BASIC MANAGEMENT PLAN
Port Saint Nicholas Hatchery
Southern Southeast Regional Aquaculture Association

I. Introduction

Port Saint Nicholas Hatchery (PSNH) is located beside the Craig Water Treatment Facility at mile 5 Port Saint Nicholas Road. Location coordinates are: 55°27.371′N lat, 133°00.135′W long. Elevation of the hatchery is 60 feet above sea level. The hatchery is located on a 70 ft by 120 ft parcel of land owned by the city of Craig. The water source is North Fork Lake, which is also the source of Craig's domestic potable water. The hatchery's water is delivered via a steel 12-inch pipeline, shared with the water treatment facility. The unrestricted flow capacity of this line is approximately 26.7 to 35.6 cubic feet per second (cfs).

In 2004, Prince of Wales Hatchery Association (POWHA) built PSNH and operated the facility under private nonprofit hatchery permit number 43. Through the operation of PSNH, POWHA has worked closely with the Southern Southeast Regional Aquaculture Association (SSRAA). In 2015, POWHA notified the state of their decision to relinquish their hatchery permit contingent upon approval of a permit for SSRAA to operate PSNH. In March 2016, SSRAA submitted a PNP hatchery permit application proposing to operate PSNH. This basic management plan (BMP) describes SSRAA's planned operations and management of PSNH production, with a maximum permitted capacity of 770,000 king salmon green eggs and 8 million chum salmon green eggs.

II. Goals

2.1 Production Goals

PSNH was designed as a king salmon incubation facility, with egg takes occurring offsite. King salmon egg takes occur at SSRAA's Whitman Lake Hatchery (WLH) in Ketchikan, Alaska.

In 2014, 8 million summer-run stock chum salmon green eggs were added to the permitted capacity for PSNH. Chum salmon egg takes will most likely occur at SSRAA's Burnett Inlet Hatchery (BIH).

Eggs will be collected offsite, incubated to the eyed stage, and transferred to PSNH. Annual production goals may vary from year to year depending on availability, but capacities reflected below indicate maximum egg-take goals for PSNH.

Maximum permitted capacity: 770,000 king salmon eggs and 8 million chum salmon green eggs.

2.2 Broodstock Source

The king salmon broodstock source for PSNH production is existing returns to WLH. The ancestral broodstock source for WLH king salmon is Chickamin River. Unuk River king salmon broodstock may be used as a backup for the Coffman Cove program. Port Armstrong Hatchery may provide Unuk River stock king salmon eggs to PSNH.

The broodstock source for the summer chum salmon program is BIH. The ancestral broodstock source for BIH chum salmon program is Carroll River.

Details of brood programs can be found in the respective hatchery annual management plans (AMPs).

2.3 Broodstock Development

The WLH and BIH broodstock programs are developed.

2.4 Release numbers and locations

The resultant progeny of up to 770,000 king salmon green eggs may be transferred to saltwater net pens in Port Saint Nicholas for rearing and release. Progeny from up to 385,000 green eggs incubated at PSNH may be transferred to net pens in Coffman Cove for additional rearing and release.

The progeny of up to 8 million chum salmon green eggs may be transported to a remote release site at Port Asumcion for short-term saltwater rearing and release.

Fish transport permits and AMPs may further limit release numbers at each location.

2.5 Principal Project Goals

The objective of the king salmon program is to contribute to common property harvest throughout Southeast Alaska. The return of fish from April to early July provides sport fishery harvest opportunities, resulting in increased revenue for guided fishing businesses and related monetary impacts to the island economy. PSNH king salmon returns also contribute to the troll fishery and a limited cost recovery harvest for the hatchery.

Chum salmon production is intended to be for cost-recovery harvest. Chum salmon returns may be intercepted in the commercial troll and seine common property fisheries.

2.6 Annual Fish Culture Objectives

1) Coordinate with egg-take facilities to achieve annual egg-take and release goals for all sites.
2) Maximize egg to fry survival to attain 68% or better over the life of the program.
3) Produce quality fry and smolt for release at optimum ocean conditions each year, and thereby maximize marine survival.
4) Maximize facility efficiency and benefit-to-cost ratio.
5) Maximize contribution to common property fisheries.
6) Share knowledge of program with agencies through publications, presentations at conferences, and interaction with local colleges, schools, and colleagues in the Pacific Northwest.

III. Hatchery Operations

3.1 Water Supply and Distribution

The hatchery water source is North Fork Lake; geographical coordinates 55°27.171′N lat, 132°57.290′W long. The lake is 30 ft deep at its deepest point. Substrate consists primarily of mud/organic matter. The North Fork drainage area encompasses approximately 3 square miles. Annual rainfall near the project averages 114 inches per year. Flows in North Fork Creek can vary from little flow during cold, dry spells, to in excess of 100 cfs during snowmelt and the rainy season.

Water for the hatchery is provided by the City of Craig's 12-inch steel pipeline that supplies raw water from North Fork Lake to the water plant located at 5.3-mile Port St. Nicholas Road. At the lake elevation of 600 ft, water enters a 5-foot wide by 9-foot long concrete intake chamber with a provision for rough screening of larger organic matter on the south side of the diversion weir. A 6-inch bypass providing 1.56 cfs has been installed at the diversion to maintain minimum instream flows to provide maintenance of fish habitat in the downstream regions.

The PSNH is a flow-through hatchery with chilled and heated water recirculation capabilities.

Treatment of incoming water is not required, other than rough organics removal and degassing. Effluent treatment consists of removing 90% of the solid waste with swirl tank separators as a

component of the circular rearing tanks. The solids are flushed and diverted into existing settling ponds that are currently servicing the water treatment plant. Any remaining cleared effluent is diverted via the water plant's normal drainage route.

3.2 Facility Description

The PSNH facility includes a hatchery building for incubation, feed storage, an office, and mechanical building. Net pen complexes are offsite for saltwater rearing at Port Saint Nicholas and Coffman Cove.

This building is subdivided into appropriate space requirements. The incubation room contains Kitoi Box-style incubators with provisions for short-term, indoor, fry ponding and rearing. Outdoor rearing requirements are met with round ponds, 5 ft to 6 ft in depth, with adjustable water level mechanisms to provide ultimate density and exchange rate control. Bottled gas and an oxygen generator provide supplemental oxygen to serve individual round ponds on demand.

3.3 Fish Culture

All fish cultural procedures followed at PSNH will conform to all applicable ADF&G fish health protocols and policies. Hatchery staff will be familiar with the signs of common fish diseases and will continuously monitor hatchery stocks to detect disease outbreaks. Outbreaks will be reported immediately to the ADF&G Fish Pathology Section, and their recommendations will be followed.

3.3.1 King salmon

The egg takes are performed in late summer (typically August) at WLH, the spawning ratio is one male to one female. All fish are first disinfected with iodine solution then stripped or bucked into a disinfected container. Following fertilization, eggs are rinsed in fresh water and water-hardened in an iodine solution for one hour. Fertilized eggs are incubated in Heath-style trays to the eyed stage. Egg inventory is estimated at egg take based on assumed fecundity. Females may be sampled for bacterial kidney disease (BKD). Each paired family will then be tracked and eggs will be discarded if state pathology lab BKD analysis detects high antigen levels. Eyed eggs may be re-enumerated at pick, after discarding nonviable eggs.

Eyed eggs are transported to the PSNH, typically in October, for further chilled water recirculation incubation to hatch. Fry are ponded into circular tanks in May. Fry for release at Coffman Cove are reared to smolt at PSNH in freshwater until spring of the following year, transported to Coffman Cove saltwater net pens for short-term rearing and release. Fry for release at Port Saint Nicholas may be reared in freshwater at PSNH until transport to netpens in the spring of the following year. Fry for release at PSN may be placed in saltwater net pens in Port Saint Nicholas in October for overwinter rearing for release in May. All smolt are transported via tank truck to net pens, which are then moved to the remote release locations. While rearing in the net pens, fish will be fed a commercial fish feed diet. The production goal is to release healthy 25–30 gram king salmon smolt.

3.3.2 Chum salmon

Chum salmon gametes will be collected at BIH using standard egg-take procedures. At the eyed stage of development, eggs will be shocked and picked. Live eggs will be enumerated prior to transport to PSNH.

Eyed eggs will be incubated through hatch and ponding, at PSNH. At swim-up, juvenile chum salmon will be transported to saltwater net pens at Port Asumcion for short-term rearing and release. While rearing in the net pens, fish will be fed a commercial fish feed diet.

IV. Fisheries Management

PSNH has only been releasing king salmon since 2007, so return data is limited. King salmon produced at PSNH have contributed to common property fisheries in the last several years based on coded wire tag recoveries. The majority of the tags recovered were found in the Craig and Sitka areas, but recoveries also occurred in Ketchikan and Petersburg.

Contribution to common property fisheries would be limited to directed fisheries within the Port Asumcion SHA.

4.1 Commercial Fisheries

4.1.1 King salmon

The troll fleet harvests the majority of king salmon released from Port Saint Nicholas, while the gillnet fleet harvests the majority of king salmon released from Coffman Cove. Commercial fisheries specifically targeting these fish are not planned at this time. It is anticipated that commercial fisheries on the west coast of Prince of Wales Island, Clarence Strait, Sumner Strait, and District 113 troll fishery will intercept returning PSNH king salmon. No changes to existing fisheries will occur to protect king salmon returning to PSNH.

4.1.2 Chum salmon

Chum salmon produced at PSNH are planned to provide a cost recovery opportunity for POWHA. Commercial fisheries specifically targeting PSNH chum salmon returns to Port Asumcion will be limited to within the Port Asumcion Special Harvest Area (SHA).

4.2 Special Harvest Areas

A hatchery operator may harvest hatchery-produced salmon in in a special harvest area (SHA), as provided in 5 AAC 40.005–40.015.

The PNP operator must notify the Division of Commercial Fisheries Area Management Biologist (CF AMB) in Ketchikan prior to cost recovery harvest in the Port Saint Nicholas SHA, or the CF AMB in Petersburg prior to cost recovery harvest in Coffman Cove. The Department reserves

the right not to open the SHA or to close the area to cost recovery harvest if the Department determines cost recovery harvest is adversely impacting the escapement of wild salmon stocks.

Maps of the Port Saint Nicholas Special Harvest Area, Coffman Cove Special Harvest Area, and the Port Asumcion Special Harvest Area can be found in Figures 1–3.

4.2.1 Port Saint Nicholas Special Harvest Area

The Port Saint Nicholas Special Harvest Area is described in 5 AAC 40.053 as follows:

> (a) There is established the Port Saint Nicholas Special Harvest Area, consisting of all waters of Port Saint Nicholas east of 133°02.92′W longitude and west of 132°59.50′W longitude, located at the mouth of the Port Saint Nicholas headstream.
> (b) A hatchery permit holder harvesting salmon within the special harvest area is exempt from the provisions of 5 AAC 33.310. Fishing periods for the hatchery permit holder will be open from May 1 through August 15, unless closed earlier by emergency order.
> (c) Notwithstanding 5 AAC 33.330, legal gear for the hatchery permit holder in the special harvest area is purse seine, beach seine, and dipnet.

Fishing periods and legal gear for cost recovery harvest in the Port Saint Nicholas Hatchery SHA may be modified for the hatchery permit holder by emergency order (EO), as needed.

4.2.2 Coffman Cove Special Harvest Area

The department may authorize cost recovery of king salmon if it is determined there are king salmon in excess of sport and commercial fishing needs; excess fish need to be harvested to prevent straying. If this were to happen, the department would issue an inseason EO that establishes, under the provisions of 5 AAC 40.005, the Coffman Cove SHA. The SHA consists of the waters of Coffman Cove south of 56°00.69′N latitude. Fishing periods for the hatchery permit holder will be opened and closed by EO and could occur from 12:01 a.m. Saturday, June 1, through Wednesday, July 31, 2016. Legal gear would be drift gillnets (with a minimum mesh size of 6-inches) and beach seines.

Fishing periods and legal gear for cost recovery harvest in the SHA may be modified for the hatchery permit holder by EO, as needed.

4.2.3 Port Asumcion Special Harvest Area

The hatchery SHA for Port Asumcion is designated as all waters within Port Asumcion north and west of a line from Point Cosinas located at 55°21.789’N latitude 133°30.645W longitude to a point west of Point Maria located at 55°2.040’N latitude 133°30.256’W longitude.

The department may authorize cost recovery of chum salmon if it is determined there are chum salmon in excess of sport and commercial fishing needs; excess fish need to be harvested to prevent straying. If this were to happen, the department would issue an inseason EO that

establishes an SHA, under the provisions of 5 AAC 40.005. Fishing periods and legal gear for cost recovery harvest in the SHA may be modified for the hatchery permit holder by EO, as needed.

4.3 Sport Fishery

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

4.3.1 Saltwater Sport Fisheries

King salmon returning to PSNH release sites are harvested in the saltwater sport fishery of Southeast Alaska with the majority of harvest occurring around POW. Additional harvest occurs in small terminal harvest area fisheries at the head of Port Saint Nicholas and Coffman Cove that consists of shore and boat anglers, however little effort, catch, and harvest data is available from these fisheries. The department may use EO authority to address issues inseason.

Chum salmon released at Port Asumcion may be caught incidentally, but will not likely be targeted in marine sport fisheries.

4.3.2 Freshwater Sport Fisheries

A regional regulation prohibiting king salmon fishing in freshwater applies to the creeks that flow into Port Saint Nicholas and Coffman Cove. A sport fishery is not anticipated in fresh water. However, should a sport fishery develop on adults returning to Port Saint Nicholas Creek or Coffman Cove, ADF&G would have EO authority to implement increases in bag limits or liberalize methods and means of harvest inseason.

4.4 Personal Use Fisheries

If deemed necessary by either the department or SSRAA, to achieve full utilization of king salmon returning to the Port Saint Nicholas release location, a personal use fishery can be authorized by EO per 5AAC 77.685. A personal use fishery would be open in the SHA, or a portion of the SHA, and would allow both dip net and beach seine gear. Daily and annual limits would be set by ADF&G, in consultation with SSRAA.

V. Special Operational Requirements

5.1 Coded Wire Tagging

In order to estimate contribution rates of PSNH king salmon to common property fisheries the king salmon released will be finclipped and coded wire tagged at a rate to be determined by the department and detailed in the AMP (typically, the lesser of 20% of the release number or 30,000 fish). All groups of released fish will be reported to the ADF&G Mark, Tag, and Age Laboratory (MTA Lab).

Tag recoveries in commercial fisheries (port sampling program), sport fisheries (creel census program), and the contribution estimates generated by ADF&G will be used in all marine survival calculations. Heads from coho salmon missing adipose fins will be recovered in the escapement in conjunction with cost recovery, terminal harvest, and egg take operations; all heads will be sent to the MTA Lab for processing. Escapement and survival data will be reported to ADF&G in an annual report.

5.2 Otolith Marking

Chum salmon eggs incubated at PSNH may be otolith marked at a rate of 100%. Though the department does not currently have a broad program to sample common property harvests for marked otoliths to determine contribution rates, otolith marking will allow for assessment of contribution in other mark recovery programs and presence of stray hatchery returns in local streams.

WLH hatchery is assigned and applies a unique thermal mark for the king salmon egg otoliths, including the eggs transferred to PSNH.

5.3 Escapement Monitoring

Weirs have been run at Port Saint Nicholas Creek and Coffman Cove Creek to block and collect returning adult king salmon. Operation of the weirs, if necessary, is described in the AMP. Other weir operation requirements detailed in the AMP include installation and removal dates, and instructions on data and reporting requirements.

5.3.1 Port Saint Nicholas

A weir, or similar fish-tight structure, will be installed at the terminus of Port Saint Nicholas Creek to prevent returning king salmon that enter the creek from transiting to upstream spawning habitat. The structure will be located at approximately 55°26′59″N lat, 132°59′30″W long, approximately 100-feet upstream of the saltwater sport fishing boundary, as determined and marked by ADF&G.

The weir will be operated from May 1 through August 31 of each year. The configuration of the weir and its picket spacing must allow passage of migrating wild stocks of steelhead, Dolly Varden char, pink, chum and coho salmon. King salmon intercepted at the weir are to be removed and sold for cost recovery or donated to the public.

5.3.2 Coffman Cove

A fish weir or similar device will be deployed in Coffman Cove Creek to block and collect returning adults. The weir will be located 100-yards downstream of the bridge on the road to Coffman Cove.

VI. Approval

The Basic Management Plan for the Port Saint Nicholas Hatchery is hereby approved.

_____ _____

Scott Kelley Date
Alaska Department of Fish and Game
Director, Division of Commercial Fisheries

_____ _____

Tom Brookover Date
Alaska Department of Fish and Game
Director, Division of Sport Fish

VII. Maps

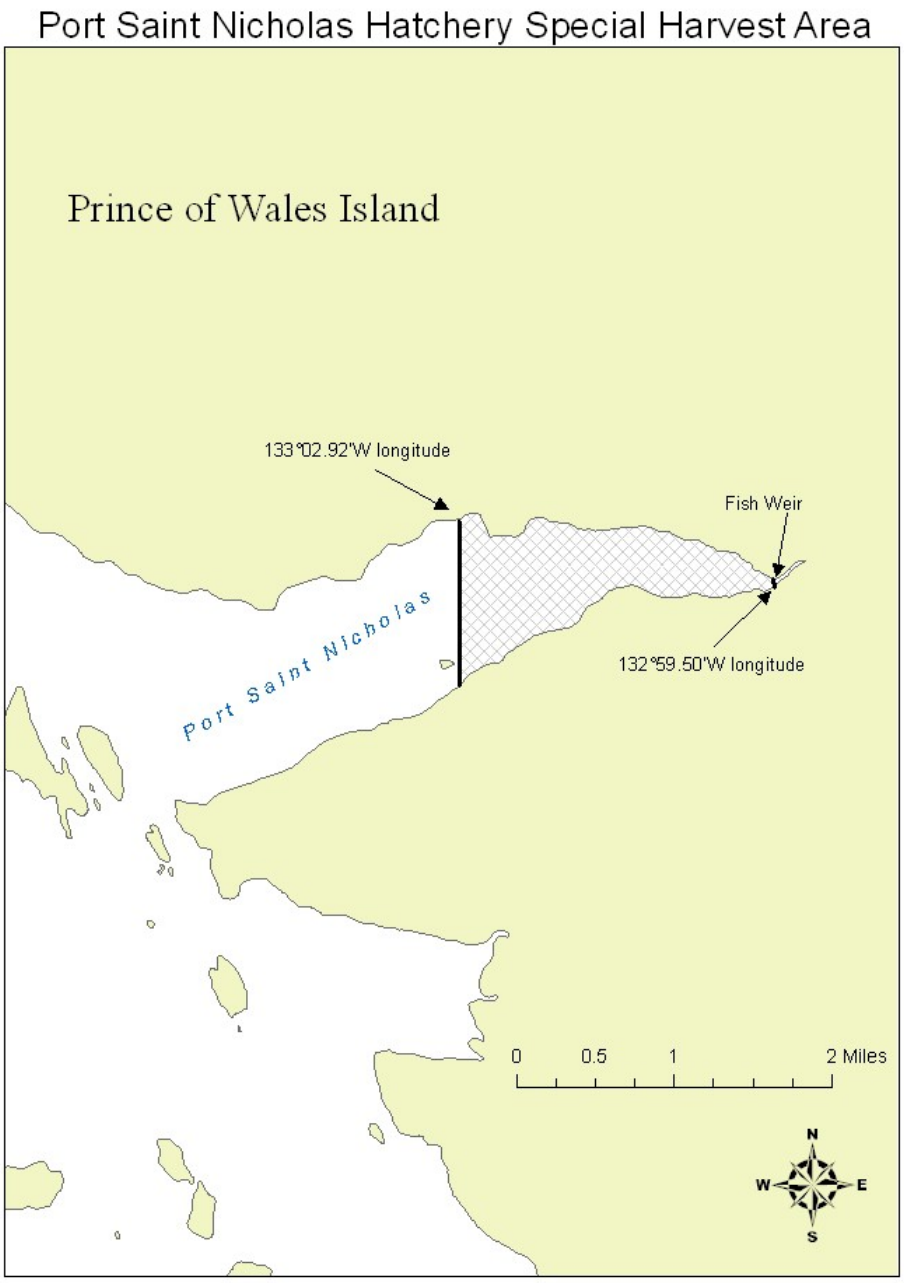

Figure 1. – Port Saint Nicholas Hatchery Special Harvest Area.

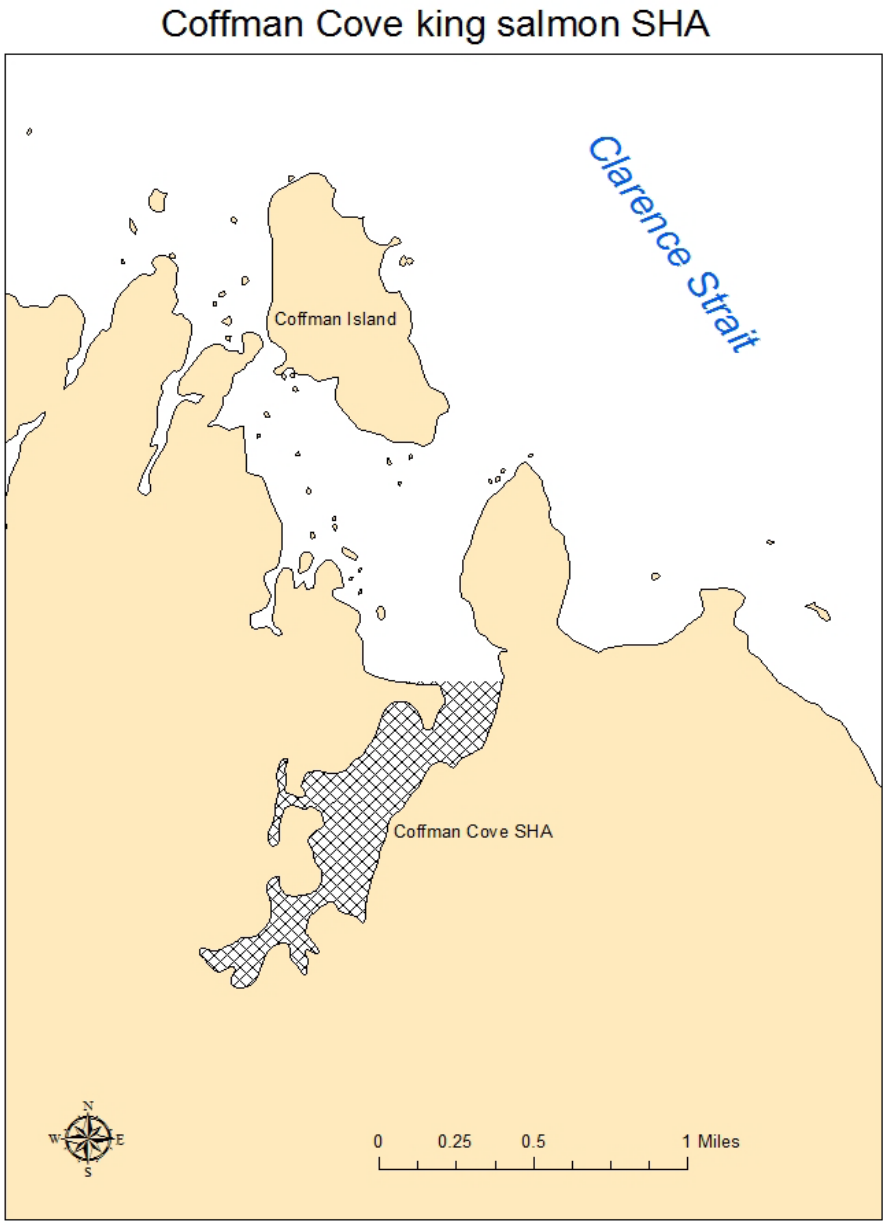

Figure 2. – Coffman Cove Special Harvest Area.

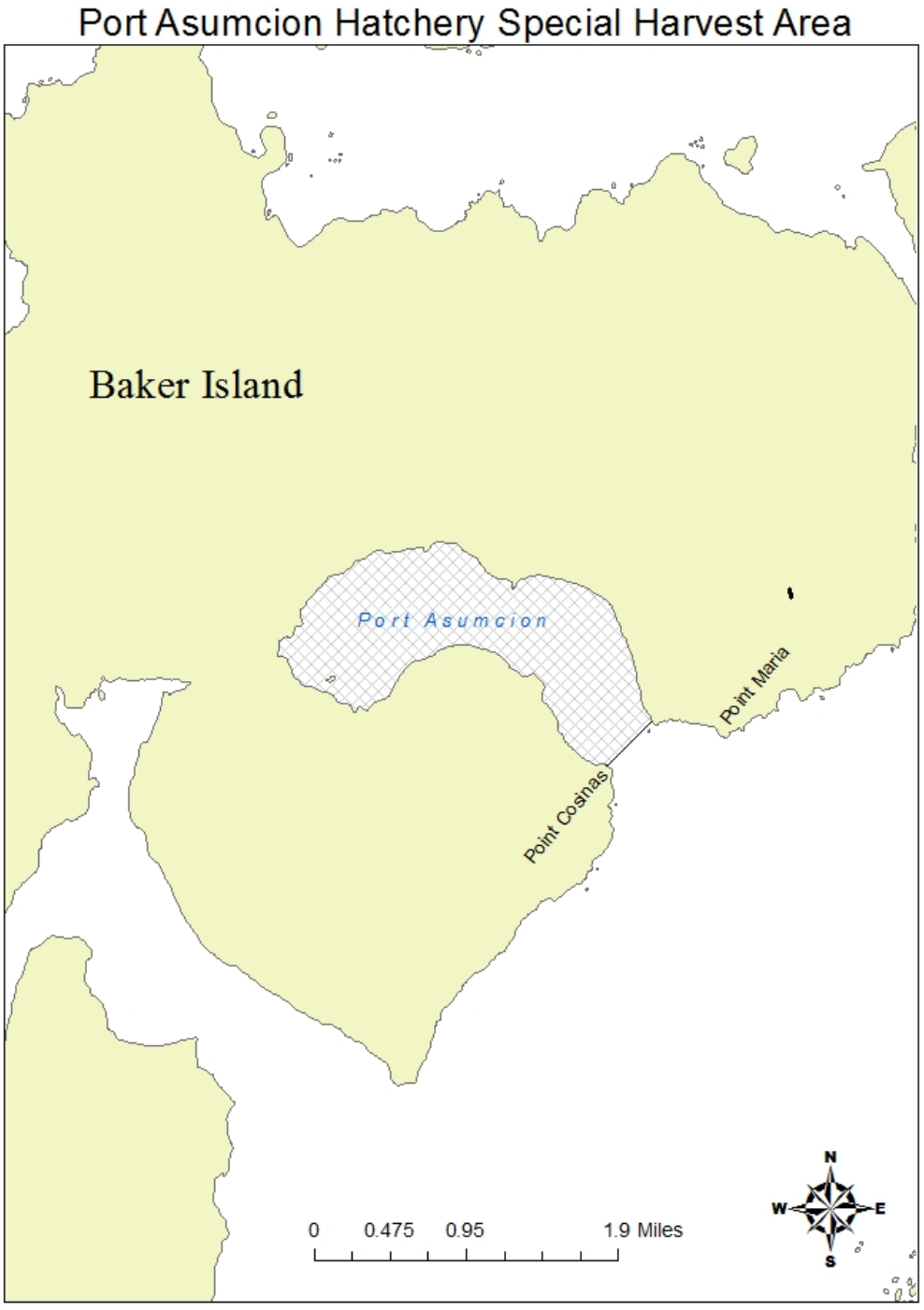

Figure 3 – Port Asumcion Special Harvest Area.