APPLICATION
PRIVATE NONPROFIT SALMON HATCHERY PERMIT
STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

COMMERCIAL FISHERIES DIVISION
P.O. Box 115526
JUNEAU, ALASKA 99811-5526

GENERAL INSTRUCTIONS

1. Fill in the blanks on the form provided.

2. Where necessary to fully answer a particular question, attach additional pages marked with the corresponding appendix number in the application.

3. Applications **Must Be Typed**.

4. Applications must be signed by the legally authorized representative of the corporate applicant.

5. The application should be sent to the following address:

   STATE OF ALASKA
   DEPARTMENT OF FISH AND GAME
   COMMERCIAL FISHERIES DIVISION
   P.O. Box 115526
   JUNEAU, ALASKA 99811-5526

   ATTENTION:
   PNP HATCHERY PROGRAM COORDINATOR

6. Requests for assistance in preparation of the application or related activities should be directed to the PNP Hatchery Program Coordinator. Such requests will be honored to the extent available staff time and funds permit.

7. This application must be accompanied by a **management feasibility analysis** (MFA) prepared by the department in accordance with 5 AAC 40.130.

8. The application must be accompanied by a $100 nonrefundable application fee, in accordance with AS 16.10.400.

(Rev. 10/2011)

APPLICATION
PRIVATE NONPROFIT SALMON HATCHERY PERMIT

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

I. IDENTIFICATION OF APPLICANT

A. Private Nonprofit Corporation

Name: Southern Southeast Regional Aquaculture Association

Address: 14 Borch Street

Ketchikan, AK 99901

Phone: (907) 225-9605

(Please attach a copy of Articles of Incorporation for the above nonprofit corporation organized in accordance with Alaska Statute 10.20)

B. Individual Completing This Form

Name: Matt W. Allen

Address: 1158 Salmon Row
Ketchikan, AK 99901

Phone: (907)-225-9606

C. Relation to Above Nonprofit Corporation

Deer Mountain Hatchery Manager

II. STATEMENT OF APPLICANT'S GOALS AND OBJECTIVES

Explain why you have decided to apply for a hatchery permit and what you generally expect to accomplish by the operation of the proposed hatchery.

Southern Southeast Regional Aquaculture Association is currently operating the Deer Mountain Hatchery as an extension of Whitman Lake Hatchery. Deer Mountain is a single species hatchery producing approximately 500,000 chinook smolt for release in Carroll Inlet and Ketchikan Creek.

Whitman Lake currently functions as a brood stock/egg collection and central incubation facility for all of SSRAA's chinook programs. The main purpose for obtaining a hatchery permit would be to allow for the flexibility of on-site collection, incubation, and hatching part of or in total, all the eggs needed to meet Deer Mountain production goals. Deer Mountain Hatchery will also act as a backup brood facility in the event Whitman Lake Hatchery encounters a brood stock shortfall.

The Deer Mountain Hatchery will have the additional goals of conducting tourism operations, community outreach, and education in line with SSRAA's mission statement and recent facility upgrades. The Deer Mountain Hatchery will also be constructing a new pathology and otolith lab within the existing facility which will enhance our efforts in monitoring fish health and determining SSRAA contributions to common property fisheries.

III. PRODUCTION GOALS AND HATCHERY SITE INFORMATION

A. Egg Capacities by species	Millions of eggs required for hatchery at start-up	at capacity
Chinook Salmon, *Oncorhynchus tshawytscha*	560,000	600,000

B. Location Description

1. Site (stream and/or lake name, ADF&G stream number, and exact geographical coordinates)

Ketchikan, Alaska
Ketchikan Creek, ADF&G Stream Number 101-47-10250
55 degrees 20’35.93” N 131 degrees 38’06.44” W, Elevation 76ft

2. Site Physical Description (attach topographic map and photographs of proposed site).

The existing hatchery was built in 1954 by the Ketchikan Chamber of Commerce with proceeds from the Ketchikan King Salmon Derby.

a. Topography

b. **Geology**

c. Soils
The hatchery site consists of crushed rock, sand and concrete.

C. Current Land Use and Ownership Status

1. Have the land or usage rights been acquired?

YES

2. What is (will be) the legal form of any usage rights?

See Appendix

Transfer of Water Rights Certificates of Appropriation, ADL 43930 and ADL 43932, Easement for Fish Ladder, Easement for Water Line, Quit Claim Deed, Agreement to Convey the Deer Mountain Fish Hatchery and Easements.

3. Use Permits (land and water): List the additional state and federal permits needed by the applicant to build and operate the proposed hatchery. Examples may include: U.S. Army Corps of Engineers Permit; Department of Natural Resources Water Use, Land Use, and Tidelands Lease Permits; and U.S. Forest Service Land Use Permit.

Deer Mountain Hatchery

State of Alaska Certificate of Appropriations of Water #471
State of Alaska Certificate of Appropriation of Water # 472(Amended)
Transfer of Water Right Certificates of Appropriation, ADL 43930 and ADL 43932 – December 31, 2014
Easement for Water Line, Document 2014-002940-0 – September 23, 2014
Quitclaim Deed, Document 2014-002938-0 – November 19, 2014
Easement for Fish Ladder, Document 2014-002939-0 – September 23, 2014
Agreement to Convey the Deer Mountain Fish Hatchery and Easements, Document 2014-002937-0 – September 23, 2014

Carroll Inlet Remote Release Site

Department of the Army Regulatory Division, Letter of Permission
File Number POA-1980-28
Department of Natural Resources Land Use Permit, LAS 30496 – February 25, 2016
Memorandum of Understanding between Southeast Alaska Power Agency (SEAPA) and Southern Southeast Regional Aquaculture Association (SSRAA)

D. Water Supply

The water quantity, minimum and maximum temperatures, and the amounts of silt loading will be critical factors in the evaluation of water supply adequacy.

1. Source (e.g., lake, stream, well, spring). Have the water usage rights been acquired?

The water supplying Deer Mountain Hatchery is effluent water from the Ketchikan Public Utilities, (KPU), Hydroelectric plant which is supplied by Ketchikan Lakes, Granite Basin and Fawn Lakes.
Water rights have been acquired, see Transfer of Water Right Certificates of Appropriation, ADL 43930 and ADL 43932.

2. Water source characteristic (e.g., substrate, size of drainage area, gradient, ground water characteristics).

The overall size of the drainage supplying water to the KPU Hydro Project at Ketchikan Lakes, Granite Basin and Fawn Lake is approximately 10.53 sq. miles. The drainage area for Ketchikan Lakes is 8.15 sq. miles, Granite Basin 2.33 sq. miles and Fawn Lake 0.05 sq. miles.

3. Water quality characteristics (in every case, cite the qualifications of the individual making the assessment and the method(s) used).

The Deer Mountain Hatchery has a well-established history of salmonid production; the water quality characteristics and suitability for planned activities are not in question.

a. Recommended parameters to measure for evaluating potential hatchery water supply. Either fill out the table below or attach a copy of the water quality analysis conducted.

Water Qualities	Standards	Levels for the hatchery water water source_____
Alkalinity	at least 20 mg/L as $caCO_3$	
Ammonia (unionized)	<0.0125 mg/L	
Arsenic	<0.05 mg/L	
Barium	<5.0 mg/L)	
Cadmium	<0.0005 mg/L (< 100 mg/L alkalinity	
	<0.005 mg/L (≥ 100 mg/L alkalinity)	
Carbon dioxide	<1.0 mg/L	
Chloride	<4.0 mg/L	
Copper	<0.006 mg/L (< 100 mg/L alkalinity)	
	<0.03 mg/L (≥ 100 mg/L alkalinity)	
Dissolved oxygen	>8.0 mg/L	
Hydrogen sulfide	<0.003 mg/L	
Iron	<0.1 mg/L	
Lead	<0.02 mg/L	
Magnesium	<15 mg/L	
Mercury	<0.0002 mg/L	
Nickel	<0.01 mg/L	
Nitrate (NO_3)	<1.0 mg/L	
Nitrate (NO_2)	<0.1 mg/L	
Nitrogen (N_2)	<110% total gas pressure	
	(<103% nitrogen gas)	
Petroleum (oil)	<0.001 mg/L	
pH	6.5 - 8.0	
Potassium	<5.0 mg/L	
Salinity	<5.0 ppt	
Selenium	<0.01 mg/L	
Silver	<0.003 mg/L (fresh water)	
	<0.003 mg/L (salt water)	
Sodium	<75.0) mg/L	
Sulfate SO_4^{-2}	<50.0 mg/L	
Total dissolved solids	<400.0 mg/L	
Total settable solids	<80.0 mg/L (25 JTU)	
Zinc	<0.005 mg/L	

Note: Synergistic and antagonistic chemical reactions must be considered when evaluating a water source against these criteria.

b. Attach a temperature profile (minimum of one year of data) of the hatchery water source. Also, provide vertical profiles if a lake water source is proposed.

See attached Appendix 2 – Annual Water Temp and DO Profile

c. List monthly levels of dissolved oxygen in the hatchery water source. If a lake source, provide seasonal oxygen profiles.

See attached Appendix 2 – Annual Water Temp and DO Profile

d. If a lake source, provide information on surface area, depth, and water storage capacity.

See attached Appendix 1 – Hydrological Data

e. Describe the silt load (include consideration of possible seasonal high water).

Silt load in the Deer Mountain Hatchery water supply is generally not an issue. Periods of heavy rain and wind in the drainages supplying Ketchikan lakes, Fawn lake and Granite basin cause erosion and organic debris to be introduced into the intakes and pipelines supplying the KPU Hydro Project. This debris is transferred into the flume supplying water to the Deer Mountain Hatchery. The debris at this time does not cause water interruptions or degradation of rearing conditions. It does however, require monitoring and removal as part of normal culture operations in rearing unit intakes.

4. Water Flow Data.

This information should be based on the equivalent of long-term USGS stream gauge data (10 years or more data) or the U.S. Forest Service Water Resources Atlas synthetic hydrograph model.

a. Attach a seasonal profile, including yearly minimum and maximum flows.

See attached Appendix 3 – Mean Creek Flow

b. List a historical range of water flow conditions, if available.

Based on 2008 observations made by KPU, Ketchikan Creek's discharge in cubic feet per second ranged from 57-852.

5. Water Distribution System

Describe the water distribution system in at least the following dimensions:

a. Type, size, elevation and locations of water intake, screening, and water use/reuse system.

Water is supplied to the Deer Mountain Hatchery via an 18" ductile iron pipe. All low pressure water utilized in the rearing of fry, smolt, and the holding of adults is supplied via the 18" ductile iron pipe. Deer Mountain Hatchery can be broken down into four main water use areas. Those four areas are: Circular rearing tanks, large swede pond rearing tanks, concrete rearing raceways and/or adult holding, and indoor rearing tanks.

Process water for the circular rearing area stems off the 18" main and reduces to an 8" HDPE supply line which is reduced to 6" PVC pipe at each of the four culture tanks.

Water for the large swede pond rearing area also stems off the 18" main with various reductions occurring along this supply line. There are 8 swede ponds total, of the 8 ponds two are fed by 6" PVC risers that are reduced to 4" PVC supply manifolds. The remaining 6 swedes are supplied by 8" PVC risers. Each riser supplies two swede ponds after being reduced down to 4" PVC supply manifolds.

The 18" main passes underneath the hatchery building and supplies process water to the two concrete raceways. The 18" main tee's off and reduces to an 8" PVC line, it is off of this 8" PVC line that each one of the two concrete raceways receives its water after being reduced down to 6" PVC.

The indoor rearing area has two potential supply sources. The 18" main as it delivers water to the large outdoor swede pond rearing area has a spur line that comes off and is reduced to 8" PVC which enters the indoor rearing area. This 8" PVC line supplies each of the 8 small indoor swede ponds via 2" PVC risers and manifolds as well as 4 fiberglass raceways via a reduction to 4" PVC risers and manifolds. High pressure wash-down and rearing water enters the indoor rearing area through the NE corner of the building. Prior to using this water for rearing purposes it is directed to a second floor degassing column to strip high nitrogen levels from the water.

See attached Appendix for approximate plumbing elevations.

b. Size, length, and type of pipe, insulation, and distribution system. Include elevations of water surfaces at each point in the system from intake through incubation and rearing to fish ladder or other discharge.

See attached Appendix

c. If a hydroelectric generation system will be used, will effluent from this system be used in the hatchery? If so, describe plans to address possible problems with gas supersaturation.

The main water supply to Deer Mountain Hatchery is provided though effluent water provided from the KPU hydroelectric project. The water is degassed in the flume which supplies the majority of the rearing water. The auxiliary high pressure line which supplies wash-down water or additional rearing water is degassed to levels below super saturation by utilizing a degassing column located on the second floor of the hatchery building.

d. Describe provisions for an emergency water system in the event of primary water system failure.

The 4" high pressure line supplying the hatchery can act as partial make up of rearing water if the main 18" low pressure line is compromised or if supply is limited. In extreme cases, water can be redirected from Ketchikan Creek or our holding pond vaults using pumps. The hatcheries oxygen generation system and/or additional bottled oxygen can provide enough supplemental oxygen during temporary water interruptions to keep fish alive until the situation is resolved.

6. Water Treatment System

Describe any water treatment facilities that you will employ to meet minimal water quality standards (influent or effluent).

An OGSI Oxygen Generator capable of producing 24 lpm of 93-95% pure oxygen will be employed during periods of low rearing dissolved oxygen levels. Low D.O. rearing periods occur predominately during the months of August and September when water temperatures are highest. The concentrated oxygen will be delivered either by micro bubble diffusers or through saturated low pressure water utilizing an Oxygen Cone. If needed, bottled oxygen will provide further oxygen supplementation.

High pressure water entering the hatchery, that will be utilized for rearing, will be degassed via a degassing tower.

7. Annual Water Budget

Attach a graph showing seasonal variation in flow required for eyeing, incubation, freshwater rearing, freshwater lens in saltwater pens, adult holding, and fish ladder operations.

During most months of operation, Deer Mountain Hatchery utilizes most of the water available per the Water Rights Agreement. Tables and graphs in the appendices details water usage by rearing operation by month. All hatchery effluent and the majority of the effluent from City Park pond and creek operations flows through hatchery grounds and discharges into Ketchikan Creek from the Deer Mountain Hatchery fish ladder. An estimated 1-2 cubic foot per second, (CFS), is discharged from Ketchikan City Park through the Deer Mountain facility. The total discharge through the fish ladder is upwards of 6-6.5 CFS for purposes of attracting returning brood stock adults.

IV. HATCHERY DESIGN AND CONSTRUCTION INFORMATION

A. Bio criteria for Design and Construction

Describe the critical operational assumptions and objectives which determine the design size and capacity of the proposed hatchery. Specific reference should be made to the following (for reference, a table of CFMD assumptions for salmon survival is provided, Table I):

BROODSTOCK – SPECIES Chickamin River Chinook

1. Eggs per female spawner 5,500
2. Broodstock requirements at 1:1 sex ratio = 224
3. Green egg requirements = 560,000
4. Estimated holding mortality (10%) = 20

HATCHERY INCUBATION

5. Eyed eggs @ 95% survival from green egg stage = 532,000
6. Eyed egg density per incubation tray = 5,500
7. Total number of incubation trays needed = 102
8. Number of incubation trays per unit = 16
9. Total water requirements at 5 gpm/unit = 35 gpm

HATCHERY FRESHWATER REARING UNITS - Ketchikan Creek Release

10. Number of emerging fry (2% loss from eyed stage) = 105,000, Number of smolt (3% loss from fry stage) = 100,000
11. Initial fry weight at 0.40 grams = 40 kg
12. Final Fry weight at 25.0 grams = 2,500 kg
13. Initial freshwater fry rearing space required at 3.4 kg/m^3, 12m^3 = 2, fiberglass raceways @ 6m^3 per
14. Final freshwater fry rearing space required at 17 kg/m^3, 148m^3 = 4 Circulars @ 25m^3 per, 2 Swedes @ 24m^3 per
15. Maximum number of rearing units = 4 Circulars @ 5.3m diameter by 1.7m deep, 2 Swedes @ 5.3m by 5.3m by 1.3m
16. Initial Water Requirements 330 gpm, Final Water Requirements 652 gpm
17. Number of exchanges per hour (R-value) per rearing unit: 1-2

HATCHERY FRESHWATER REARING UNITS - Carroll Inlet Release

18. Number of emerging fry (2% loss from eyed stage) = 412,000
19. Initial fry weight at 0.40 grams = 160 kg
20. Final Fry weight at 13.0 grams = 5,200 kg
21. Initial freshwater fry rearing space required at 3.6kg/m^3, 44m^3, 8 small swedes @ 4m^3 per, and 2 fiberglass raceways @ 6m^3 per
22. Final freshwater fry rearing space required at 19 kg/m^3, 270 m^3
23. Maximum number of rearing units = 8 Swedes @ 5.3m by 5.3m by 1.3m = 24m^3 per, 192m^3 total, 2 Raceways @ 11.7m by 2.9m by 2m = 39m^3 per, 78m^3 total, overall rearing volume is 270m^3.
24. Initial and Final Water Requirements 1,188 gpm
25. Number of exchanges per hour (R-value) per rearing unit: 1-2

MARINE REARING UNITS - Carroll Inlet Release

26. Number of fry/fingerling/or smolt (3% loss from fry stage) = 400,000
27. Initial weight at 13.0 grams = 5,200 kg

28. Final weight at 25.0 grams = 10,000 kg
29. Initial rearing space required at 3.0kg/m^3 = 1,728m^3
30. Final rearing space required at 5.8kg/m^3 = 1,728m^3
31. Maximum number of rearing units = 2 Net Pens @ 1,728m^3
    (12m by 12m by 6m = 864 m^3)

See attached Appendix 5 – Rearing Biocriteria

PROJECTED RETURN

32. Number of returning fish at 3% ocean survival = 15,000

100,000 (1) Check Smolt - **Ketchikan Creek**
- 300 3yr old adults
- 1,500 4yr old adults
- 1,200 5yr old adults

400,000 (1) Check Smolt - **Carroll Inlet**
- 1,200 3yr old adults
- 6,000 4yr old adults
- 4,800 5yr old adults

B. GENERAL DESCRIPTION

Attach a written description of the proposed facility. This description should represent a solid concept of the proposed hatchery design. Also include preliminary sketches and drawings of at least the following in an appendix.

1. Incubation and rearing site plan.

2. Hatchery floor plan.

3. Water supply system.

4. Incubation/operation building.

5. Facility layout.

The site plan should include a plan view of all facilities at a scale of 1:100 or larger, a USGS 1: 63,360 scale topographical map showing the entire watershed and all facility locations, and a NOAA marine chart of the largest scale available showing all tidewater-based facilities and local data.

See Attached Appendix A2.1, A3.0, A3.1

C. PROPOSED CONSTRUCTION TIMETABLE

Prepare a timetable for the construction period which indicates the critical milestones for the project.

The Deer Mountain Hatchery is currently operating and has a long history of rearing and production releases. SSRAA has since made site improvements and modifications beginning in 2013 to meet established production goals.

V. BROODSTOCK

A. Initial Donor Stock

1. Identification of source.

Indicate stream name, ADF&G number or geographic coordinates, and salmon species for each proposed donor stock.

a. Species Chinook, Onchorynchus tshawytscha

Stream name Chickamin River

ADF&G number/geographic coordinates: AWC 101-71-10040, 55.8234N, 130.8866 W

2. Capture techniques and holding facilities at the donor stream.

a. Capture techniques

Describe in detail the capture techniques you will use to harvest adults and take eggs. Please provide a map identifying the exact location of the holding facilities.

There are no plans at this time to conduct eggtakes at the donor stream. The brood stock/source for the Deer Mountain Hatchery is an existing donor establish in 1984 at the Whitman Lake Hatchery.

b. Holding facilities

Describe the holding facilities to be used for donor stock spawners (include schematics). List the loading rate [kg fish/ (L/min)] and density (kg fish/mg^3).

_____

_____

_____

3. Transportation

Discuss method planned for transporting live fish and/or eggs

Not applicable.

4. Spawning and fertilization

Discuss the spawning, fertilization, and disinfection procedures and the procedure for estimating percent fertilization.

Not applicable

B. Broodstock Returning to Hatchery

1. Capture techniques and holding facilities at the hatchery.

a. Capture Techniques

Describe in detail the techniques you will use to capture and ripen adults and take eggs.

Whitman Lake

Adult Chinook returning to Herring Cove and Whitman Lake Hatchery are collected when fish voluntarily enter a fish ladder in the estuary. The ladder terminates into one of three aluminum holding raceways. Two holding raceways are utilized for holding Chinook designated as broodstock. Fish are extracted from the raceways utilizing manual crowders which direct fish into an Archimedes Screw. The fish are then carried up to an aluminum sorting table where adults are directed into an anesthesia tank. Fish are anesthetized with MS-222. Adult hens are then checked for ripeness. Ripe hens are dispatched and bleed on aluminum holding racks. Males are dispatched at a 1:1 ratio, but each male will be used to fertilize two hens. The hens are disinfected with a 1:100ppm Argentine iodine solution before being spawned into a tub. One hen per tub, two males per hen. Green females are returned to the raceway via a pipe for additional holding and maturation. Excess males not utilized for spawning are excessed or returned to the raceways for future spawning.

Deer Mountain

Adults returning to Ketchikan Creek may be used as brood stock in case of a brood stock shortfall at Whitman Lake or if it is determined that the eggs of adults returning to Ketchikan Creek are better suited for current or changing production goals. By the time this permit has been approved the Unuk River stock utilized by KIC will have been exhausted and only Chickamin River stock will return to Ketchikan Creek for potential future brood. Adults returning to Ketchikan Creek will navigate through Thomas Basin into Ketchikan Creek and will ascend the Creek Street fish ladder maintained by ADF&G and SSRAA. To divert fish into the hatchery from Ketchikan Creek a partial and temporary weir will be installed. This weir will act as a wing which will divert fish

travelling along the north shore of Ketchikan Creek into the fish ladder at the Deer Mountain Hatchery. Adults will navigate up the short ladder into two concrete holding areas. Adults will then be collected into one of two holding raceways.

b. Holding facilities

Describe the holding facilities to be used for hatchery brood stock spawners (include schematics) and give the loading rate [kg fish/ (L/min)] and density (kg fish/mg^3).

Whitman Lake

Adult Chinook are held in two aluminum holding ponds/raceways located at the Whitman Lake Hatchery. HP1 with dimensions of 4.6m*23m*1.3m ($137m^3$), HP2 with dimensions of 4m*23m*1.3m ($119m^3$). Whitman Lake provides eggs for several SSRAA Chinook programs. 750-800 adults are held in some combination between the two raceways. Each raceway has an influent flow of 350-450gpm. Adults are held until the 1st week in August at which time weekly eggtakes begin.

Deer Mountain

If egg take operations were to occur at the Deer Mountain Hatchery two concrete raceways will be utilized to collect and hold adult brood stock. These raceways are also used as juvenile rearing units. If adult collection is necessary, fish size at this time allows us to rear the approximately 100,000 fish typically designated for rearing in the raceways to be relocated into our other existing units without compromising rearing densities or good fish culture practices. After eggtake operations the raceways will be drained, disinfected and made ready for juvenile rearing. Eggtakes will be complete by the end of August at which time juveniles from other rearing units will be split into the raceways for final rearing or transport.

The two raceways are of approximately the same dimensions (35' Long, 8.75' Wide, and 6' Deep). The overall holding volume of the two raceways is $78m^3$, the holding density would be approximately $33kg/m^3$.

2. Transportation

Discuss method planned for transporting live fish and/or eggs (if different from those described in Part A).

Whitman Lake/Deer Mountain

Plastic tubs containing eggs and milt are carried approximately 25 yards from the spawn area/building to incubation building where the sperm is activated and eggs placed in incubators.

3. Spawning and fertilization

Discuss the spawning and fertilization procedures (if different from those described in Part A).

Adults are held and checked for ripeness at historically determined times. Adult Chinook are extracted from holding ponds either by dip net or fish screw. Adults are anesthetized in a tote with water and MS-222. Adult hens are checked for ripeness, ripe hens are bled just behind the head using a cleaver and green hens are returned via pipe to the holding raceways. Male Chinook are dispatched utilizing a fish stunner or baton. Both sexes are placed in racks for bleed out and disinfection using Argentine at a dilution of 1:100. Spawning occurs at a ratio of 1:2 in a small plastic tub. Females are cut using a zak knife from anal vent to pectoral fins. Eggs are extracted by gentle hand gesture up and down the body cavity. Once the hen has been spawned two males are bucked into the tub. The milt is gently mixed in with the eggs by hand. A tub is assigned a number identifying it with the female who was spawned for BKD tracking purposes. Zak knives, tubs and spawners disinfect between spawning pairs using 1:100 Argentine.

VI INCUBATION AND REARING PLAN

A. Incubators and Rearing Units

Describe the type of incubators and rearing facilities to be used.

Whitman Lake

Green eggs destined for transport to Deer Mountain are deposited in double stacked Heath Tray units. Each double stack contains 16 trays at a flow of 3gpm. After one week or approximately 60 tu's of development a chilled recirculation system is utilized to lower ambient water temperature to a near constant 4C. The eggs are then incubated until a strong eye occurs at which time they are shocked, picked, inventoried and reseeded at approximately 5,500 eggs per tray. Emergent fry are ponded into fiberglass circular tanks. Approximately 48,000 fry are ponded into each 3.4 cubic meter circular tank and there are a total of 11 units. If necessary, as determined by production rearing goals, fry will be split into a fiberglass raceway to lower rearing densities before transport to Deer Mountain in late June or early July at approximately 1-2 grams' average weight.

Deer Mountain

Green eggs collected at Deer Mountain Hatchery will be incubated in double stacked Heath Tray units. Each double stack contains 16 trays at a flow of 5gpm. After one week of development a chilled recirculation system will be utilized to lower ambient water temperature to a near constant 4C. The eggs are then incubated until a strong eye occurs at which time they are shocked, picked, inventoried, and reseeded at approximately 5,500 eggs per tray. Emergent fry will be ponded into 8 each 4 cubic meter indoor swede ponds and 4, 6 cubic meter fiberglass raceways with an overall rearing volume of 56 cubic meters. Approximately 500,000 fry will be split evenly into all units for a total rearing density of 3.6 kg per cubic meter. Fry will be split and transferred to outdoor rearing units consisting of swede ponds and circulars in late June or early July.

B. Egg Handling

Describe the method by which you plan to handle the eggs from the spawning process through planting them in incubators.

Eggs and milt are collected in small tubs. Tubs are carried to the incubation building from the spawning pad. Eggs are gently poured into a heath basket where they are rinsed with water from a garden hose. The egg basket containing eggs from one female are then deposited into a heath tray for disinfection and development. Disinfection is for 1hr @ a treatment concentration of 1:100ppm Argentine.

C Chemical Treatment

What chemicals and concentrations will be used for controlling fungus on eggs until the eyed stage?

Eggs are treated three times per week using Formalin. Flow through treatments at a concentration of 1:600ppm and duration of 15 minutes are given Monday, Wednesday and Friday.

D. Enumerations

Describe the method(s) to be used in estimating numbers of green eggs, eyed eggs, and fry.

An assumed fecundity of 5,500 eggs is used per spawning female to provide a green egg number. The assumed number of eggs is usually conservative. At the eyed stage, when eggs are shocked and picked, the inventory is determined based on multiple 100 egg weight samples to determine average eggs/gram. After the pick process when eggs are put down the number of eggs per gram is used to determine the incubator loading rate. Fry are enumerated based on average weight samples. A minimum of three samples of approximately 100 fry are collected to determine average individual weights. Emergent fry weights will be conducted upon outmigration to start tanks. Weekly average weight sampling will be conducted from start-up rearing until release.

E. Rearing Plans

Describe any plans to rear the salmon including type of food.

Currently, Chinook are reared at Whitman Lake Hatchery until they reach approximately two grams. The fish are then transported via truck and 300-gallon aluminum transport tank to the Deer Mountain Hatchery. At Deer Mountain, the fish are pumped to the rearing units where they will remain until release or transport. It is our goal to keep rearing densities for all groups below

21kg/m3. Skretting/Bio-Oregon or EWOS will be the feed manufacturers. Feed sizes will range from #0 crumbles to 2mm pellets. Bio Clarks fry will be the feed of choice during freshwater rearing applications. Bio Supreme Transfer will be fed to all fish prior to saltwater transfer or freshwater release based on manufacturer recommendations.

F. Disease Control

Describe plans for preventing or controlling disease during rearing.

Heath baskets containing fertilized green eggs are rinsed and placed in heath trays for a 1-hour disinfection bath in a 1:100 dilution of Argentine iodine. Fungus is controlled during egg incubation by treating with Formalin. Formalin treatments occur 3 times per week and are delivered as a flow through treatment. Treatment concentrations are 1:600 for a total treatment duration of 15 minutes. Single family lot tracking is conducted on adults whose eggs may be designated for release in programs that may provide eggs in future years. Kidney samples are collected from spawned hens. Samples are sent to the ADF&G Pathology Lab in Juneau for analysis. If egg inventories allow, eggs are destroyed which provide test results indicating a high

incidence of BKD. Whitman Lake has a long history and a documented occurrence of common diseases and parasites to include Bacterial Gill Disease, Bacterial Kidney disease, Cold Water Disease, Phoma, and Trichodina. All Chinook fry designated for rearing at Deer Mountain are vaccinated for Vibrio and Furunculosis prior to transport from Whitman Lake. Good fish culture practices are instituted to better insure proper prevention, detection and treatment. SSRAA utilizes its own pathology department as well as the ADF&G Pathology Lab in Juneau to monitor, diagnose, and provide treatment options and follow-up evaluations.

VII RELEASE PLAN

A. Release Site(s)

1. Give exact location and description of proposed release site(s), including maps.

See Appendix

Deer Mountain Hatchery production will be released in two locations;

Ketchikan Creek from Deer Mountain Hatchery
Ketchikan Creek, ADF&G Stream Number 101-47-10250
55 degrees 20'35.93" N 131 degrees 38'06.44" W, Elevation 76ft

Carroll Inlet from Saltwater Net Pens
Upper Carroll Inlet, Falls Creek
N 55.61800, W 131.5860

2. List proposed number and age of each species to be released at each site.

100,000 (1) Check Smolt, Ketchikan Creek
Contribution of this Release @ 3% for one Brood Year (3,000 fish)
300 - 3yr old adults

1,500 - 4yr old adults
1,200 - 5yr old adults

400,000 (1) Check Smolt, Carroll Inlet
Contribution of this Release @ 3% for one Brood Year (12,000 fish)
1,200 - 3yr old adults
6,000 - 4yr old adults
4,800 - 5yr old adults

B. Transportation

Discuss the methods planned for transporting live fish from the hatchery to the release site(s).

Deer Mountain/Ketchikan Creek
Fish released from DMH will non-volitionally outmigrate from concrete raceways, swede ponds, or circular tanks at the facility. Fish will enter Ketchikan Creek from the adult fish pass at the Deer Mountain Hatchery.

Carroll Inlet/Falls Creek

Parr to be transferred to Carroll Inlet for salt water rearing, imprinting, and released in mid-May will be transported to saltwater net pens in mid-April. The fish will be pumped from the concrete raceways at DMH into a 6,000-gallon tanker truck. Approximately 100,000 fish will be transported at one time by tanker truck to a transport boat one mile away from Deer Mountain Hatchery. The transport boat or tender has been specially fitted with the equipment necessary to transport approximately 200,000 fish, split evenly between its two holds to the remote release site in Carroll Inlet.

The primary transport vessel is the "Lynda", a Ketchikan based fish tender with two fish holds. The forward hold is approximately 51.3 cubic meters and the aft 30.3 cubic meters. Transport densities of 25 kg/m^3 and 43 kg/m^3 based on a 13 gram fish and 100,000 fish per hold. These densities are well within established SSRAA parameters for parr or smolt transports. Each hold contains a fitted 3/8 mesh transport net. A special hatch cover is placed over the holds which serves as an attachment point for the transport nets, oxygen supplementation, carbon dioxide stripping and smolt evacuation upon arriving at the remote rearing site. Transport time will be approximately 4-5 hours. Two transports over two days will be necessary to move the 400,000 fish designated for rearing and release in Carroll Inlet.

VIII STAFFING

A. Technical Advisors

Attach information about each technical advisor to the nonprofit corporation, indicating that person's name, address, role and responsibilities, and a brief statement of technical qualifications.

B. Design and Construction

Attach a list of the names and qualifications of persons or corporations responsible for final design and construction of proposed facilities.

Kramer, Chin, Mayo Inc and Pool Engineering 1977
Welsh Whiteley Architects 2016
Stephen Peter's Architects 2015
See attached Appendix

C. Administrative Personnel

List the administrative personnel who will support this facility when operational.

Personnel Assigned (Titles)	Percentage of Time
1. David Landis, General Manager	5%
2. Bret Hiatt, Operations Manager	15%
3. Bill Gass, Production Manager	20%
4. Steve Reid, Assistant Production Manager	20%

5. Cindy Walters, Executive Administrative Assistant 20%

D. Operating Personnel

List the operating personnel who will be assigned to this facility when operational.

Personnel Assigned (Titles)	Percentage of Time
1. Matt Allen, Hatchery Manager	100%
2. Michelle Leitz, Lead Fish Culturist	100%
3. Ted Addington, Special Projects Manager	15%
4. John Holt, R&E Manager	5%
5. Stephanie Sanguinetti, Lab Manager	5%
6. Jay Creasy, Whitman Lake Manager	5%

IX FINANCIAL PLAN

The Deer Mountain Hatchery has an estimated yearly operational budget of $250,000. There is no current plan to conduct cost recovery harvest at the facility or in a designated SHA. Capital and operational funds will come from SSRAA's other cost recovery facilities, predominately Neets Bay.

X. Basic Management Plan

The preparation of a draft Basic Management Plan will be completed prior to the public hearing. The applicant will be expected to work closely with ADF&G staff in developing the Basic Management Plan (see 5 AAC 40.820).

XI DECLARATION AND SIGNATURE

I declare that the information given in this application is, to my knowledge, true, correct, and complete.

Matt W. Allen_____ _____
Name of Applicant Date Signed

_____
Signature of Applicant

Appendix 1

Deer Mountain Usage Rights and Permits

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Natural Resources
DIVISION OF MINING, LAND & WATER
Water Resources Section
Southeastern Office
P. O. Box 111020
Juneau, Alaska 99811-1020
Main: 907.465.3400
TDD: 907.269.8411
Fax: 907.465.3886

December 31, 2014

Bret Hiatt
Southern Southeast Regional Aquaculture Association, Inc.
14 Borch Street
Ketchikan, AK 99901

Re: Transfer of Water Right Certificates of Appropriation, ADL 43930 and ADL 43932

Dear Mr. Hiatt:

The Water Resources Section completed the review of your request to transfer ownership of the above referenced Certificates of Appropriation from the City of Ketchikan to Southern Southeast Regional Aquaculture Association, Inc. (SSRAA). This letter is to advise you that the transfer transaction is completed. Our records now show that SSRAA is the current holder of the water rights. Please note that with a transfer of ownership the Certificate itself does not need to be amended to show the new holder's name. To have the Certificate amended and issued showing the new owner's name, additional fees apply. A recording fee of $50 is required and regulation 11 AAC 05.010(a)(8)(A)(iii) allows a fee of $50 per hour for staff time. Regretfully, given our backlog, issuing amended Certificates is a low priority and will only be completed as time allows. Enclosed please find copies of the original Certificates of Appropriation.

If you have any questions on this matter please call me at (907) 465-6363 or email at clint.gundelfinger@alaska.gov and refer to the casefile numbers referenced above. Thank you for your cooperation with the Water Resources Section.

Best regards,

Clint Gundelfinger
Natural Resource Specialist

Encl: Copy of Certificates of Appropriation, ADL 43930 & ADL 43932
Water Use Act

State of Alaska

CERTIFICATE OF APPROPRIATION OF WATER

Certificate No. 472*(Amended)

Know All Men By These Presents that the State of Alaska, pursuant to A.S. 46.15, as amended and the rules and regulations promulgated thereunder, hereby grants to Department of Fish and Game, Subport Building, Juneau, Alaska 99801

the right to the use of 1,615,790 gallons per day from the public waters of the State of Alaska for the purposes of fish hatchery water supply.

The location of the water source to which the water right herein granted shall appertain is pipe taps into Ketchikan Public Utilities penstocks near power plant, in protracted NE 1/4 of NE 1/4 of Section 30, T75S, R91E, CRM

and the right to said water shall be appurtenant to that certain tract of real property described as follows:

Deer Mountain Fish Hatchery in protracted NE 1/4 of NE 1/4 of Section 30, T75S, R91E, CRM

Beneficial use of water began 1961

To Have and to Hold the said water right with the appurtenances thereof unto the said Grantee and its heirs and assigns forever, subject to the provisions of A. S. 46.15.140-160.

In Testimony Whereof the State of Alaska has caused these presents to be executed by the Director of the Division of Lands pursuant to A. S. 46.15, as amended, this 4th day of February A.D. 1972.

*Original certificate dated July 23, 1970 read 16,157,900 gpd - amended to read 1,615,790 gpd

Director, Division of Lands

State Record of Water Right Certificates

Vol. IV Page 472 ADL 43930

cor 2.8.72

ALASKA

2014-002937-0

Recording District 102 Ketchikan

11/20/2014 10:04 AM Page 1 of 7

AGREEMENT TO CONVEY THE DEER MOUNTAIN FISH HATCHERY AND EASEMENTS

This Agreement dated as of November 19, 2014, is between the **City of Ketchikan, Alaska,** a home-rule, first-class municipality ("the City") whose principal offices are located at 334 Front Street, Ketchikan, Alaska 99901, and the **Southern Southeast Regional Aquaculture Association, Inc.** ("SSRAA"), an Alaska nonprofit corporation, whose principal offices are located at 14 Borch Street, Ketchikan, Alaska 99901.

RECITALS

WHEREAS:

A. The Deer Mountain Fish Hatchery in Ketchikan, Alaska, has for many years been operated for the production of chinook and coho salmon and certain other stocks of fish, and is of benefit to the people of the City of Ketchikan.

B. The hatchery building and associated facilities, the land on which they are located, and certain easements necessary for the successful operation of the Hatchery, are or may be owned by the City of Ketchikan. In order to operate the Hatchery, it is important that SSRAA own or control the building, facilities, land, and easements.

C. For these reasons, the City wishes to convey to SSRAA any interest it may have in the property, subject to a right of reversion to the City in the event SSRAA stops operating the Hatchery as a nonprofit hatchery.

D. SSRAA desires to own and operate the Hatchery as a nonprofit fish hatchery, subject to the City's reversionary interest.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. **Conveyance**. In consideration of the promises of SSRAA set forth in this Agreement, the City agrees to convey to SSRAA by quitclaim deed any and all interest the City has or may have in the following-described real property, subject to

interest the City has or may have in the following-described real property, subject to a utility easement, and reserving to itself a reversionary interest and a right to re-enter and retake the property as described in paragraph 3 below:

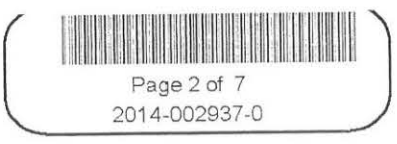
> The Deer Mountain Hatchery Parcel as shown on Deer Mountain Hatchery Re-plat, filed January 11, 2013 as Plat No. 2013-1, Ketchikan Recording District, First Judicial District, State of Alaska, (all of which with all buildings, fixtures and appurtenances are referred to in this Agreement as "the Hatchery").

RESERVING, HOWEVER, to the City, its successors and assigns an easement for the construction, maintenance, repair, reconstruction, replacement, and use of sanitary and storm sewer pipes, and other utilities and facilities on, under, over and across the following described real estate:

> Beginning at the east corner of Lot 9B, U.S.M.S. 769 Ingrams Addition; thence S-70°56' W a distance of 90.12 feet to a point being on the southerly boundary line of Lot 8 of Ingrams Addition also known as corner 8 of Plat No. 2013-1, Ketchikan Recording District thence S-18°55'01" E a distance of 10.42 feet to the true point of beginning;
>
> thence S-18°55'01" E a distance of 10.49 feet to corner 9 of Plat No. 2013-1, Ketchikan Recording District;
> thence S-70°30'45" W a distance of 10.00 feet;
> thence N-19°04'00" W a distance of 10.71 feet;
> thence N-72°10.'00" E a distance of 10.03 feet to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska.

The City further conveys to SSRAA any and all interest it has or may have in an easement for water pipes under and across the following-described real property:

> Two portions of U.S.M.S. 769, more particularly described as follows:
>
> Beginning at the east corner of Lot 9, U.S.M.S. 769 Ingrams Addition;
> thence S-67°56'-W a distance of 110.15 feet;
> thence S-19°04'-E a distance of 10.01 feet;
> thence N-67°56'-E a distance of 113.35 feet;
> thence N-37°56'-E a distance of 214.38 feet;
> thence N-60°50'05"-W a distance of 10.11 feet;
> thence S-37°56'00"-W a distance of 210.39 feet to the point of beginning;



and

Beginning at the east corner of Lot 9, U.S.M.S. 769 Ingrams Addition;
thence S-70°56'-W a distance of 110.00 feet; this point being on the southerly boundary line of Lot 7, Ingram's Addition;
thence S-19°04'00"-E a distance of 60.00 feet to the true point of beginning;
thence N-70°56'00"-E a distance of 25.00 feet;
thence S-84°38'30"-E a distance of 35.00 feet;
thence N-70°11'00"E a distance of 41.27 feet;
thence N-53°42'-E a distance of 183.91 feet;
thence N-49°34'30"-E a distance of 103.89 feet;
thence N-60°50'05"-E a distance of 10.64 feet;
thence S-49°34'30"-W a distance of 100.12 feet;
thence S-53°42'-W a distance of 182.10 feet;
thence S-70°11'-W a distance of 37.59 feet;
thence N-84°38'30"-W a distance of 34.93 feet;
thence S-70°56'-W a distance of 27.16 feet;
thence S-19°14'-E a distance of 10.0 feet to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska.

The City further conveys to SSRAA any and all interest it has or may have in an easement for fish ladder under and across the following-described real property:

Beginning at the eastern-most corner of U.S.M.S. 769 Ingrams Additional also known as corner 11 of Plat No. 2013-1, the Deer Mountain Hatchery Parcel, Ketchikan Recording District, thence S-76°09'15" W a distance of 104.91 feet to a point being on the southeasterly boundary line of said Parcel to the true point of beginning;
thence S-12°49'00" W a distance of 24.23 feet;
thence N-77°07'17" W a distance of 10.00 feet;
thence N-12°49'00" E a distance of 20.35 feet to a point along the lot line of said Parcel;
thence N-85°04'16" E a distance of 5.47 feet to a property corner of said Parcel;
thence N-76°09'15" E a distance of 5.36 feet to a point along the lot line of said Parcel to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska.

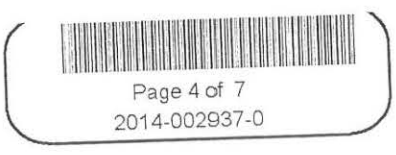
The above water pipes and fish ladder easements are together referred to hereinafter as the "Easement Areas."

2. **Operation as a Hatchery**. SSRAA, its successors and assigns agree to operate the Hatchery as a bona fide nonprofit fish hatchery and to produce and release from the Hatchery at least 100,000 live Chinook salmon into Ketchikan Creek annually. In the event that fire, storm, earthquake, vandalism, theft, strike, or other causes beyond SSRAA's reasonable control destroys or substantially damages the Hatchery or destroys salmon stock, or otherwise prevents SSRAA's compliance with the requirements of this paragraph 2, SSRAA, its successors and assigns shall be relieved of their obligation under this section for up to one year. SSRAA may also use the Hatchery for community educational and tourism programs, including tours or a gift shop to be operated by SSRAA, outside vendors, or both, provided the other requirements of this paragraph are met.

3. **Reversion: City's Right to Retake and Re-enter**. In the event that SSRAA, its successors or assigns fails substantially to comply with the requirements of paragraph 2 of this Agreement, the City shall have the right to re-enter and retake the Hatchery in which case all rights, title, and interest in the Hatchery shall revert to the City, and the Easements shall automatically terminate. The Quitclaim Deed conveying the Hatchery shall contain a clause providing for such reversion and right to re-enter and retake. All fixtures, buildings, improvements on, and appurtenances to the Hatchery shall become the property of the City upon such reversion And re-entry. Upon request of the City, SSRAA, its successors or assigns, shall execute and deliver to the City such conveyances, releases, and other documents the City may reasonably require to evidence the termination of their interests in the Hatchery and Easement Areas and all improvements, buildings, and fixtures thereon and appurtenances thereto.

4. **No Warranties of Title**. SSRAA understands that the City's interests, if any, in the Hatchery and Easement Areas are uncertain, that some fixtures and improvements may be owned by the State of Alaska or other entity, and that the Ketchikan Gateway Borough may have some interest in, or full title to, the Hatchery and Easement Areas. SSRAA understands that various grant agreements, leases, agreements, easements or other encumbrances may exist which may cloud title as to the land, buildings, improvements, fixtures and appurtenances. SSRAA further understands that, except to the extent provided in this Agreement or in any other written conveyance, SSRAA has not been granted by the City or by Ketchikan Public Utilities any water rights or easements for water lines or utilities to the Hatchery.

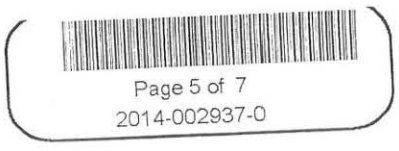
5. **No Warranties as to Condition or Suitability for Use**. The City will convey the Hatchery and the Easement across and under the Easement Areas in "as is"



condition with no warranties or representations as to their condition, or suitability for any use. SSRAA expressly recognizes that the Hatchery and Easement Areas may have latent, hidden, unknown, undisclosed, or undiscovered defects, deterioration, damage, or undesirable conditions. SSRAA shall at no cost to the City, repair, remediate, rebuild, or reconstruct any defect, damage, deterioration or undesirable conditions. The City, its officers, agents and employees shall have no liability to SSRAA, its successors or assigns for any opinion, advice, report, map, or document relating to the condition, suitability, use, or ownership of the Hatchery and Easement Areas. In addition to the above, SSRAA, its successors and assigns specifically and unconditionally release the City, its agents, employees and officers from any and all liability to SSRAA, its successors and assigns for: lost use, profits, business or sales; costs of remediation, removal or disposal; and costs of repairing, maintaining, replacing, reconstructing or remodeling, arising out of or in any way related to the existence, release, remediation, removal or disposal of any hazardous, toxic or polluting materials located on the Hatchery or Easement Areas. Hazardous toxic or polluting materials include any substance which is defined as hazardous waste, hazardous substance, pollutant or contaminant under any state, federal or local law; or the presence of which could constitute a nuisance or which threatens to pose a hazard to the health or safety of persons on or about the Hatchery or Easement Areas.

6. **Responsibility and Indemnification for Easement Areas**. SSRAA shall at its cost immediately and without delay maintain, repair or replace any broken or leaking water pipe or other improvement located or used pursuant to the Easements conveyed by the City to SSRAA. In the event of any repair, maintenance, replacement or reconstruction of the water pipe or other improvements, SSRAA shall immediately, at its cost, restore to their previous condition the Easement Areas and all soil, elevations, drainage, vegetation, improvements and structures which are damaged, excavated, changed, removed or destroyed as a result of leakage, flooding, breaks, repair, maintenance, replacement or reconstruction. SSRAA shall indemnify and hold the City, its successors and assigns and their employees, agents and assigns harmless from any and all damages, injuries, deaths, losses, costs or claims arising from or related to the condition, use, maintenance, repair, replacement, or reconstruction, of the water pipes or other improvements or any leakage, settling, or flooding. All fixtures and appurtenances to the Easement Areas shall become the property of the City in the event the applicable Easement is terminated.

7. **Covenants Survive Closing**. The covenants, terms and conditions set forth in this Agreement shall survive closing, shall remain in full force and effect thereafter as covenants running with the land, and shall inure to the benefit of and be binding upon the parties, their successors and assigns.



8. **Law Applicable**. The laws of the State of Alaska shall govern the construction, validity, performance and enforcement of this Agreement.

9. **Relationship of the Parties**. This Agreement sets forth all the covenants, promises, agreements, conditions and understandings between the parties.

10. **Entire Agreement**. This Agreement sets forth all the covenants, promises, agreements, conditions and understandings between the parties.

11. **Amendment**. This Agreement may be amended only by a written document signed by both parties.

DATED at Ketchikan, Alaska, this 19th day of November, 2014.

CITY OF KETCHIKAN

FOR

Karl R. Amylon
City Manager

ATTEST

Katherine M. Suiter
Katherine M. Suiter
City Clerk

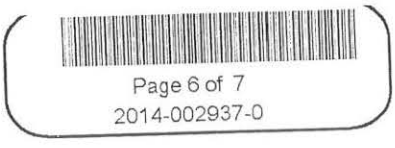
SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION, INC.

John Burke
John Burke
General Manager

CITY ACKNOWLEDGMENT

STATE OF ALASKA)
) **ss.** David Martin for
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 19th day of November, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared **KARL R. AMYLON** and **KATHERINE M. SUITER** to me known to be the **City Manager** and the **City Clerk** of the **CITY OF KETCHIKAN**, a municipal corporation, the corporation which executed the above and foregoing instrument; who on oath stated that they were duly authorized to execute said instrument and affix the



corporate seal thereto on behalf of said corporation; who acknowledged to me that they signed and sealed the same freely and voluntarily on behalf of said corporation for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in the certificate first above written.

Official Seal
Diane L. Walker
Notary Public - State of Alaska
My Comm. Expires
May 9, 20 15

Diane L. Walker
NOTARY PUBLIC FOR ALASKA
My Commission Expires: 5/9/2015

CORPORATE ACKNOWLEDGMENT

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 23rd day of September, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared **John Burke** known to be the **General Manager** of **SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION, INC.**, a corporation formed under the laws of the State of Alaska, the corporation which executed the above and foregoing instrument, and who on oath stated he was duly authorized to execute said instrument and affix the corporate seal thereto on behalf of said corporation, and that the seal affixed thereto is the corporate seal thereof, and acknowledged that he signed the same freely and voluntarily on behalf of said corporation for the purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate above written.

Cindy Walters
NOTARY PUBLIC FOR ALASKA
My Commission Expires: June 1, 2018

(Seal)

Return to:

Mitch Seaver, City Attorney
City of Ketchikan
334 Front Street
Ketchikan, Alaska 99901

OFFICIAL SEAL
CINDY WALTERS
NOTARY PUBLIC-STATE OF ALASKA
Commission No 14052914
My Comm Expires June 1, 2018

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ALASKA

2014-002938-0

Recording District 102 Ketchikan

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QUITCLAIM DEED

The CITY OF KETCHIKAN, ALASKA, a first class, home rule municipality, Grantor, of 334 Front Street, Ketchikan, Alaska 99901, pursuant to and in consideration of the covenants, terms and conditions set forth in an "Agreement to Convey the Deer Mountain Fish Hatchery and Easements" ("Agreement to Convey") between Grantor and Grantee dated November 19, 2014, conveys, and quitclaims to the SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION, INC., Grantee, an Alaska nonprofit corporation located at 14 Borch Street, Ketchikan, Alaska 99901, the following real property:

> The Deer Mountain Hatchery Parcel as shown on Deer Mountain Hatchery Re-plat, filed January 11, 2013 as Plat No. 2013-1, Ketchikan Recording District, First Judicial District, State of Alaska, (hereinafter together with all buildings, fixtures and appurtenances referred to as the "Hatchery Property").

RESERVING, however, to the Grantor, its successors and assigns, an easement for the construction, use, repair, maintenance, replacement and reconstruction of sanitary and storm sewer pipes, and other utilities and facilities on, over, under and across that portion of the Hatchery Property described as follows:

> Beginning at the east corner of Lot 9B, U.S.M.S. 769 Ingrams Addition; thence S-70°56' W a distance of 90.12 feet to a point being on the southerly boundary line of Lot 8 of Ingrams Addition also known as corner 8 of Plat No. 2013-1, Ketchikan Recording District thence S-18°55'01" E a distance of 10.42 feet to the true point of beginning;
>
> thence S-18°55'01" E a distance of 10.49 feet to corner 9 of Plat No. 2013-1, Ketchikan Recording District;

thence S-70°30'45" W a distance of 10.00 feet;
thence N-19°04'00" W a distance of 10.71 feet;
thence N-72°10'00" E a distance of 10.03 feet to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska.

AND FURTHER RESERVING to the Grantor, its successors and assigns the right to re-enter and retake the Hatchery Property in the event that Grantee, its successors or assigns, fails to operate a nonprofit fish hatchery on the Hatchery Property, including producing and releasing at least 100,000 live Chinook salmon into Ketchikan Creek annually, all according to the requirements and subject to the terms found in the Agreement to Convey.

In the event that the Grantor re-enters and retakes the Hatchery Property, all rights, title and interest in the Hatchery Property shall revert to the Grantor and all fixtures, buildings and appurtenances shall become the property of the Grantor.

DATED at Ketchikan, Alaska, this 19 day of November, 2014.

CITY OF KETCHIKAN

J. David Martin
Assistant City Manager

ATTEST

Katherine M. Suiter
Katherine M. Suiter
City Clerk

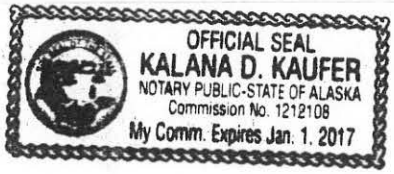
CITY ACKNOWLEDGMENT

STATE OF ALASKA)
) **ss.**
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 19th day of November, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and

sworn, personally appeared **J. DAVID MARTIN** and **KATHERINE M. SUITER** to me known to be the **Assistant City Manager** and the **City Clerk** of the **CITY OF KETCHIKAN**, a municipal corporation, the corporation which executed the above and foregoing instrument; who on oath stated that they were duly authorized to execute said instrument and affix the corporate seal thereto on behalf of said corporation; who acknowledged to me that they signed and sealed the same freely and voluntarily on behalf of said corporation for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in the certificate first above written.

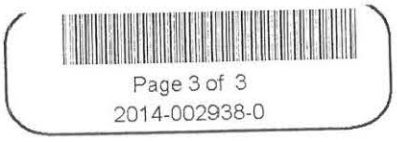


Kalana D. Kaufer

NOTARY PUBLIC FOR ALASKA
My Commission Expires: 01/01/2017

Return to:

Mitch Seaver, City Attorney
City of Ketchikan
334 Front Street
Ketchikan, Alaska 99901



ALASKA
2014-002939-0
Recording District 102 Ketchikan
11/20/2014 10:04 AM Page 1 of 4

EASEMENT FOR FISH LADDER

The CITY OF KETCHIKAN, ALASKA, (hereinafter referred to as "the City") a home rule, first class municipality located at 334 Front Street, Ketchikan, Alaska 99901, hereby grants to the SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION, INC. (hereinafter referred to as "SSRAA") an Alaska nonprofit corporation located at 14 Borch Street, Ketchikan, Alaska 99901, an easement under and across the following described parcels of real property (hereinafter referred to as "the Easement Area"):

> Beginning at the eastern-most corner of U.S.M.S. 769 Ingrams Additional also known as corner 11 of Plat No. 2013-1, the Deer Mountain Hatchery Parcel, Ketchikan Recording District, thence S-76°09'15" W a distance of 104.91 feet to a point being on the southeasterly boundary line of said Parcel to the true point of beginning;
> thence S-12°49'00" W a distance of 24.23 feet;
> thence N-77°07'17" W a distance of 10.00 feet;
> thence N-12°49'00" E a distance of 20.35 feet to a point along the lot line of said Parcel;
> thence N-85°04'16" E a distance of 5.47 feet to a property corner of said Parcel;
> thence N-76°09'15" E a distance of 5.36 feet to a point along the lot line of said Parcel to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska,

for the following purposes only:

> The repair, maintenance, use, replacement and reconstruction of a fish ladder for the property known as the Deer Mountain Fish Hatchery and otherwise described as:
>
> > The Deer Mountain Hatchery Parcel as shown on Deer Mountain Hatchery Re-plat, filed January 11, 2013 as Plat No. 2013-1, Ketchikan Recording District, First Judicial District, State of Alaska, (hereinafter together with all buildings, fixtures and appurtenances referred to as the "Hatchery Property").

The City, its successors and assigns reserve the right to use the surface and other portions of the Easement Area not occupied by the fish ladder for any purposes that do not

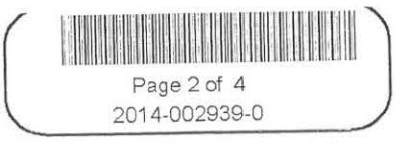
unreasonably interfere with the easement rights herein granted.

At its cost, SSRAA shall at all times maintain the fish ladder in a safe, legal and proper manner and condition and shall inspect, repair, and replace it as necessary. In the event of any repair, maintenance, replacement or reconstruction of the fish ladder, SSRAA shall immediately, at its cost, restore to its previous condition the Easement Area and all soil, elevations, drainage, vegetation, improvements and structures which are damaged, excavated, changed, removed or destroyed as a result of repair, maintenance, replacement or reconstruction. SSRAA shall indemnify and hold the City, its successors and assigns and their employees, agents and assigns harmless from any and all damages, injuries, deaths, losses, costs or claims arising from or related to the condition, use, maintenance, repair, replacement, or reconstruction.

The City makes no warranties or representations that it has title to the Easement Area. This easement extends only to any interest the City may have in the Easement Area. It is understood that title to or interests in Easement Area may be held by the Ketchikan Gateway Borough, the State of Alaska, or by other governmental or private entities. Therefore, the City provides no covenant of peaceable enjoyment as to the Easement Area or as to any improvements already existing on the Easement Area. The City makes no warranties or representations as to the condition of any fish ladder or other facilities already located on the Easement Area or as to their suitability for any use.

The terms and conditions of that "Agreement to Convey the Deer Mountain Fish Hatchery and Easements" (hereinafter referred to as "the Agreement to Convey") of even date hereof between the City and SSRAA are fully incorporated herein by reference. In the event that the City exercises its right to re-enter and retake the Deer Mountain Fish Hatchery and title to the Hatchery reverts to the City then this Easement shall immediately and automatically terminate and all fixtures and appurtenances shall become the property of the City.

SSRAA may assign this Easement to an owner or lessee of the Deer Mountain Fish Hatchery, but shall assure that any such assignment of this Easement continues for only so long as the lessee, owner or their successors and assigns also lease or own the Deer Mountain Fish Hatchery and operate the Deer Mountain Fish Hatchery in compliance with the Agreement to Convey. This Easement shall be and constitute a covenant running with the Easement Area and shall inure to the benefit of and be binding upon the parties, their successors and assigns.



DATED at Ketchikan, Alaska, this 19th day of November, 2014.

CITY OF KETCHIKAN

For

Karl R. Amylon
City Manager

ATTEST

Katherine M. Suiter
Katherine M. Suiter
City Clerk

The above easement is hereby accepted by the Southern Southeast Regional Aquaculture Association, Inc. and all terms and conditions contained therein or incorporated by reference are approved and agreed to.

Date: 23 Sept., 2014

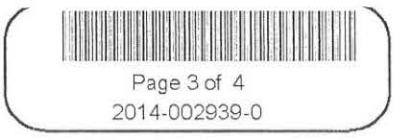
SOUTHERN SOUTHEAST AQUACULTURE ASSOCIATION, INC.

John Burke
John Burke
General Manager

CITY ACKNOWLEDGMENT

STATE OF ALASKA)
) **ss.** David Martin for
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 23rd day of September, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared **KARL R. AMYLON** and **KATHERINE M. SUITER** to me known to be the **City Manager** and the **City Clerk** of the **CITY OF KETCHIKAN**, a municipal corporation, the corporation which executed the above and foregoing instrument; who on oath stated that they were duly authorized to execute said instrument and affix the corporate seal thereto on behalf of said corporation; who acknowledged to me that they signed and sealed the same freely and voluntarily on behalf of said corporation for the uses and purposes therein mentioned.



WITNESS my hand and official seal the day and year in the certificate first above written.

Deane R Walker
NOTARY PUBLIC FOR ALASKA
My Commission Expires: 5/9/2015

CORPORATE ACKNOWLEDGMENT

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 23rd day of September, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared **JOHN BURKE** known to be the **General Manager** of **Southern Southeast Regional Aquaculture Association, Inc.**, a corporation formed under the laws of the State of Alaska, the corporation which executed the above and foregoing instrument, and who on oath stated he(she)(they) were duly authorized to execute said instrument and affix the corporate seal thereto on behalf of said corporation, and that the seal affixed thereto is the corporate seal thereof, and acknowledged that he(she)(they) signed the same freely and voluntarily on behalf of said corporation for the purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate above written.

Cindy Walters
NOTARY PUBLIC FOR ALASKA
My Commission Expires: June 1, 2018

Return to:

Mitch Seaver, City Attorney
City of Ketchikan
334 Front Street
Ketchikan, Alaska 99901

OFFICIAL SEAL
CINDY WALTERS
NOTARY PUBLIC-STATE OF ALASKA
Commission No. 14052914
My Comm. Expires June 1, 2018

ALASKA

2014-002940-0

Recording District 102 Ketchikan

11/20/2014 10:04 AM Page 1 of 5

EASEMENT FOR WATER LINE

The CITY OF KETCHIKAN, ALASKA, (hereinafter referred to as "the City") a home rule, first class municipality located at 334 Front Street, Ketchikan, Alaska 99901, hereby grants to the SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION, INC. (hereinafter referred to as "SSRAA") an Alaska nonprofit corporation located at 14 Borch Street, Ketchikan, Alaska 99901, an easement under and across the following described parcels of real property (hereinafter referred to together as "the Easement Area"):

Two portions of U.S.M.S. 769, more particularly described as follows:

Beginning at the east corner of Lot 9, U.S.M.S. 769 Ingrams Addition;
thence S-67°56'-W a distance of 110.15 feet;
thence S-19°04'-E a distance of 10.01 feet;
thence N-67°56'-E a distance of 113.35 feet;
thence N-37°56'-E a distance of 214.38 feet;
thence N-60°50'05"-W a distance of 10.11 feet;
thence S-37°56'00"-W a distance of 210.39 feet to the point of beginning;

and

Beginning at the east corner of Lot 9, U.S.M.S. 769 Ingrams Addition;
thence S-70°56'-W a distance of 110.00 feet; this point being on the southerly boundary line of Lot 7, Ingram's Addition;
thence S-19°04'00"-E a distance of 60.00 feet to the true point of beginning;
thence N-70°56'00"-E a distance of 25.00 feet;
thence S-84°38'30"-E a distance of 35.00 feet;
thence N-70°11'00"E a distance of 41.27 feet;
thence N-53°42'-E a distance of 183.91 feet;
thence N-49°34'30"-E a distance of 103.89 feet;
thence N-60°50'05"-E a distance of 10.64 feet;
thence S-49°34'30"-W a distance of 100.12 feet;
thence S-53°42'-W a distance of 182.10 feet;
thence S-70°11'-W a distance of 37.59 feet;
thence N-84°38'30"-W a distance of 34.93 feet;
thence S-70°56'-W a distance of 27.16 feet;

thence S-19°14'-E a distance of 10.0 feet to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska.

for the following purposes only:

The repair, maintenance, use, replacement and reconstruction of underground water pipes for the carrying of untreated water to fish tanks located on property known as the Deer Mountain Fish Hatchery and otherwise described as:

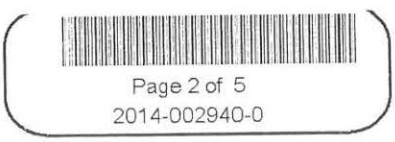
Beginning at the east corner of Lot 9B, U.S.M.S. 769 Ingrams Addition; thence S-70°56' W a distance of 90.12 feet to a point being on the southerly boundary line of Lot 8 of Ingrams Addition also known as corner 8 of Plat No. 2013-1, Ketchikan Recording District thence S-18°55'01" E a distance of 10.42 feet to the true point of beginning;

thence S-18°55'01" E a distance of 10.49 feet to corner 9 of Plat No. 2013-1, Ketchikan Recording District;
thence S-70°30'45" W a distance of 10.00 feet;
thence N-19°04'00" W a distance of 10.71 feet;
thence N-72°10'00" E a distance of 10.03 feet to the true point of beginning, all in the Ketchikan Recording District, First Judicial District, State of Alaska.

The City, its successors and assigns reserve the right to use the surface and other portions of the Easement Area not occupied by the water pipe for any purposes that do not unreasonably interfere with the easement rights herein granted.

At its cost, SSRAA shall at all times maintain the water pipes in a safe, legal and proper manner and condition and shall inspect and repair said water pipes as necessary. Any broken or leaking pipe shall be repaired or replaced by SSRAA at its cost, immediately and without delay. In the event of any repair, maintenance, replacement or reconstruction of the water pipe, SSRAA shall immediately, at its cost, restore to their previous condition the Easement Area and all soil, elevations, drainage, vegetation, improvements and structures which are damaged, excavated, changed, removed or destroyed as a result of leakage, flooding, breaks, repair, maintenance, replacement or reconstruction. SSRAA shall indemnify and hold the City, its successors and assigns and their employees, agents and assigns harmless from any and all damages, injuries, deaths, losses, costs or claims arising from or related to the condition, use, maintenance, repair, replacement, or reconstruction, of the water pipes or any leakage, settling, or flooding.

The City makes no warranties or representations that it has title to the Easement Area. This easement extends only to any interest the City may have in the Easement Area.



It is understood that title to or interests in Easement Area may be held by the Ketchikan Gateway Borough, the State of Alaska, or by other governmental or private entities. Therefore, the City provides no covenant of peaceable enjoyment as to the Easement Area or as to any improvements already existing on the Easement Area. The City makes no warranties or representations as to the condition of any water pipes or other facilities already located on the Easement Area or as to their suitability for any use.

The terms and conditions of that "Agreement to Convey the Deer Mountain Fish Hatchery and Easements" (hereinafter referred to as "the Agreement to Convey") of even date hereof between the City and SSRAA are fully incorporated herein by reference. In the event that the City exercises its right to re-enter and retake the Deer Mountain Fish Hatchery and title to the Hatchery reverts to the City then this Easement shall immediately and automatically terminate and all fixtures and appurtenances shall become the property of the City.

SSRAA may assign this Easement to an owner or lessee of the Deer Mountain Fish Hatchery, but shall assure that any such assignment of this Easement continues for only so long as the lessee, owner or their successors and assigns also lease or own the Deer Mountain Fish Hatchery and operate the Deer Mountain Fish Hatchery in compliance with the Agreement to Convey. This Easement shall be and constitute a covenant running with the Easement Area and shall inure to the benefit of and be binding upon the parties, their successors and assigns.

DATED at Ketchikan, Alaska, this 19th day of November, 2014.

CITY OF KETCHIKAN

For

Karl R. Amylon
City Manager

ATTEST

Katherine M. Suiter
Katherine M. Suiter
City Clerk

The above easement is hereby accepted by the Southern Southeast Regional Aquaculture Association, Inc. and all terms and conditions contained therein or incorporated by reference are approved and agreed to.

Date: 22 Sept., 2014

SOUTHERN SOUTHEAST AQUACULTURE ASSOCIATION, INC.

John Burke

John Burke

CITY ACKNOWLEDGMENT

STATE OF ALASKA)
) **ss.**
FIRST JUDICIAL DISTRICT)

David Martin for

THIS IS TO CERTIFY that on this 19th day of November, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared **KARL R. AMYLON** and **KATHERINE M. SUITER** to me known to be the **City Manager** and the **City Clerk** of the **CITY OF KETCHIKAN**, a municipal corporation, the corporation which executed the above and foregoing instrument; who on oath stated that they were duly authorized to execute said instrument and affix the corporate seal thereto on behalf of said corporation; who acknowledged to me that they signed and sealed the same freely and voluntarily on behalf of said corporation for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in the certificate first above written.

Official Seal
Diane L. Walker
Notary Public - State of Alaska
My Comm. Expires
May 9, 2015

Diane L. Walker

NOTARY PUBLIC FOR ALASKA
My Commission Expires: 5/9/2015

CORPORATE ACKNOWLEDGMENT

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 23rd day of September, 2014, before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared **JOHN BURKE** known to be the **General Manager** of

Southern Southeast Regional Aquaculture Association, Inc., a corporation formed under the laws of the State of Alaska, the corporation which executed the above and foregoing instrument, and who on oath stated he was duly authorized to execute said instrument and affix the corporate seal thereto on behalf of said corporation, and that the seal affixed thereto is the corporate seal thereof, and acknowledged that he signed the same freely and voluntarily on behalf of said corporation for the purposes therein mentioned.

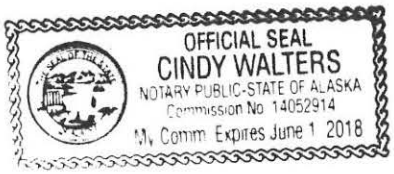
WITNESS my hand and official seal the day and year in this certificate above written.

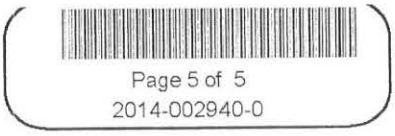
Cindy Walters

NOTARY PUBLIC FOR ALASKA
My Commission Expires: June 1, 2018

Return to:

Mitch Seaver, City Attorney
City of Ketchikan
334 Front Street
Ketchikan, Alaska 99901





Appendix 2

Carroll Inlet Permits

US Army Corps of Engineers
Alaska District

Permit Number: POA-1980-28, Carroll Inlet

Name of Permittee: Southern Southeast Regional Aquaculture Association, Inc.

Date of Issuance: December 22, 2015

Upon completion of the activity authorized by this letter of permission and any required mitigation, sign this certification and return it to Ms. Roberta Budnik at the following address:

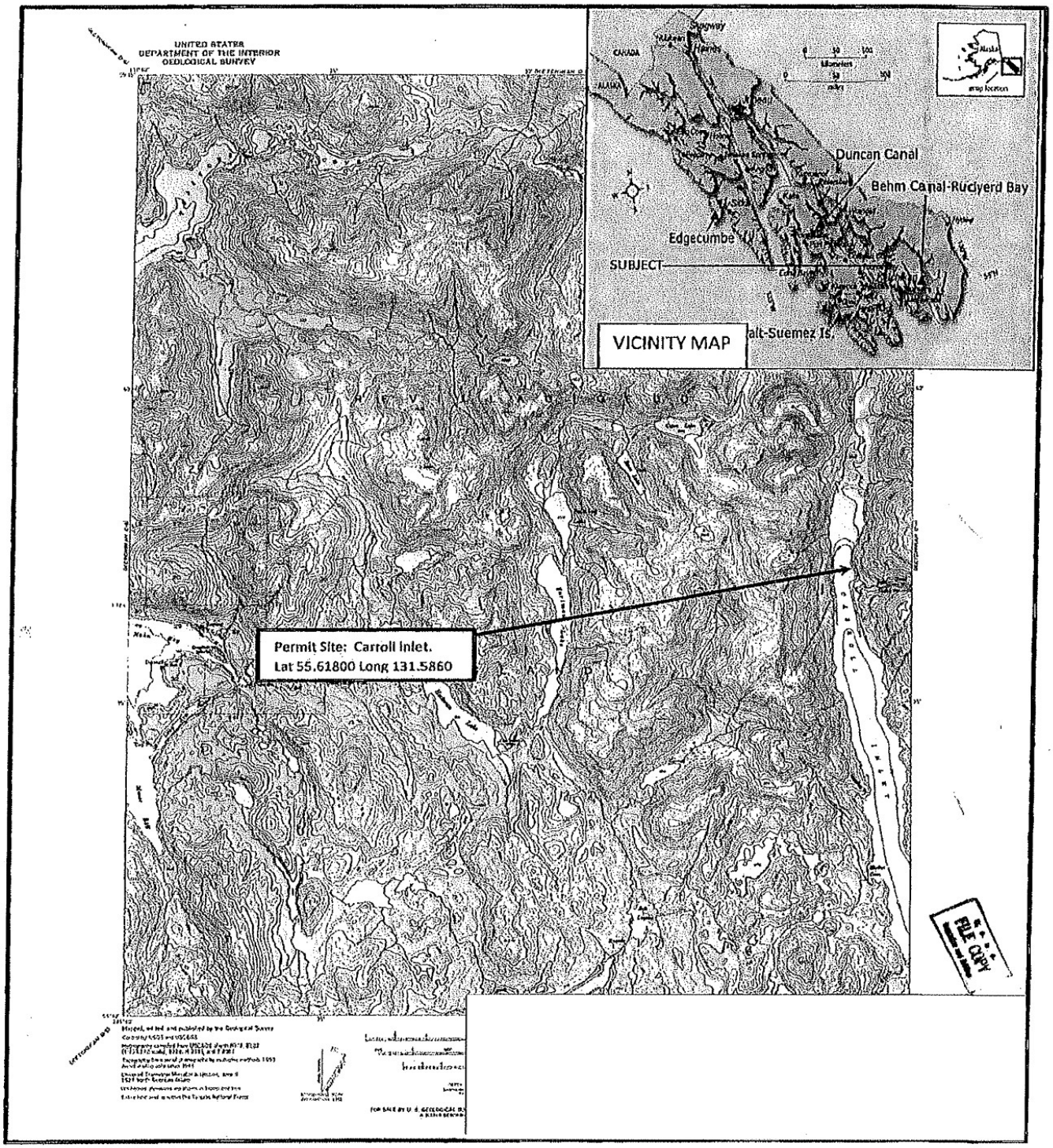
U.S. Army Corps of Engineers
Alaska District
Regulatory Division
Post Office Box 6898
JBER, Alaska 99506-0898

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

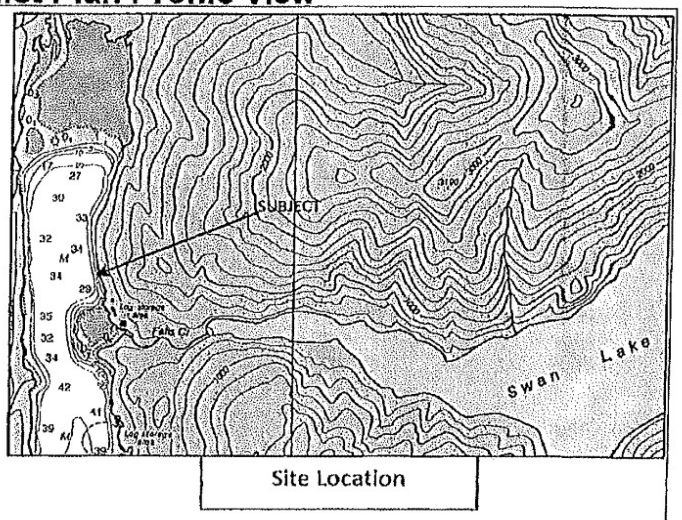
_____ _____

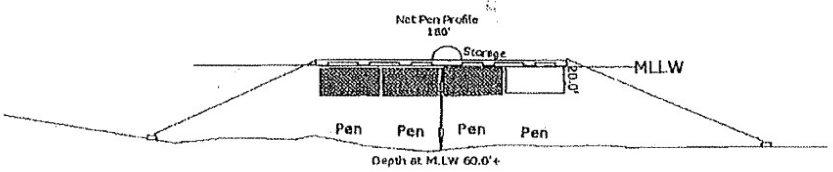
Signature of Permittee Date

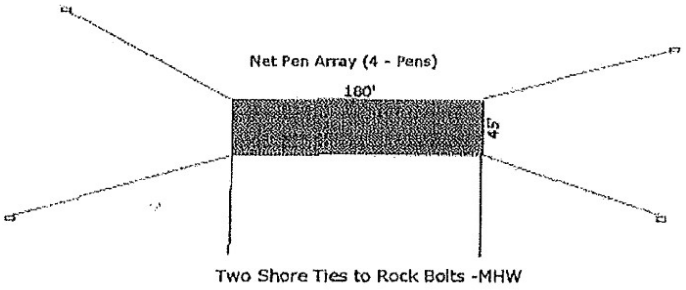


POA-1980-28, Carroll Inlet, Southern SE Regional Aquaculture Assoc.
Installation of net pens
Lat. 55.6180 N., Long. 131.3586 W.
Sheet 1 of 3, September 25, 2015

Carroll Inlet Plan Profile View







POA-1980-28, Carroll Inlet, Southern SE Regional Aquaculture Assoc.
Installation of net pens
Lat. 55.6180 N., Long. 131.3586 W.
Sheet 3 of 3, September 25, 2015

LAND USE PERMIT

PERMIT NUMBER: LAS 30496

PERMITTEE: Southern Southeast Regional Aquaculture Association

ACTIVITY: Year-round anchorage of a 40' x 180' net pen array.

PERMIT TERM: March 1, 2016 THROUGH February 28, 2021

Robert H Edwards

DNR REPRESENTATIVE

This permit must be posted in a conspicuous location visible from the most common access route.

North of Falls Creek outlet of Swan Lake, approximately 23 miles NNE of Ketchikan in Carroll Inlet.

Alaska Department of
NATURAL RESOURCES
Division of Mining, Land and Water
Southeast Regional Land Office
400 Willoughby Avenue/PO Box 111020
Juneau, Alaska 99811-1020
(907) 465-3400

Appendix 3

Water Supply and Hydrology

Deer Mountain Hatchery Water Supply Hydrological Data

Basin	
Ketchikan Lakes	
Drainage Area(square miles)	8.15
Highest Elevation	3,220
Granite Basin	
Drainage Area(square miles)	2.33
Highest Elevation	3,310
Fawn Lake	
Drainage Area(square miles)	0.05
Highest Elevation	
Mean Annual Precipitation Ketchikan (inches)	153
Mean Snowfall	37

Reservoir Data

Fawn Lake

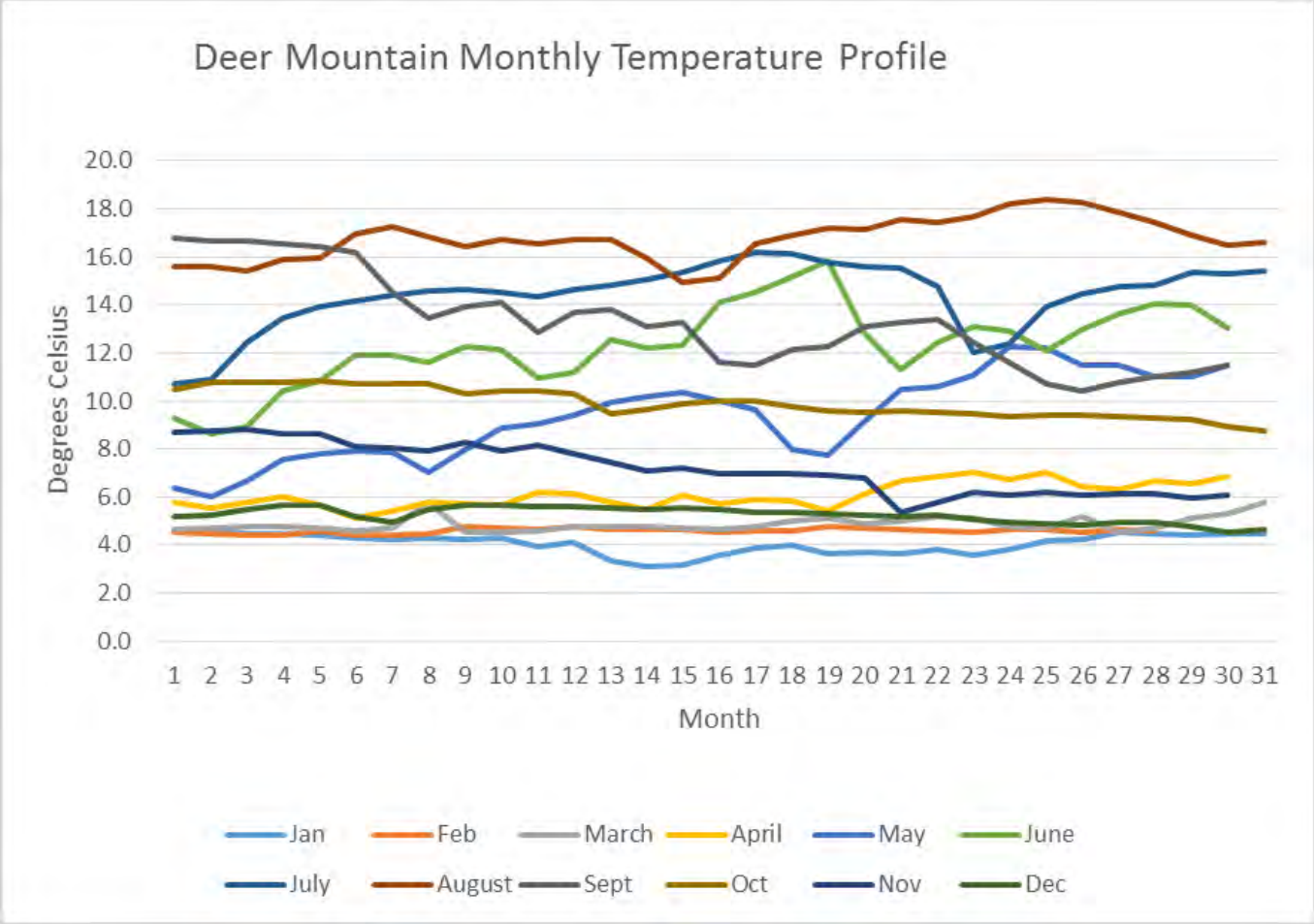
Dam Structure Data - North Dam	
Maximum height (feet)	15
Crest elevation (feet)	352
Crest width (feet)	10
Crest length (feet)	200
Dam Structure Data - South Dam	
Maximum height (feet)	22
Crest elevation (feet)	352
Crest width (feet)	10
Crest length (feet)	385
Reservoir Data	
Surface area, normal (acres)	3.1
Reservoir storage (acre-feet)	27
Drainage area (square miles)	0.05

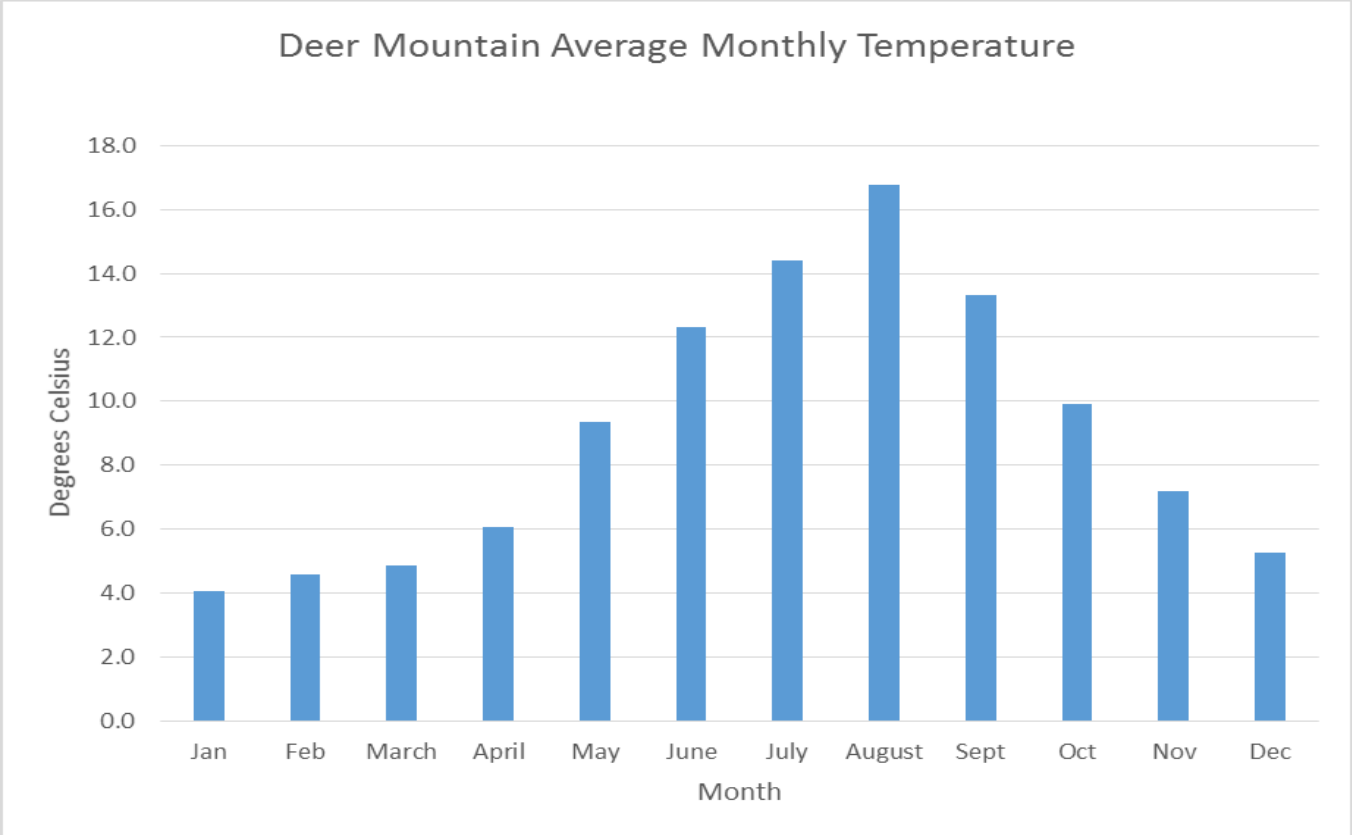
Ketchikan Lakes

Key Dam and Reservoir Data	
Maximum height (feet)	34
Crest elevation (feet)	353.9
Crest width (feet)	12
Crest length (feet)	1,163
Reservoir Data	
Surface area, normal (acres)	632
Reservoir storage (acre-feet)	13,300
Drainage area (square miles)	8.15

Daily/Average Monthly Temperatures 2015/16

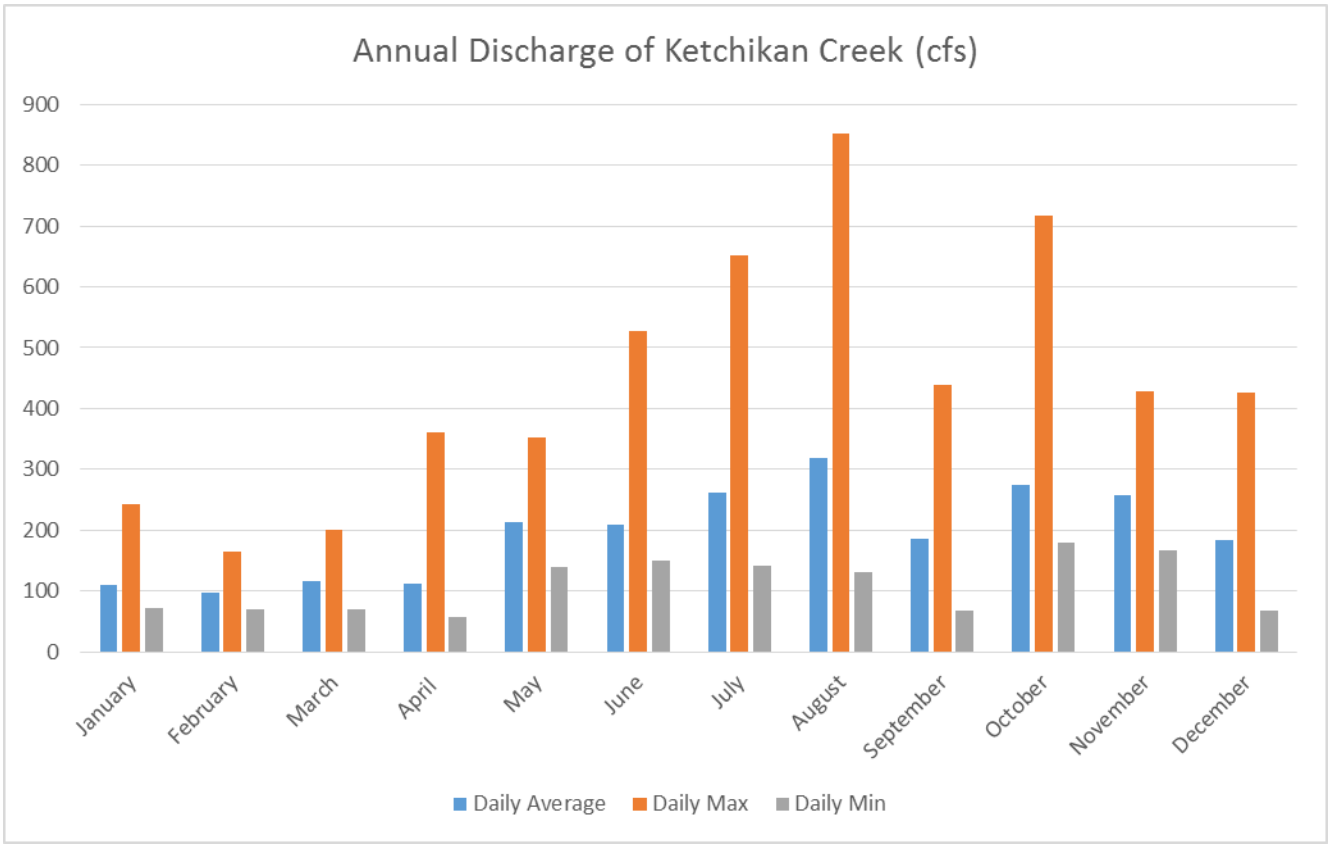
Day	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
1	4.6	4.5	4.7	5.8	6.4	9.3	10.7	15.6	16.8	10.5	8.7	5.2
2	4.6	4.5	4.7	5.6	6.0	8.6	10.9	15.6	16.6	10.7	8.7	5.2
3	4.5	4.4	4.7	5.8	6.7	8.9	12.4	15.4	16.6	10.8	8.8	5.5
4	4.5	4.4	4.8	6.0	7.6	10.4	13.5	15.9	16.6	10.8	8.6	5.7
5	4.4	4.6	4.7	5.7	7.8	10.8	13.9	15.9	16.4	10.8	8.6	5.7
6	4.3	4.4	4.6	5.1	7.9	11.9	14.2	17.0	16.2	10.7	8.1	5.2
7	4.3	4.4	4.7	5.4	7.9	11.9	14.4	17.3	14.5	10.7	8.1	5.0
8	4.3	4.5	5.8	5.8	7.0	11.6	14.6	16.8	13.5	10.7	7.9	5.5
9	4.2	4.8	4.5	5.7	8.0	12.3	14.6	16.4	13.9	10.3	8.3	5.7
10	4.3	4.7	4.5	5.7	8.8	12.1	14.5	16.7	14.1	10.4	7.9	5.6
11	4.0	4.7	4.6	6.2	9.1	10.9	14.3	16.5	12.9	10.4	8.1	5.6
12	4.1	4.7	4.8	6.1	9.4	11.2	14.6	16.7	13.7	10.3	7.8	5.6
13	3.3	4.6	4.8	5.8	9.9	12.5	14.8	16.7	13.8	9.5	7.4	5.6
14	3.1	4.6	4.8	5.5	10.2	12.2	15.1	15.9	13.1	9.6	7.1	5.5
15	3.2	4.6	4.7	6.1	10.4	12.3	15.4	14.9	13.3	9.9	7.2	5.6
16	3.6	4.5	4.7	5.7	10.0	14.1	15.8	15.1	11.6	10.0	7.0	5.5
17	3.9	4.6	4.8	5.9	9.6	14.5	16.2	16.6	11.5	10.0	7.0	5.4
18	4.0	4.6	5.0	5.8	8.0	15.2	16.1	16.9	12.1	9.7	6.9	5.4
19	3.6	4.7	5.1	5.4	7.7	15.8	15.8	17.2	12.2	9.6	6.9	5.3
20	3.7	4.7	4.9	6.1	9.1	12.8	15.6	17.1	13.1	9.5	6.8	5.3
21	3.6	4.7	5.0	6.7	10.5	11.3	15.6	17.6	13.3	9.6	5.3	5.2
22	3.8	4.6	5.2	6.9	10.6	12.5	14.8	17.4	13.4	9.5	5.8	5.2
23	3.6	4.6	5.1	7.0	11.1	13.1	12.0	17.6	12.5	9.4	6.2	5.1
24	3.8	4.7	4.8	6.7	12.2	12.9	12.4	18.2	11.6	9.4	6.1	4.9
25	4.2	4.6	4.7	7.0	12.2	12.1	13.9	18.4	10.7	9.4	6.2	4.9
26	4.2	4.5	5.2	6.5	11.5	13.0	14.4	18.2	10.4	9.4	6.1	4.8
27	4.5	4.7	4.5	6.3	11.5	13.6	14.8	17.8	10.8	9.3	6.1	5.0
28	4.4	4.6	4.7	6.7	11.0	14.1	14.8	17.4	11.0	9.3	6.1	4.9
29	4.4		5.1	6.5	11.0	14.0	15.3	16.9	11.2	9.2	6.0	4.8
30	4.4		5.3	6.8	11.5	13.0	15.3	16.5	11.5	8.9	6.1	4.6
31	4.5		5.8				15.4	16.6		8.8		4.6
Avg Temp	**4.1**	**4.6**	**4.9**	**6.1**	**9.4**	**12.3**	**14.4**	**16.7**	**13.3**	**9.9**	**7.2**	**5.3**
Avg DO(mg/l)	13.09	12.75	12.75	12.43	11.55	10.76	10.29	9.65	10.52	11.55	12.12	12.75


Deer Mountain Monthly Temperature Profile
Degrees Celsius
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Month
Jan
Feb
March
April
May
June
July
August
Sept
Oct
Nov
Dec


Deer Mountain Average Monthly Temperature
Degrees Celsius
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Jan
Feb
March
April
May
June
July
August
Sept
Oct
Nov
Dec
Month

Ketchikan Creek Discharge Below Tailrace, Cubic Feet Per Second (2008)

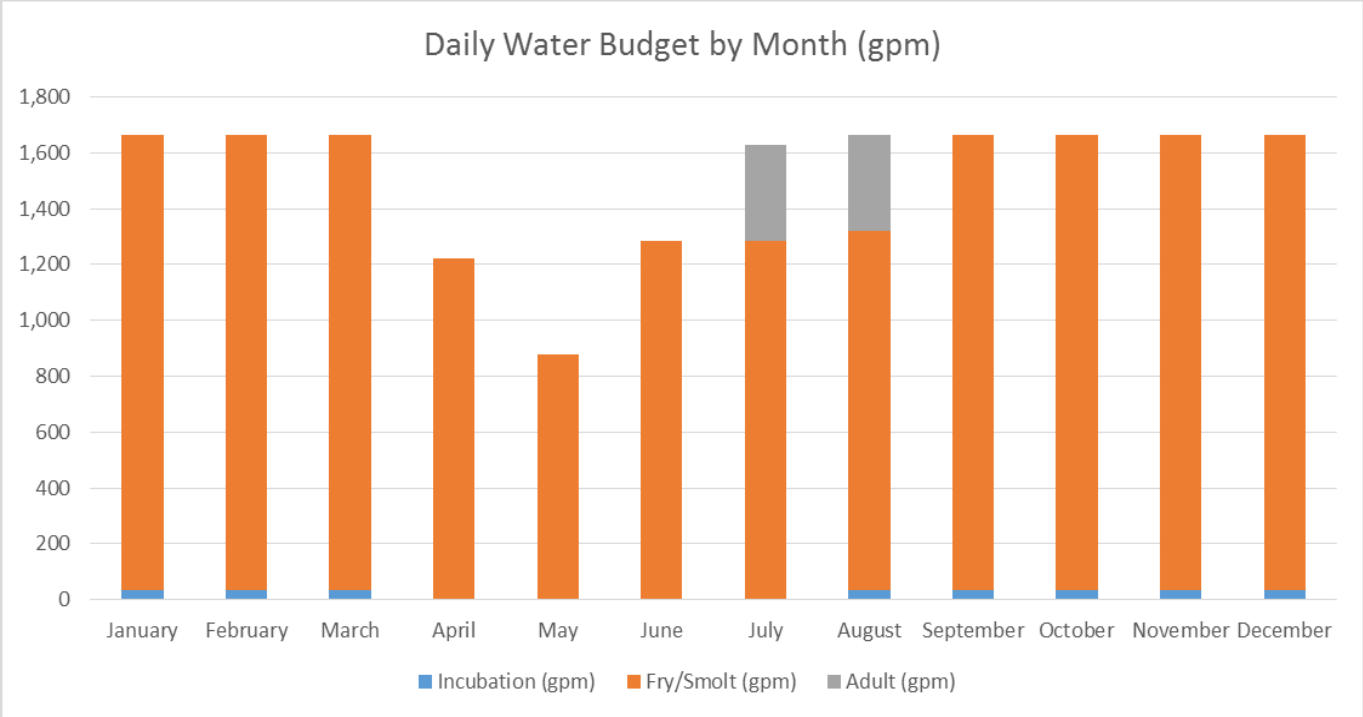
	Daily Average	Daily Max	Daily Min	Monthly Total
January	111	242	72	3428
February	97	165	71	2818
March	116	200	69	3581
April	112	360	57	3355
May	213	353	139	6598
June	210	527	151	6301
July	261	651	141	8090
August	318	852	132	9873
September	186	439	67	5583
October	275	716	180	8513
November	257	429	166	7722
December	183	426	68	5681



Deer Mountain Hatchery Monthly Water Budget

	Daily Avg (gpm)	Daily Avg (lpm)	Daily Avg (cfs)
January	1,663	6,294	3.7
February	1,663	6,294	3.7
March	1,663	6,294	3.7
April	1,223	4,630	2.7
May	880	3,331	2.0
June	1,285	4,863	2.9
July	1,628	6,162	3.6
August	1,663	6,294	3.7
September	1,663	6,294	3.7
October	1,663	6,294	3.7
November	1,663	6,294	3.7
December	1,663	6,294	3.7

	Incubation (gpm)	Fry/Smolt (gpm)	Adult (gpm)	Total
January	35	1,628		1,663
February	35	1,628		1,663
March	35	1,628		1,663
April		1,223		1,223
May		880		880
June		1,285		1,285
July		1,285	343	1,628
August	35	1,285	343	1,663
September	35	1,628		1,663
October	35	1,628		1,663
November	35	1,628		1,663
December	35	1,628		1,663



Appendix 4

Hatchery Biological Criteria

Rearing Survivals at Start-Up		Ketchikan Creek	Carroll Inlet
	% Survival	560,000	
Green to Eye	95%	106,400	425,600
Eye to Emergence	98%	104,000	416,000
Fry to Smolt	97%	100,000	400,000
Release Goal	Total Release	500,000	

Rearing Survivals at Permit Capacity		K. Creek	Carroll
	% Survival	670,000	
Green to Eye	95%	127,200	508,800
Eye to Emergence	98%	124,000	496,000
Fry to Smolt	97%	100,000	500,000
Release Goal	Total Release	600,000	

Fresh Water Rearing Program with Whitman Lake Supplied Fry

Ketchikan Creek Release	100,000 Grams	Fry/Smolt Kilograms
Initial Fry Weight(2.0g)	200,000	200
Final Fry Weight(25g)	2,500,000	2,500
Initial Rearing Density		2.00
Final Rearing Density		17

Carroll Inlet Release	400,000 Grams	Fry/Smolt Kilograms
Initial Fry Weight(2.0g)	800,000	800
Final Fry Weight(13g)	5,200,000	5,200
Initial Rearing Density		2.96
Final Rearing Density		19

Salt Water Rearing Program

Carroll Inlet Release	400,000 Grams	Smolt Kilograms
Initial Fry Weight(13g)	5,200,000	5,200
Final Fry Weight(25g)	10,000,000	10,000
Initial Rearing Density		3
Final Rearing Density		6

Fresh Water Rearing Program from Deer Mountain Brood Stock

Incubation Rearing Requirements	560,000	Green Eggs
5,500 Eggs Per Tray	102	Heath Trays
16 Trays Per Stack	7	Heath Stacks

Initial Start Up	500,000 Grams	Fry Kilograms
Initial Fry Weight(0.4g)	200,000	200
Transfer Fry Weight(2.0g)	1,000,000	1,000
Initial Rearing Density		3.85
Transfer Rearing Density		19

Salt Water Rearing Program

Carroll Inlet Release	400,000 Grams	Smolt Kilograms
Initial Fry Weight(13g)	5,200,000	5,200
Final Fry Weight(25g)	10,000,000	10,000
Initial Rearing Density		3
Final Rearing Density		6

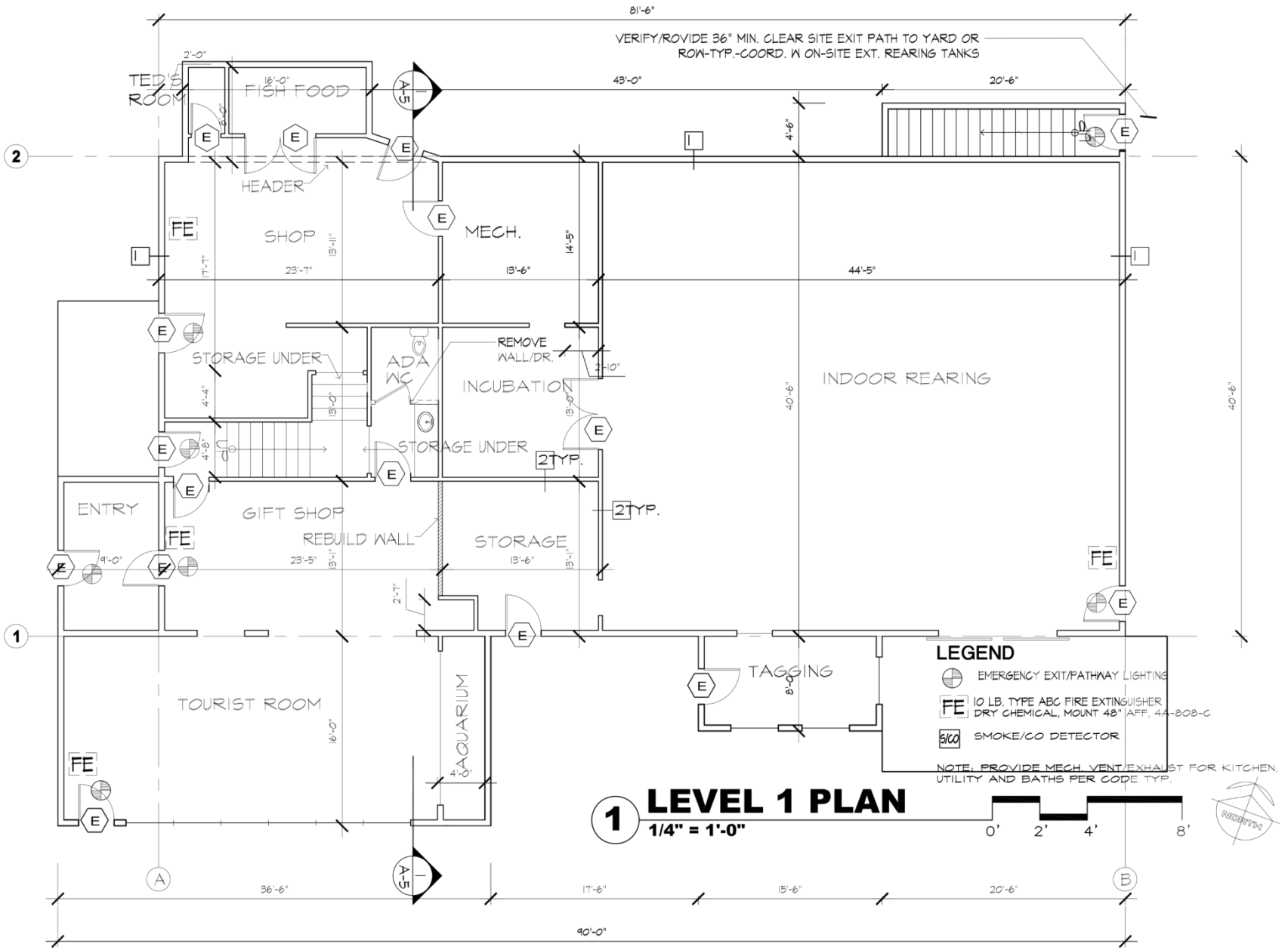
Ketchikan Creek Release	100,000 Grams	Fry/Smolt Kilograms
Initial Fry Weight(2.0g)	200,000	200
Final Fry Weight(25g)	2,500,000	2,500
Initial Rearing Density		2.00
Final Rearing Density		17

Carroll Inlet Release	400,000 Grams	Fry/Smolt Kilograms
Initial Fry Weight(2.0g)	800,000	800
Final Fry Weight(13g)	5,200,000	5,200
Initial Rearing Density		2.96
Final Rearing Density		19

Flow Requirements/Turover Rates								
	Volume(m^3)	Liters	Gallons	R1	R2	Total Flow @ R1	Total Flow @ R2	
Concrete Raceway	39	39,000	10,296	172	343	343	686	
Circular	25	25,000	6,600	110	220	440	880	
Large Swede	24	24,000	6,336	106	211	845	1,690	
Small Swede	4	3,500	924	15	31	123	246	
Fiberglass Raceway	6	6,000	1,584	26	53	106	211	
Incubation Module(Heath Trays)		133lpm	35gpm					
					Total GPM	1,892	3,714	
					Total CFS	4.2	8	

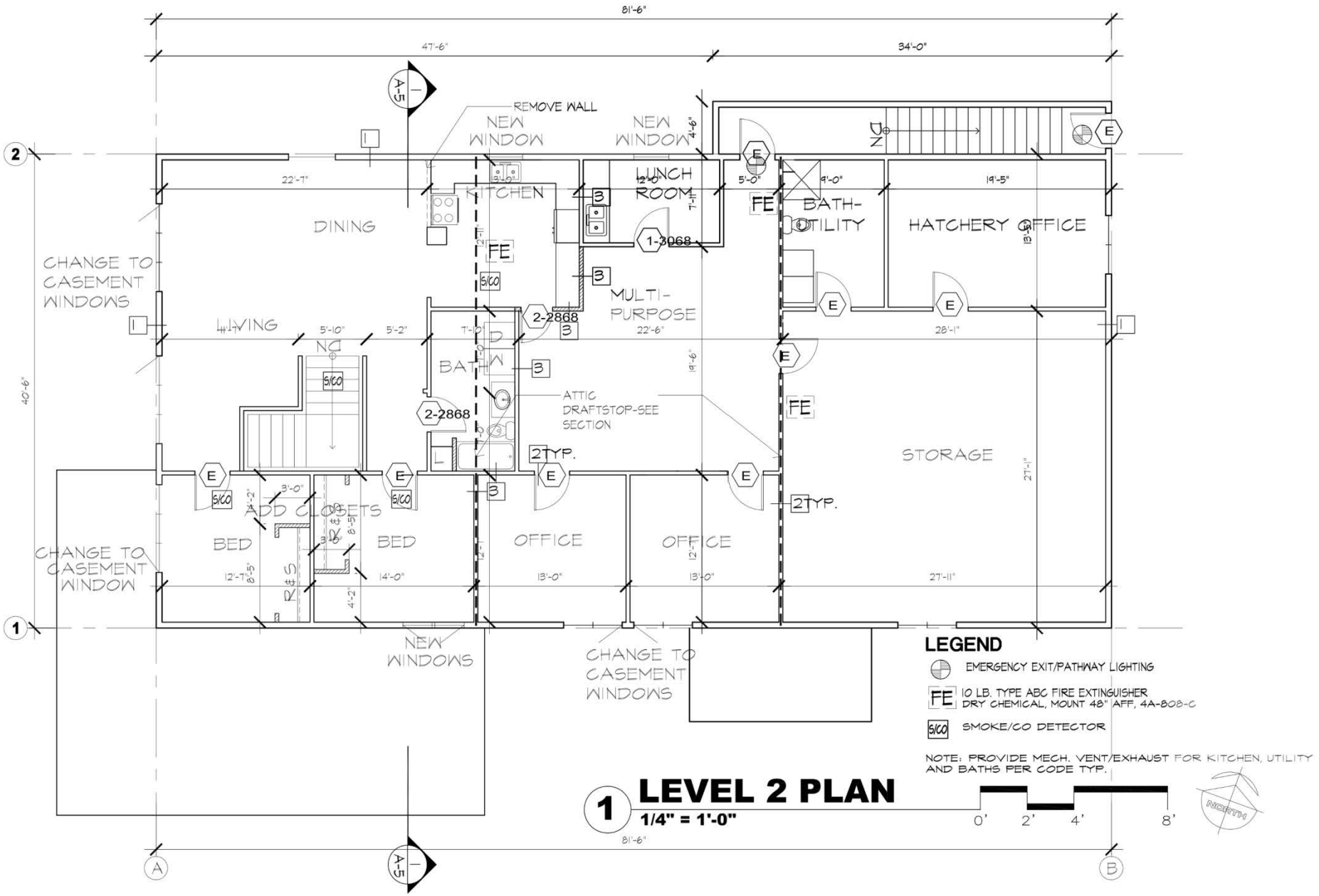
Calendar Year Rearing Plan	Types and Number of Rearing Units in Production by Month							
	Concrete Raceway	Circulars	Large Swede	Small Swede	Fiberglass Raceway	Heath Tray Stack	Total GPM	Total CFS
January	2	4	8	0	0	7	1,663	3.7
February	2	4	8	0	0	7	1,663	3.7
March	2	4	8	0	0	7	1,663	3.7
April	2	4	2	8	4	0	1,223	2.7
May	0	4	2	8	4	0	880	2.0
June	0	4	8	0	0	0	1,285	2.9
July	2	4	8	0	0	0	1,628	3.6
August	2	4	8	0	0	7	1,663	3.7
September	2	4	8	0	0	7	1,663	3.7
October	2	4	8	0	0	7	1,663	3.7
November	2	4	8	0	0	7	1,663	3.7
December	2	4	8	0	0	7	1,663	3.7

Appendix 5
Facility Layout



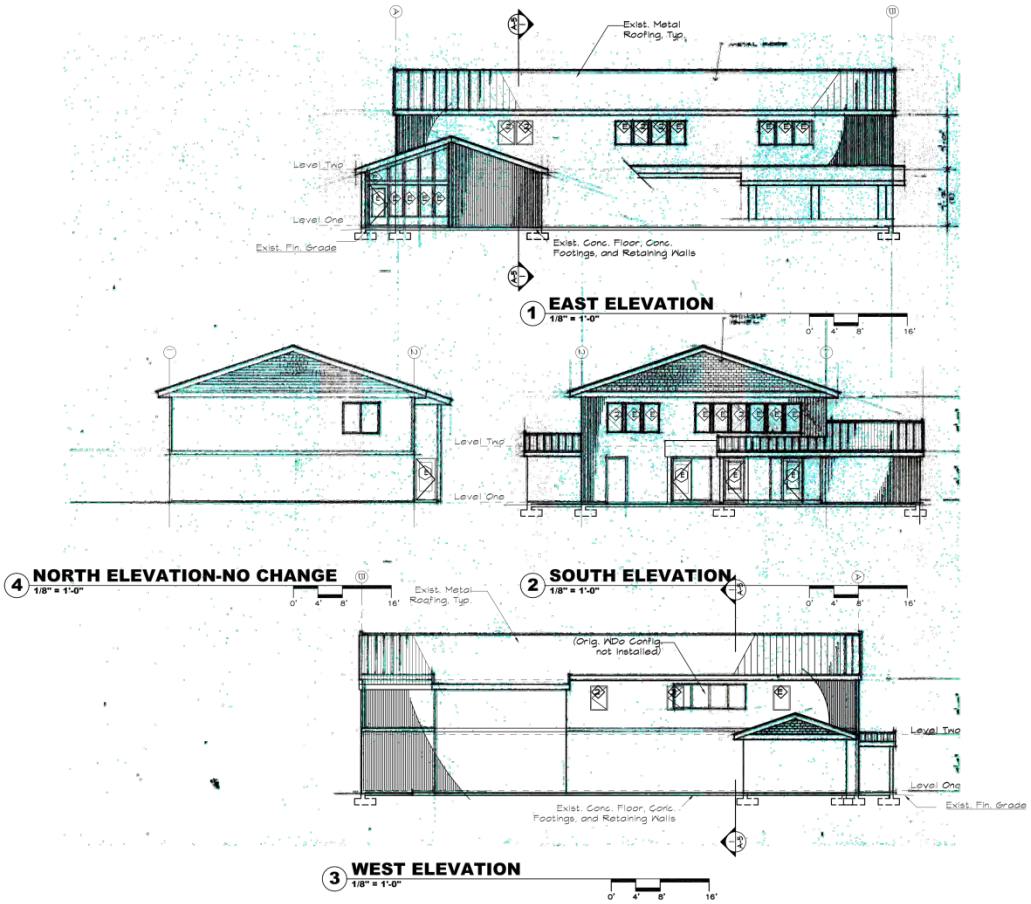
1 LEVEL 1 PLAN

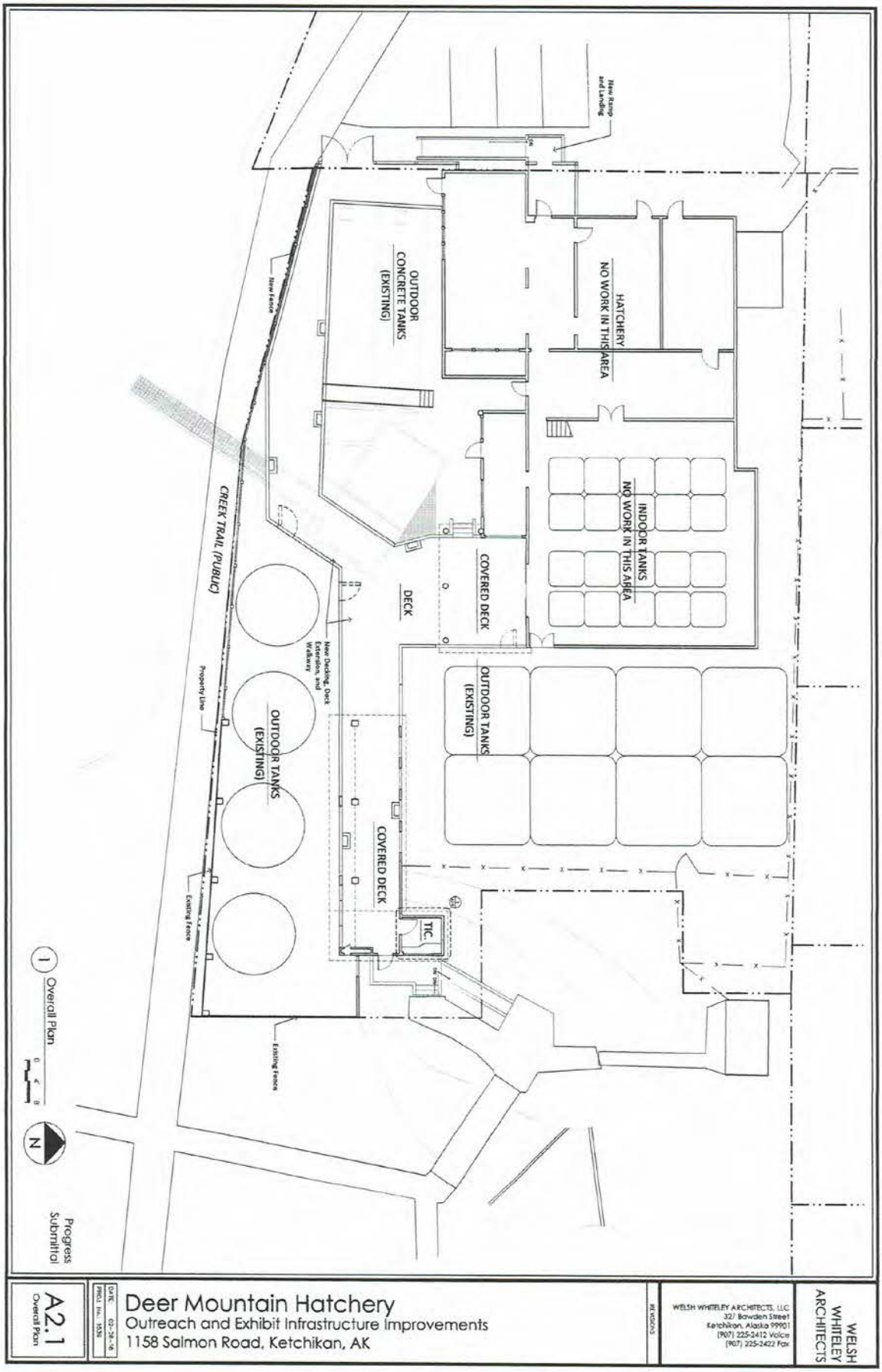
1/4" = 1'-0"



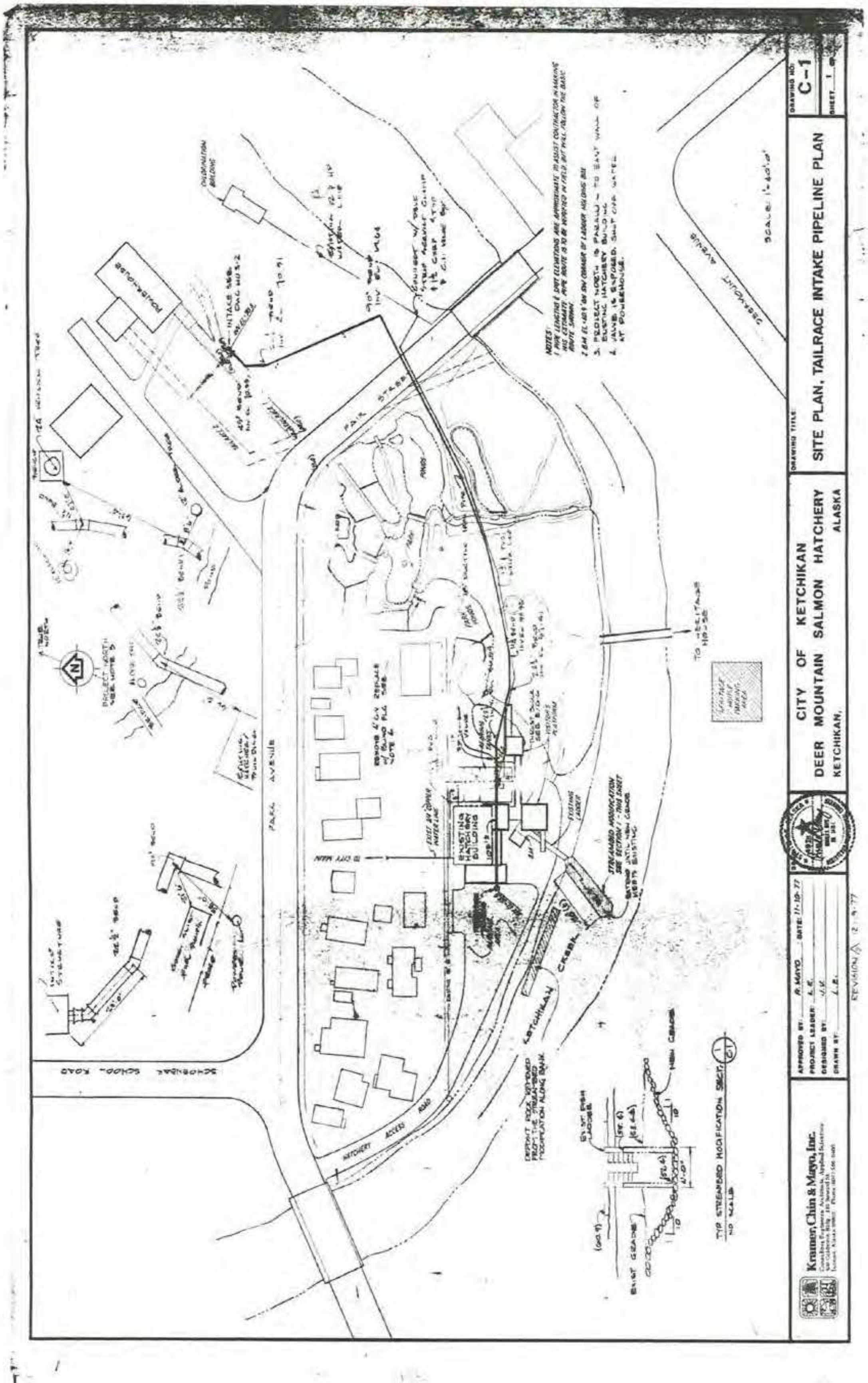
1 **LEVEL 2 PLAN**

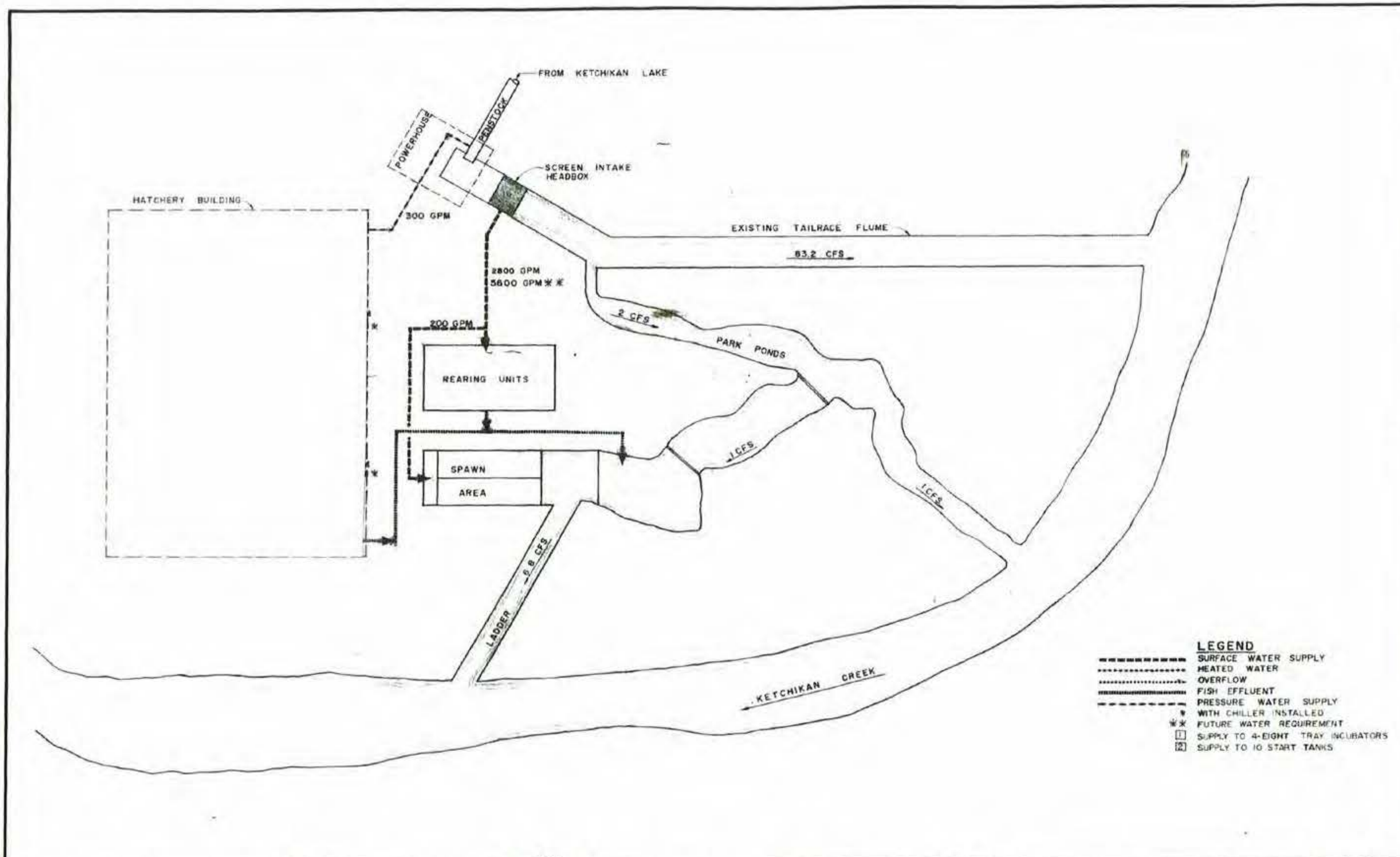
1/4" = 1'-0"


Exist. Metal Roofing, Typ.
Level Two
Level One
Exist. Fin. Grade
Exist. Conc. Floor, Conc. Footings, and Retaining Walls
1 EAST ELEVATION
1/8" = 1'-0"
0' 4' 8' 16'
Level Two
Level One
4 NORTH ELEVATION-NO CHANGE
1/8" = 1'-0"
2 SOUTH ELEVATION
1/8" = 1'-0"
Exist. Metal Roofing, Typ.
(Orig. NDo Config. not Installed)
Level Two
Level One
Exist. Fin. Grade
Exist. Conc. Floor, Conc. Footings, and Retaining Walls
3 WEST ELEVATION
1/8" = 1'-0"

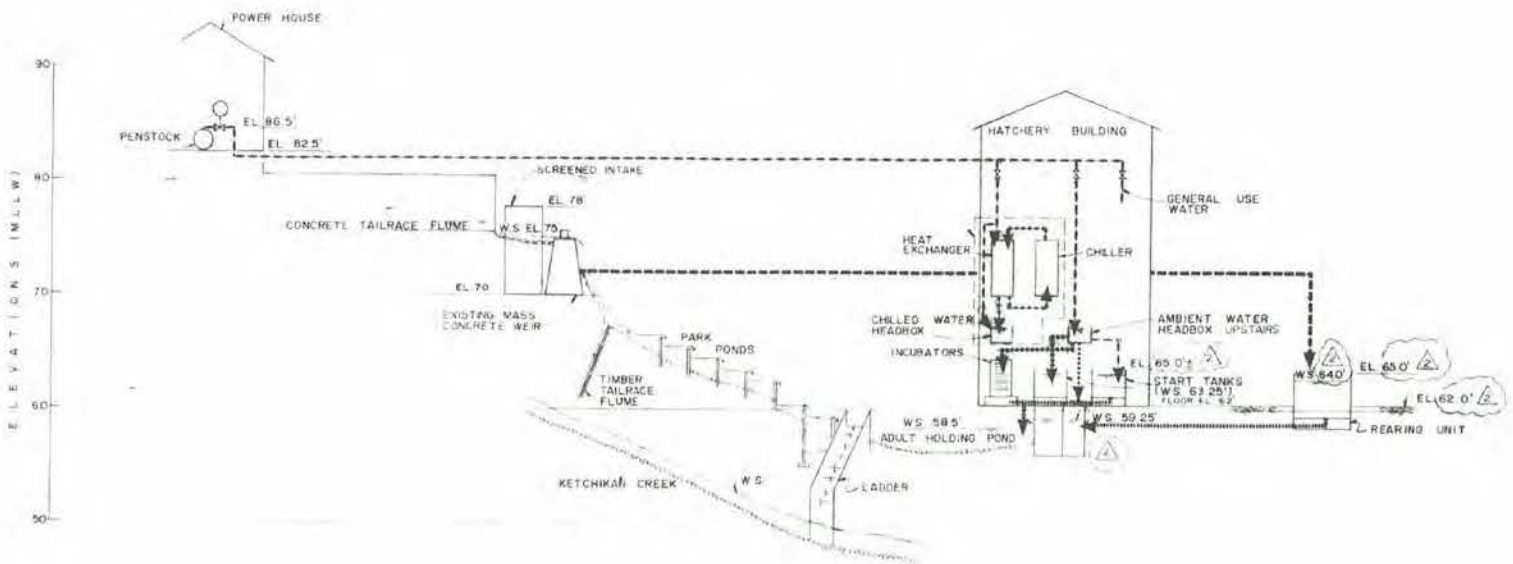

New Ramp and Landing
OUTDOOR CONCRETE TANKS (EXISTING)
HATCHERY NO WORK IN THIS AREA
New Fence
CREEK TRAIL (PUBLIC)
INDOOR TANKS NO WORK IN THIS AREA
COVERED DECK
DECK
New Decking, Deck Extension, and Walkway
OUTDOOR TANKS (EXISTING)
Property Line
OUTDOOR TANKS (EXISTING)
COVERED DECK
TIC
Existing Fence
Existing Fence
1 Overall Plan
N
Progress Submittal
A2.1 Overall Plan
DATE 02-26-16
PROJ. No. 1535
Deer Mountain Hatchery
Outreach and Exhibit Infrastructure Improvements
1158 Salmon Road, Ketchikan, AK
WELSH WHITELEY ARCHITECTS, LLC
327 Bawden Street
Ketchikan, Alaska 99901
(907) 225-2412 Voice
(907) 225-2422 Fax
WELSH WHITELEY ARCHITECTS

1
A4.2
COVERED
VIEWING DECK
Existing Tank
Existing Tank
1 Viewing Deck Section 0 2' 4'
Mesh Panels
8'-0", Typ.
Cedar Panels
Existing Wood Fence
8'-0"
Existing Finished
Garde
Existing Fish Ladder/Raceway
2 Fence Elevation - South 0 2' 4'
Existing Hatchery Building
New Fence W/ Cedar Panels
New Double
Gate
Existing Finshed
Garde
New Loading Dock/Landing
New Ramp and Handrail
Progress
Submittal
3 Fence Elevation - West 0 2' 4'
WELSH
WHITELEY
ARCHITECTS
WELSH WHITELEY ARCHITECTS, LLC
327 Bawden Street
Ketchikan, Alaska 99901
(907) 225-2432 Voice
(907) 225-2422 Fax
REVISIONS
Deer Mountain Hatchery
Outreach and Exhibit Infrastructure Improvements
1158 Salmon Road, Ketchikan, AK
DATE: 02-26-16
PROJ. No.: 1539
A3.0
Sections


CITY OF KETCHIKAN
DEER MOUNTAIN SALMON HATCHERY
KETCHIKAN, ALASKA
SITE PLAN, TAILRACE INTAKE PIPELINE PLAN
C-1
Kramer, Chin & Mayo, Inc.
PARK AVENUE
FAIR STREET
KETCHIKAN CREEK
HATCHERY ACCESS ROAD
SCHOENBAR SCHOOL ROAD
POWERHOUSE

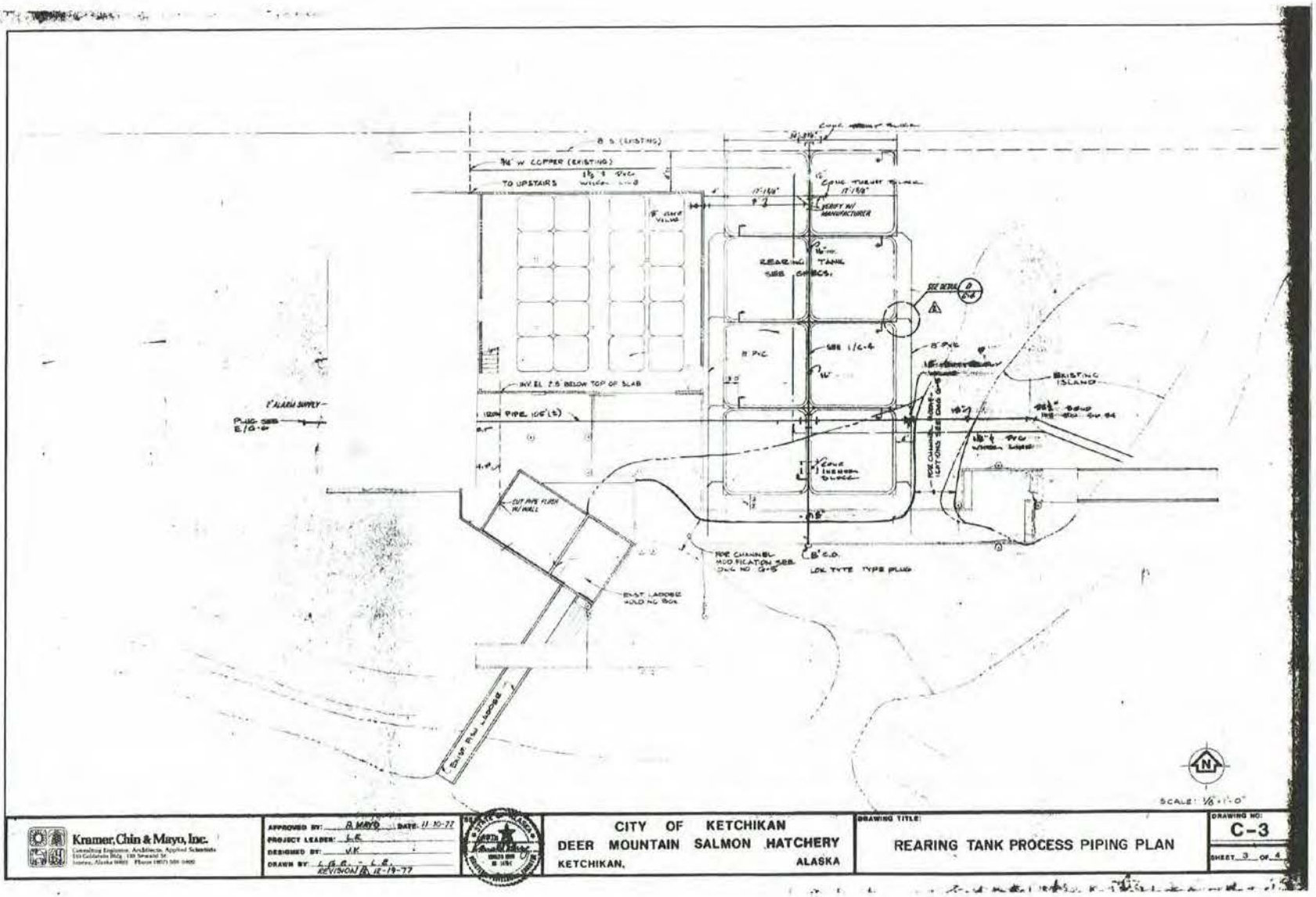


Kramer, Chin & Mayo, Inc.	APPROVED BY: R. MAYO DATE 11-10-77 PROJECT LEADER: L. ERICKSON DESIGNED BY: J. VAIL DRAWN BY: B. BENNETT	CITY OF KETCHIKAN DEER MOUNTAIN SALMON HATCHERY	DRAWING TITLE: PROCESS DESIGN SCHEMATIC	DRAWING NO: G-3 SHEET 3 OF 6



Kramer, Chin & Mayo, Inc.	APPROVED BY: R. MAYO DATE 11-10-77 PROJECT LEADER L. ERICKSON DESIGNED BY J. VAIL DRAWN BY B. BENNETT	CITY OF KETCHIKAN DEER MOUNTAIN SALMON HATCHERY KETCHIKAN, ALASKA	DRAWING TITLE: HYDRAULIC FLOW SCHEMATIC	DRAWING NO: G-4 SHEET 4 OF 6

REVISION A 12-19-77



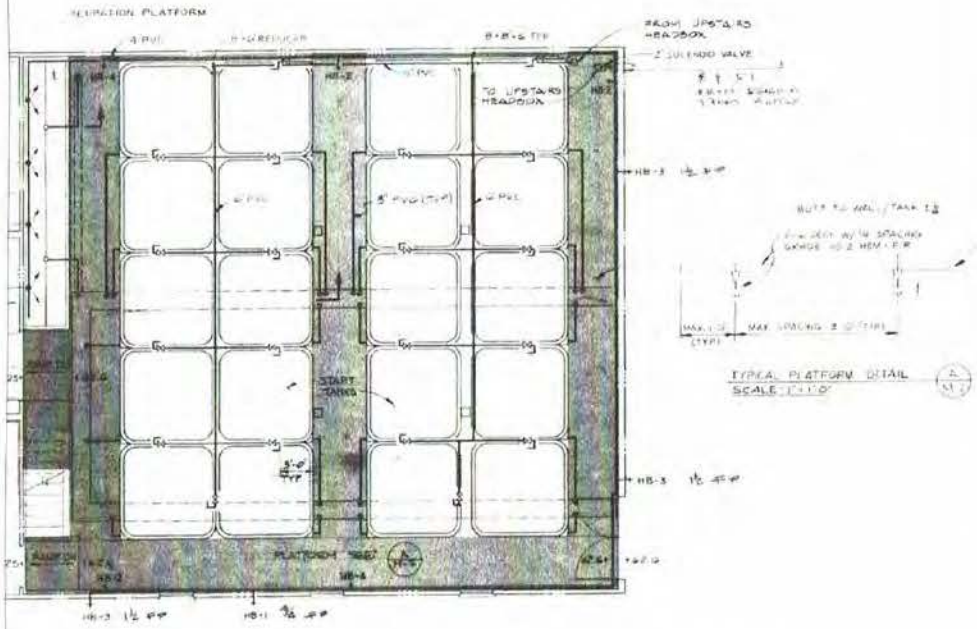
Kramer, Chin & Mayo, Inc.

APPROVED BY: D. MAYO DATE: 11-10-77
PROJECT LEADER: L.C.
DESIGNED BY: V.K.
DRAWN BY: L.C.C. - L.C.
REVISION 12-19-77

CITY OF KETCHIKAN
DEER MOUNTAIN SALMON HATCHERY
KETCHIKAN, ALASKA

DRAWING TITLE: REARING TANK PROCESS PIPING PLAN

DRAWING NO: C-3
SHEET 3 OF 4



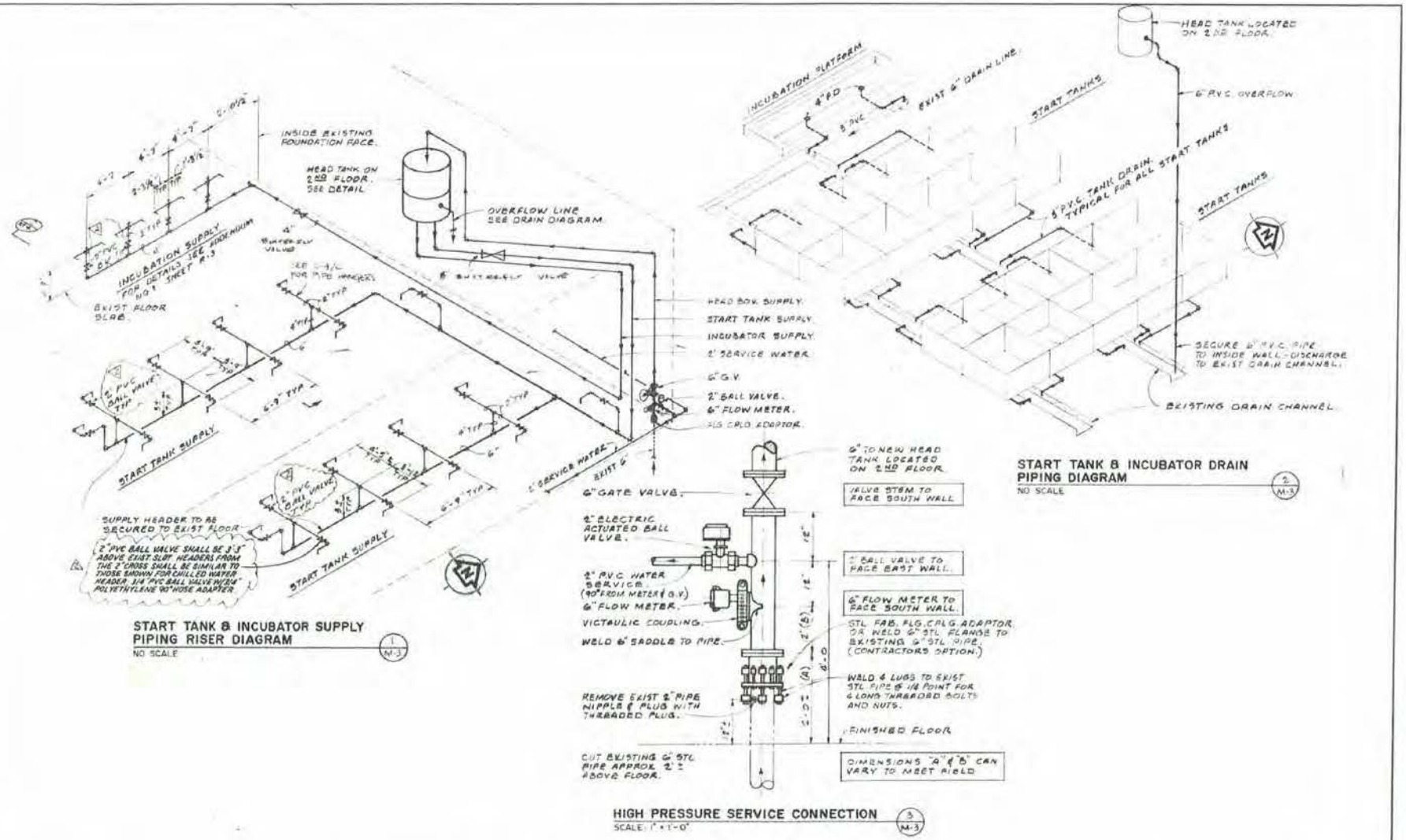
HATCHERY PROCESS PIPING PLAN

TYPICAL PLATFORM DETAIL

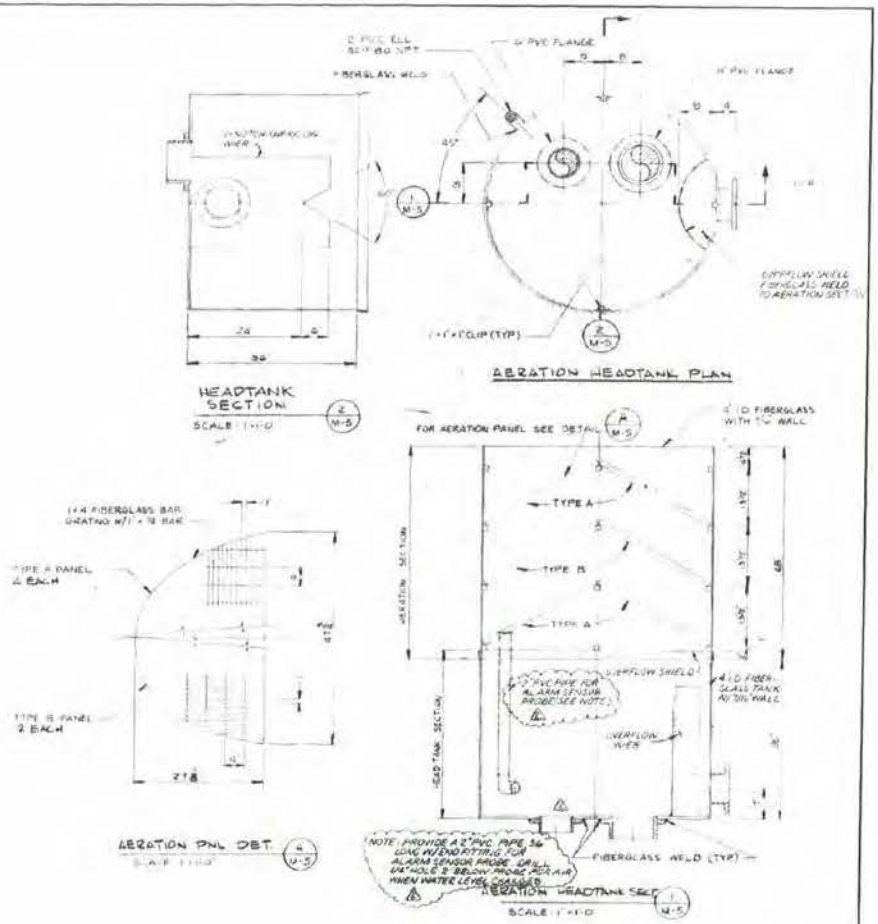
NOTE
B NOSE BIBB ELEVATIONS SHALL BE EL 64.5 UNLESS OTHERWISE SHOWN

SCALE 1/4"=1'-0"

Kramer, Chin & Mayo, Inc. Consulting Engineers, Architects, Applied Scientists 549 Columbia Bldg. 550 Seward St. Juneau, Alaska 99801 Phone (907) 586-6400	APPROVED BY: [illegible] DATE: 8-10-77 PROJECT LEADER L.E. DESIGNED BY: J.V. DRAWN BY: E.M. REVISION 12-15-77	CITY OF KETCHIKAN DEER MOUNTAIN SALMON HATCHERY KETCHIKAN, ALASKA	DRAWING TITLE: HATCHERY BUILDING PROCESS PIPING PLAN	DRAWING NO: M-2 SHEET 2 OF 4



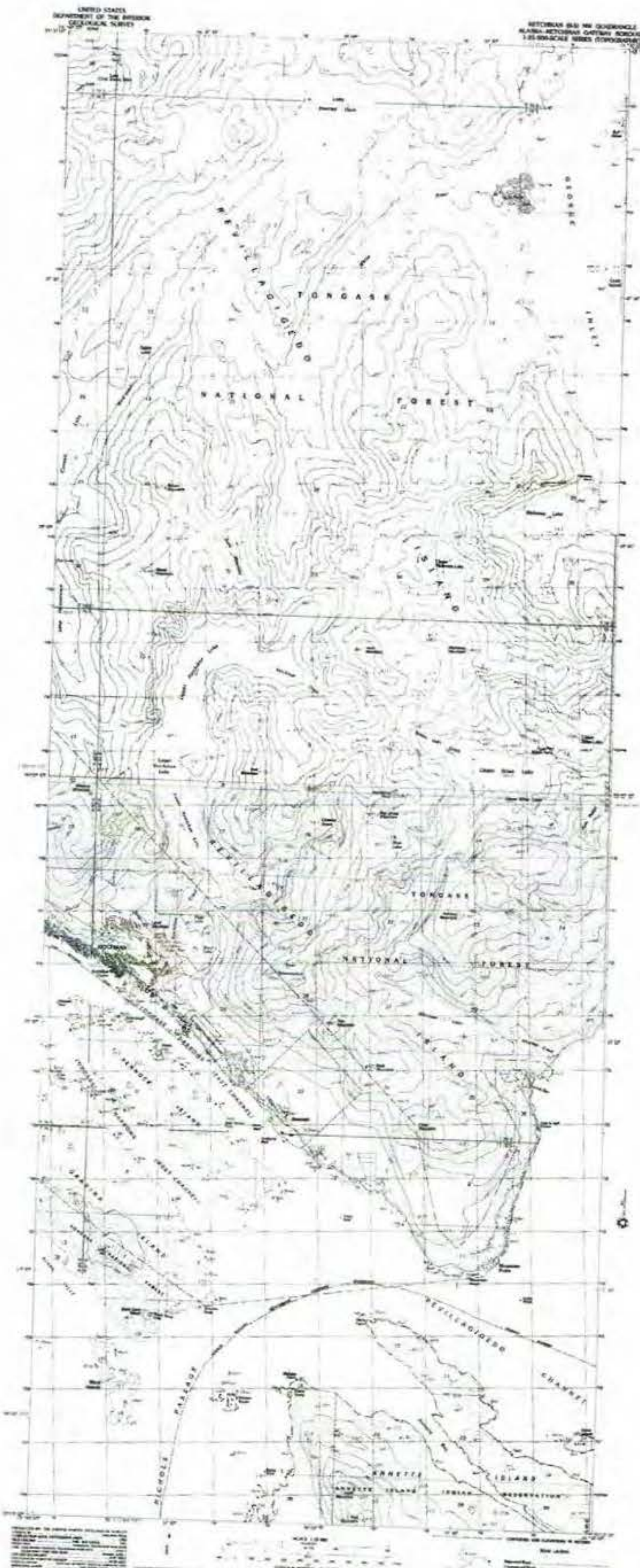
Kramer, Chin & Mayo, Inc.	APPROVED BY: R. MAYO DATE: 11-10-77 PROJECT LEADER: L.F. DESIGNED BY: J.V. DRAWN BY: F.M. REVISION A 12-19-77	CITY OF KETCHIKAN DEER MOUNTAIN SALMON HATCHERY KETCHIKAN, ALASKA	DRAWING TITLE: HATCHERY BUILDING PROCESS PIPING RISER DIAGRAM & DETAILS	DRAWING NO: M-3 SHEET 3 OF 4

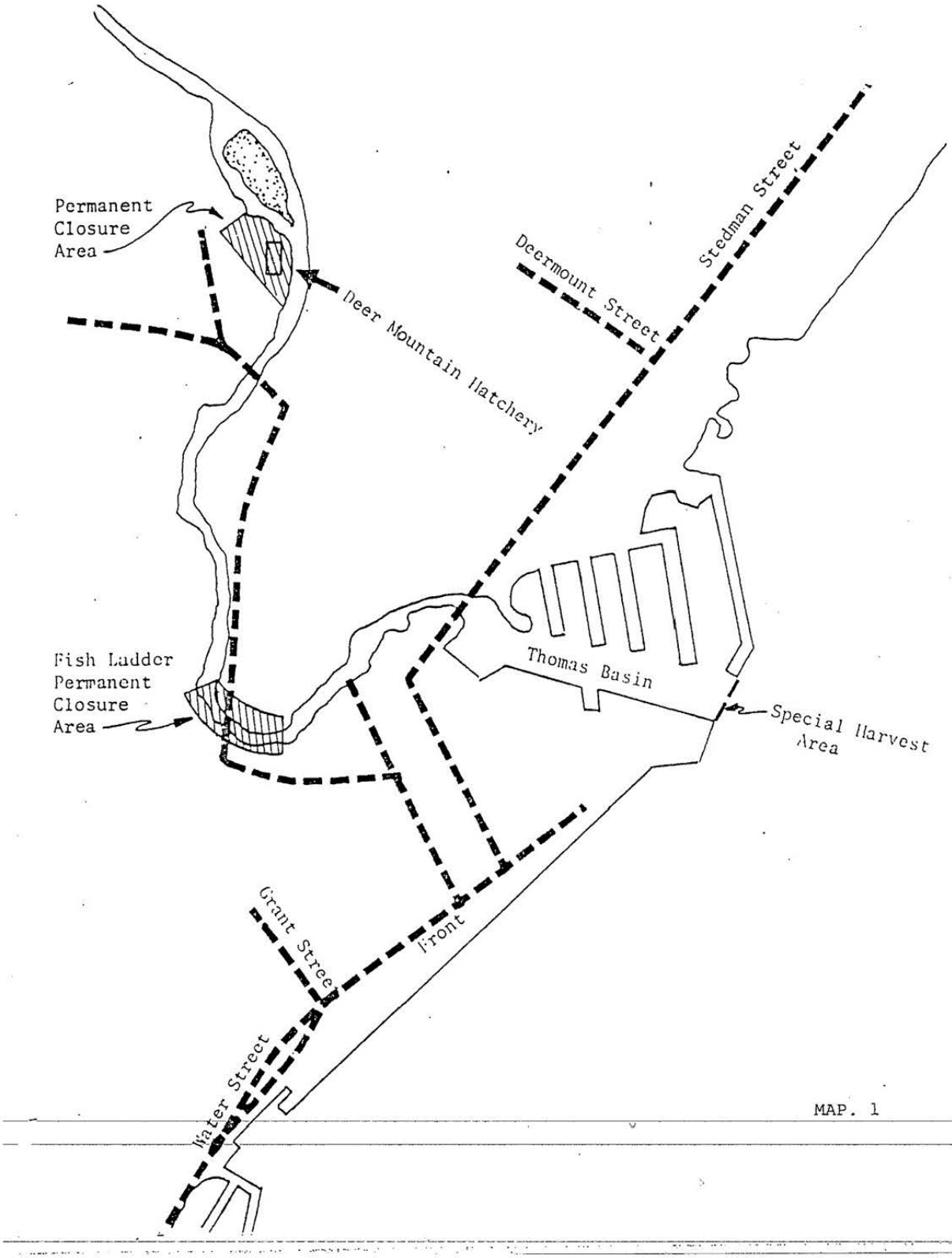


Kramer, Chin & Mayo, Inc.	APPROVED BY: R. MAYO DATE: 11-10-77 PROJECT LEADER: L.E. DESIGNED BY: U.V. DRAWN BY: C.L. REVISION 12-19-77	CITY OF KETCHIKAN DEER MOUNTAIN SALMON HATCHERY KETCHIKAN, ALASKA	DRAWING TITLE: AERATING HEADTANK PLAN, ELEVATIONS & DETAILS	DRAWING NO: M-5 SHEET 5 OF 1

Appendix 6
Deer Mountain Hatchery and Carroll Inlet Maps

17428
REVILLAGIGEDO CHANNEL
NICHOLS PASSAGE AND TONGASS NARROWS
SOUNDINGS IN FATHOMS
17428


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
TONGASS
NATIONAL
FOREST
PROVISIONAL MAP


Permanent
Closure
Area
Deer Mountain Hatchery
Deermount Street
Stedman Street
Fish Ladder
Permanent
Closure
Area
Thomas Basin
Special Harvest
Area
Grant Street
Front
Water Street

MAP. 1


Legend
E DMH Fish Ladder
B DMH Flume
D Deer Mountain Hatchery
A KPU Power House
C KPU Tail Race
F Ketchikan Creek
G Ketchikan Creek Fish Ladder
H Thomas Basin
KPU Power House
DMH Flume
KPU Tail Race
Ketchikan Creek Fish Ladder
Ketchikan Creek
Deer Mountain Hatchery
DMH Fish Ladder
Ketchikan
Thomas Basin
Google earth
© 2016 Google
Image © 2016 DigitalGlobe
N
500 ft