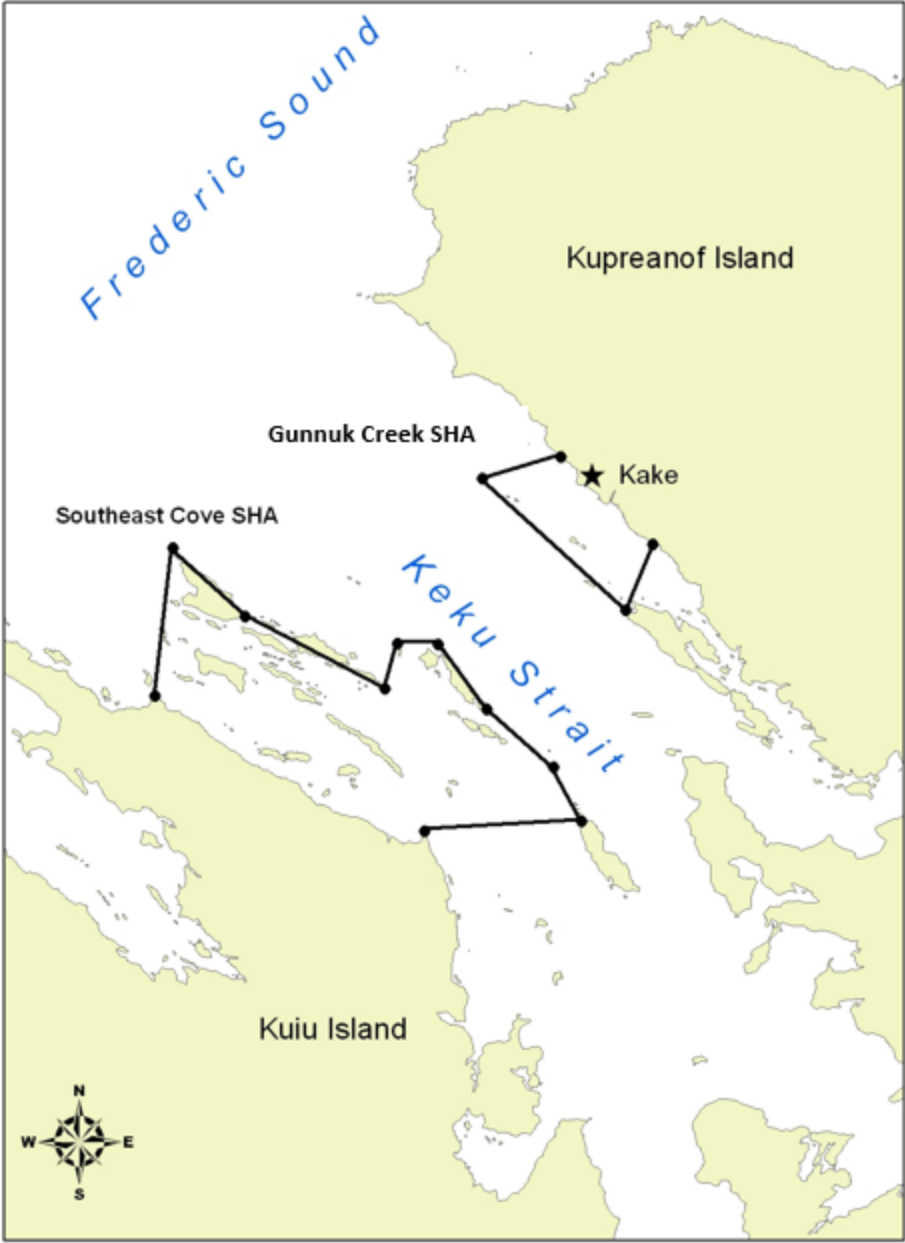
Brood Year	Eggs Collected	Releases		Returns from Annual Report			Percent Ocean Survival
		Traditional Rearing	Zero-Check	Estimated Common Property	Hatchery	Total Returns by Brood Year	
1994	50,000	35,000	0	482		964	2.75%
1995	40,000	35,000	0	653		1,306	3.73%
1996	0	0	0	0		0	0.00%
1997	0	0	0	0		0	0.00%
1998	15,000	13,000	0	170		340	2.62%
1999	47,000	33,000	0	420		840	2.55%
2000	0	0	0	0		0	0.00%
2001	72,920	0	59,573	745		745	1.25%
2002	0	0	0	0		0	0.00%
2003	0	0	0	0		0	0.00%
2004	0	0	0	0		0	0.00%
2005	25,000	4,143	8,000	25	64	89	0.73%
2006	28,759	1,025	18,232	100	101	201	1.04%
2007	25,000	8,803	9,180	238	250	488	2.71%
2008	50,000	35,978	0	2,274	2,561	4,835	10.52%
2009	135,000	98,272	0	4,906	2,563	7,469	7.60%
2010	260,665	91,385	25,000				
2011	507,736	456,962					
Average (BY05 to present)							4.76%

BY94–00 data from 2004 AMP.

1994–2004 all fry releases for USFS projects at Portage Bay Creek and Duncan Creek.

BY05–current have been smolt releases at GCH.

# Gunnuk Creek Hatchery SHAs



**Figure 1–Location of Gunnuk Creek Hatchery and Southeast Cove Special Harvest Area (SHA), in Southeast Alaska.**