

ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILE 8672
1857 SCOMM 75: MARICULTURE (FISH FARMING), 1987-1990

74

however, that animals living in degraded environments (which I assume would include under-pen locales) can be seriously disabled by such bacteria. Bacteria that degrade chitin, including *Vibrio*, *Beneckea* and *Pseudomonas*, cause shell disease in a host of crustacea, including spiny lobsters, tanner crabs, king crabs, various shrimp, and others of economic importance (Johnson, 1983). The species of *Vibrio* bacteria that infect crabs and shrimp include those associated with salmon pens or are present in local waters: *V. anguillarum*, *V. parahaemolyticus*, *V. alginolyticus*. (Johnson, 1983). Laboratory experience indicates that animals kept in clean sea water are difficult to infect, but those in the presence of sewage sludge developed shell disease. In addition to causing shell diseases, bacteria invade shrimp, crabs and other crustacea and cause internal infections. Again, the total relation of these infections to stress, to polluted environments, to salmon pen sewage is not resolved (Johnson, 1983), but we believe this relationship needs analysis in relation to establishing fish pens in the vicinity of shrimp and crab populations.

There is a well documented literature demonstrating that molluscan embryos and larvae - some of commercial significance - are subject to serious infection by these same species of vibrio bacteria. Abalone embryos and Pacific oyster (*Crassostrea gigas*) embryos and veliger larvae in hatcheries suffer serious mortalities from vibriosis (Sparks, 1985; Jeffries, 1984; Tubiash and Elston, 1984). It would be prudent to determine carefully the potential damage that may be caused by juxtaposing salmon pens to oyster and abalone culture facilities, and to native bivalve beds.

It would be of interest, also, to determine if vibriosis similarly affects these same kinds of molluscan larvae and embryos in the natural plankton, thereby affecting natural populations. Beyond that, it is important to know if populations of these *Vibrio* species or other pathogens, enhanced by sewage or fish pen wastes, infect other forms of invertebrate larvae or adults. I am thinking of the sponges, sea urchins, starfish and the host of other invertebrates which, though not of direct commercial value, are absolutely fundamental to the ecosystems of these water and to their productivity. Their impairment would sound the death knell for these waters.

Some of these bacteria are pathogenic to man as well. Knowledge of the genus *Vibrio* is expanding rapidly. This genus, which includes *V. cholerae*, includes species that typically live in marine locales (Kelly et al., 1982). *V. anguillarum* appears not to infect humans. However, *V. vulnificus* and *V. parahaemolyticus* do infect humans. *V. vulnificus*, a recently recognized species, is a deadly pathogen that is carried in sea water. It is readily filtered and concentrated from sea water by oysters and clams and it is easily transmitted to humans when these bivalves are eaten. The results are often fatal. Other than through ingestion, humans can contract the disease through simple contact of sea water with open wounds or mucosal tissues. It is predominately a warm water organism, which suggests that our waters may be safe from it, but virulent strains of this species have been found in Oregon associated with fish, crabs and clams and in Japan associated with eels (Tison and Kelly, 1986; Kelly and McCormick, 1981; Tison and Kelly, 1984; Blake, Weaver and Hollis, 1980). A preliminary search for this species in the San Juan Islands has not revealed it, but its presence in warmer bays there, and in the Canadian Gulf Islands, or elsewhere in the Sound cannot yet be discounted (Kelly, pers. com.). *V. parahaemolyticus* is, by contrast, commonly found around the San Juan Islands and doubtless is ubiquitous here (Kelly, pers. com.). It causes acute gastroenteritis in humans (Tison and Kelly, 1984; Blake, Weaver and Hollis 1980). This form of gastroenteritis appears to be transmitted exclusively through food, usually seafood (Blake, Weaver and Hollis, 1980). It can be a very significant infectious agent: in Japan, over a 10 year span, 24% of reported cases of food poisoning were attributed to this bacterium.

V. parahaemolyticus, thus, is present here, is a known pathogen of humans, and is transmitted through filter feeders such as clams and oysters. *V. vulnificus* is found nearby, and with further searching may be found in the Sound and Gulf. Simple contact with infected sea water will lead to serious infection. The former species, and probably the latter as well, thrives in heavy, enriched sediments such as sewage sludge. It can also be expected to grow in salmon pen sludge (Staley, pers. com.; Kelly, pers. com.).

It has been argued by associates of the salmon pen aquaculture industry that human diseases associated with these vibrios have been rarely found in the Puget Sound region, and therefore no danger is posed by them. Thus fish pen aquaculture is justified. It is good that the base line now, before salmon pens are well established, is essentially zero. The water is relatively clean, now, and the populations of these pathogens are within tolerable limits, using customary screening methods for detecting these pathogens. But a further complication is introduced by a recent paper (Grimes, et al, 1986). They find that when such pathogens as I have been discussing are introduced into marine waters, they rather quickly lose their identity as measured by conventional culture methods. They enter into dormancy, but remain viable though not culturable by traditional methods. Failure to find them using these methods could lead to overlooking a substantial, but cryptic source of serious pathogens in the environment.

The important question, then, is not whether these organisms pose a present health threat, or ecological threat. The proper question is: can these organisms, and this ecosystem, and these humans tolerate the eutrophic burden that will be imposed by a full blown fish pen industry? It is our belief that there are many too many questions that need resolution, of a public health nature, and of an ecological nature, before we proceed further.

Literature Cited

- Håstein, Tore, 1986. Diseases, pollution and quality control. Norwegian Export Council Seminar, Vancouver, B.C.
- Weston, 1986. (a review of literature of floating mariculture)
- Trust, T.J., 1986. Pathogenesis of infectious diseases of fish. *Ann. Rev. Microbiol.*, 40: 479-502.
- Johnson, P.T., 1983. Diseases caused by viruses, rickettsiae, bacterias and fungi. in The Biology of Crustacea. Vol. 6. Pathobiology. A.J. Provenzano, Jr. (Ed.). Acad. Press, Inc. N.Y.
- Sparks, A.K., 1985. Synopsis of nvertebrate Pathology. Exclusive of Insects. Elsevier Science Publishers, N.Y.
- Jeffries, V.E., 1984. Vibriosis of larval oysters. First International Colloquium on Pathology in Marine Aquaculture. Montpellier, France.
- Tubiash, H.S., and R.A. ELston, 1984. Bacteriological problems in oysters.. First International Colloquium on Pathology in Marine Aquaculture. Mobtpellier, France.
- Kelly, M.T., J.W. Peterson, H.E. Sarles, M. Romanko, D. Martin, and B. Hafkin, 1982. Cholera on the Texas Gulf Coast., *JAMA* 247: 1598-1599.
- Tison, D.L, and M.T. Kelly, 1986. Virulence of *Vibrio vulnificus* strains from marine environments. *Appl. and Env. Microbiol.*, 51 1004-1006.
- Kelly, M.T., and W.F. McCormick, 1981. Acute bacterial myositis caused by *Vibrio vulnificus*. *JAMA*, 246: 72-73.
- Tison, D.L., and M.T. Kelly, 1984. *Vibrio* species of medical importance. *Diagn. Microbiol. Infect. Dis*, 2: 263-276.
- Blake, P.A., R.A. Weaver, and D.G. Hollis, 1980. iseases of humans other than those caused by vibrios. *Ann. Rev. Microbiol.* 34: 341-367.
- Grimes, D.J., R.W. Atwell, P.R. Brayton, L.M. Palmer, D.M. Rollins, D.B. Roszak, F.L. Singleton, M.L. Tamplin, and R.R. Colwell, 1986. The fate of enteric pathogenic bacteria in estuarine and marine environments. *Microbiol. Sci.*, 3: 324-329.

Elisson

SUPPLY AND DEMAND CONSIDERATIONS IN THE SEAFOOD INDUSTRY IN THE UNITED STATES

U.S. Imports 65% of Consumption

- The main obstacles to increased consumption in the United States derive from limitations of supply. Fish are primarily caught and supplied from the open seas. Not only does the catch itself fluctuate from year-to year (season to season), but the U.S. is heavily dependent on foreign suppliers. In recent years, imports have accounted for at least 60% of domestic consumption. In 1985, the figure was 64.4%. Our 60% import level reflects the superior organization and equipment of foreign fishing industries, their high commitment to quality, and the fact that some foreign countries developed new, high value products that the U.S. has not yet managed (or attempted) to emulate.
- Numerous opportunities present themselves for expansion in the seafood industry. Moreover, for many important species, that demand appears to be strong enough to offset the higher prices that will follow limited supply.
- Since it is unlikely that domestic supply can meet the increased demand, imports will continue to make up the difference.
- It is clear that aquaculture holds great potential for establishing a steady supply of high quality seafood. Aquatic animals thus reared can be harvested at the optimum time and processed immediately (Seafood Processing & Distribution by Resource Dev. Inc., report 715, Nov. 1986).

Ocean Harvest Static for 20 Years

- The annual harvest world-wide of fishery products from our oceans has remained static for the past 20 years, yet world population has passed 5 billion and is expected to double in 35 years. (August 5, 1986 presentation to National Conference of State Legislators, Dr. James Avault, fishery biologist La. St. Univ.).

\$4.5 billion in Seafood Deficit in 1985

The United States imported \$4.5 billion in seafood in 1985. Fish is our largest food import (Sci. of Food and Agriculture, Nov. 1985).

EXAMPLES

- \$48.2 million in fish analog (surimi) from Japan alone in 1985
- \$1.2 billion in wild caught and cultured shrimp in 1985
- \$80 million in farmed salmon in 1985, primarily for Norway, Canada, Scotland, Ireland, Denmark, Chile and New Zealand (see worldwide Pen Reared Salmon attached)

Per capita Fish Consumption Rising Rapidly

U.S. annual per capita consumption of commercial fish and shellfish has risen from 12.3 pounds in 1982 to 14.5 pounds in 1985. (Washington Seafood Marketing Study, Dec. 1986).

If we are to reach consumption of 20 pounds per capita by 1990, an additional 1.5 billion pounds of seafood are needed to satisfy demand. (Seafood Bus., Jan/Feb 1987).

WORLDWIDE PEN REARED SALMON

Major Producers of Atlantic Salmon (75% of the farmed salmon)

Norway

- 1973 production = 170 tons, 1985 = 27,000 tons, est. 1986 - 40,000 tons.
- "Imports of fresh salmon from Norway totaled 15.8 million pounds Jan-Oct '86, compared with 11.2 million pounds during the same period in 1985" (Seafood Bus., January '87), refers to U.S. imports only.
- Wholesale value of fresh Atlantic Salmon exceeded \$4.00 per pound during the '86 period.
- In 1985, Norway produced 78% of all farmed Atlantic Salmon. In 1985 71.8% of all fresh salmon entering the U.S. originated in Norway, valued in excess of \$60 million.

Scotland

- Farmed production increased from 600 tons in 1980 to 7,000 tons in 1985, and 8,000 tons in 1986. Planned production for 1987 - 14,000 tons.
- Scotland is the second leading exporter of Atlantic Salmon to U.S., \$4 million value in 1985.

Major Producers of Pacific Salmon (25% of the farmed salmon)

Japan

- Currently the largest producer, primarily farmed Coho.
- 1985, 6,900 tons were produced for domestic consumption.

United States

- Washington State production of pan-sized Coho was 1,685 tons (3,369,000 pounds) in 1985, with a wholesale value exceeding \$10 million.
- Production was primarily by one company, on approx. 8 surface acres of marine water.

Canada

- Industry established in British Columbia, New Brunswick and Nova Scotia.
- The 70 currently operating farms in B.C. represent investment of \$75 million, employs 375 directly, and spend \$50 million/yr. on services and supplies.
- B.C. plans to produce 30,000 metric tons of salmon by 1990, primarily for U.S. export market.

Chile

- Exported 0.3 million pounds Coho to U.S., Jan-Oct 85, and 1.4 million pounds during same period 1986.
- Total production in 1986 was 800% over 1985.
- "We imported more Chilean cultured Coho in 1986 than were caught by Oregon fishermen", (Dr. J. Lannan, O.S.U. fishery biologist.)

The United States imported \$80 million in farmed salmon in 1985. The 1986 figures are not yet available, but will be much higher. The U.S. Market for farmed salmon is estimated to be worth \$130 million by 1990.

EMPLOYMENT STATISTICS FOR SALMON

FARMING

Scotland: 1983 - 372 jobs at 103 farms
1984 - 515 jobs at 129 farms
1985 - 721 jobs at 194 farms

Support industries such as fish processing, net making, feed production, cage construction, etc., create a multiplier of 1.5 to 2.0 for upland employment. (source: Highlands and Islands Development Assoc., 1986).

Norway: 1984 - 2,000 jobs at 500 farms
1986 - 2,700 jobs at 700 farms
1987 - 150 new farms permitted (Ministry of Fishery, Norway, pers. comm., Oct. 1986).

Total jobs related to Norwegian salmon industry expected to go from 4,000 in '84 to 12,000 in '90. (Water Farming Jour., Nov. '86).

Canada: December, 1986 - 75 farms in British Columbia
23 farms in Bay of Fundy

Average employment is 5.5 jobs/farm - 539 jobs total. Upland support not included.

Puget Sound: January, 1987

Domsea, Manchester, employs an average of 140 people at 3 farms and 2 hatcheries, and their processing plants. 1985 Coho production was 3,369,000 pounds with an estimated wholesale value of \$10,107,000.

Sea Farms, Pt. Angeles, 13 jobs at 2 acre farm (will add 6 more in 87-88 as they expand), 2 jobs at Hadlock site, and 5.5 jobs at Rochester hatchery. Additional seasonal employment during harvest and summer. 1987 production est. = 500,000 lbs.

ScanAm Farms, Cypress Island, 11 full time plus seasonal employ. 50,000 pound production '86, est. 700,00 lbs. in 1987.

Prepared by John Pitts, DVM, Washington State Dept. of Agriculture, Jan. 1987

PRIVATE AQUACULTURE PRODUCTION

WASHINGTON STATE - 1985

SPECIES	POUNDS GROWN	PRICE/LB. EX-VESSEL	VALUE EX-VESSEL	PRICE/LB. WHOLESALE	VALUE WHOLESALE
HARDSHELL CLAMS					
BUTTER	18,231	\$0.27	\$4,911	\$0.50	\$9,116
NATIVE LITTLENECK	534,417	\$0.52	\$277,523	\$1.10	\$587,859
MANILA	2,847,558	\$0.53	\$1,500,094	\$1.25	\$3,559,448
SOFTSHELL	405,256	\$0.38	\$155,497	\$1.00	\$405,256
OYSTERS					
OLYMPIA	2,447	\$21.47	\$52,526	\$21.47	\$52,537
PACIFIC	6,020,000	\$1.07	\$6,437,788	\$2.51	\$15,110,200
KUMAMOTO	36,661	\$9.19	\$336,757	\$9.19	\$336,915
EUROPEAN (O. EDULIS)	1,219	\$16.92	\$20,623	\$16.72	\$20,382
MUSSELS	264,000	0.53	140,844	\$1.10	\$290,400
TROUT (RAINBOW, CUTTHROAT)					
EGGS	75,000			\$28.00	\$2,100,000
JUVENILES (LIVE)	12,600			\$25.00	\$315,000
PAN-SIZED	552,000	\$1.60	\$883,200	\$2.00	\$1,104,000
SALMON (COHO)					
EGGS	420			\$120.00	\$50,400
JUVENILES (LIVE)	1,000			\$64.00	\$64,000
PAN-SIZED	3,369,000	\$1.36	\$4,581,840	\$3.00	\$10,107,000
TOTAL	14,139,809		\$14,391,602		\$34,112,511

NOTES:

1) Whole weight is reported for all species except oysters. Oysters are reported as pounds of shucked meat. A gallon of oyster meat weighs about 8.75 pounds and a pound of meat is equivalent to around 5 pounds whole weight (in the shell). If oysters were reported in whole weight like everything else, their total production would be around 30 million pounds and total aquaculture production would be around 38 million.

2) "Ex-vessel" values are those reported to the department. These are consistently below market value. Consequently, I have included a best guess wholesale value (value of finished product including processing, packaging and shipping in most cases). I consider wholesale value to be the best estimate of actual value for the industry and the most consistent.

3) Washington is a major producer of eggs and juveniles for stocking trout farms. These are sold live and are consequently reported as final product (harvested fish) elsewhere.

RECEIVED

JUL 6 1985

PLANNING

DEPT.

NATIONAL AQUACULTURE IMPROVEMENT ACT OF 1985

Food Security Act of 1985

Title 17 -- Related and Miscellaneous Matters

Subtitle D. National Aquaculture Improvement Act of 1985

An Act

To provide for the development of aquaculture in the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Aquaculture Improvement Act of 1985".

FINDINGS, PURPOSE, AND POLICY

SEC. 2. (a) FINDINGS--Congress finds the following:

(1) The harvest of certain species of fish and shellfish exceeds levels of optimum sustainable yield, thereby making it more difficult to meet the increasing demand for aquatic food

(2) To satisfy the domestic market for aquatic food, the United States imports more than 50 per centum of its fish and shellfish, but this dependence on imports adversely affects the national balance of payments and contributes to the uncertainty of supplies.

(3) Although aquaculture currently contributes approximately 13 per centum of world seafood production, less than 6 per centum of current United States seafood production results from aquaculture. Domestic aquacultural production, therefore, has the potential for significant growth.

(4) Aquacultural production of aquatic plants can provide sources of food, industrial materials, pharmaceuticals, and energy, and can assist in the control and abatement of pollution.

(5) The rehabilitation and enhancement of fish and shellfish resources are desirable applications of aquacultural technology.

(6) The principal responsibility for the development of aquaculture in the United States must rest with the private sector.

(7) Despite its potential, the development of aquaculture in the United States has been inhibited by many scientific, economic, legal, and production factors, such as inadequate credit, diffused legal jurisdiction, the lack of management information, lack of supportive Government policies, and the lack of reliable supplies of seed stock.

(8) Many areas of the United States are suitable for aquaculture, but are subject to land-use or water-use management policies that do not adequately consider the potential for aquaculture and may inhibit the development of aquaculture.

(b) PURPOSE.--It is the purpose of this Act to promote aquaculture in the United States by--

- (1) declaring a national aquaculture policy;
- (2) establishing and implementing a national aquaculture development plan;
- (3) establishing the Department of Agriculture as the lead Federal agency with respect to the coordination and dissemination of national aquaculture information by designating the Secretary of Agriculture as the permanent chairman of the coordinating group and by establishing a National Aquaculture Information Center within the Department of Agriculture; and
- (4) encouraging aquaculture activities and programs in both the public and private sectors of the economy; that will result in increased aquacultural production, the coordination of domestic aquaculture efforts, the conservation and enhancement of aquatic resources, the creation of new industries and job opportunities, and other national benefits.

(c) POLICY.--Congress declares that aquaculture has the potential for reducing the United States trade deficit in fisheries products, for augmenting existing commercial and recreational fisheries and for producing other renewable resources, thereby assisting the United States in meeting its future food needs and contributing to the solution of world resource problems. It is, therefore, in the national interest, and it is the national policy, to encourage the development of aquaculture in the United States.

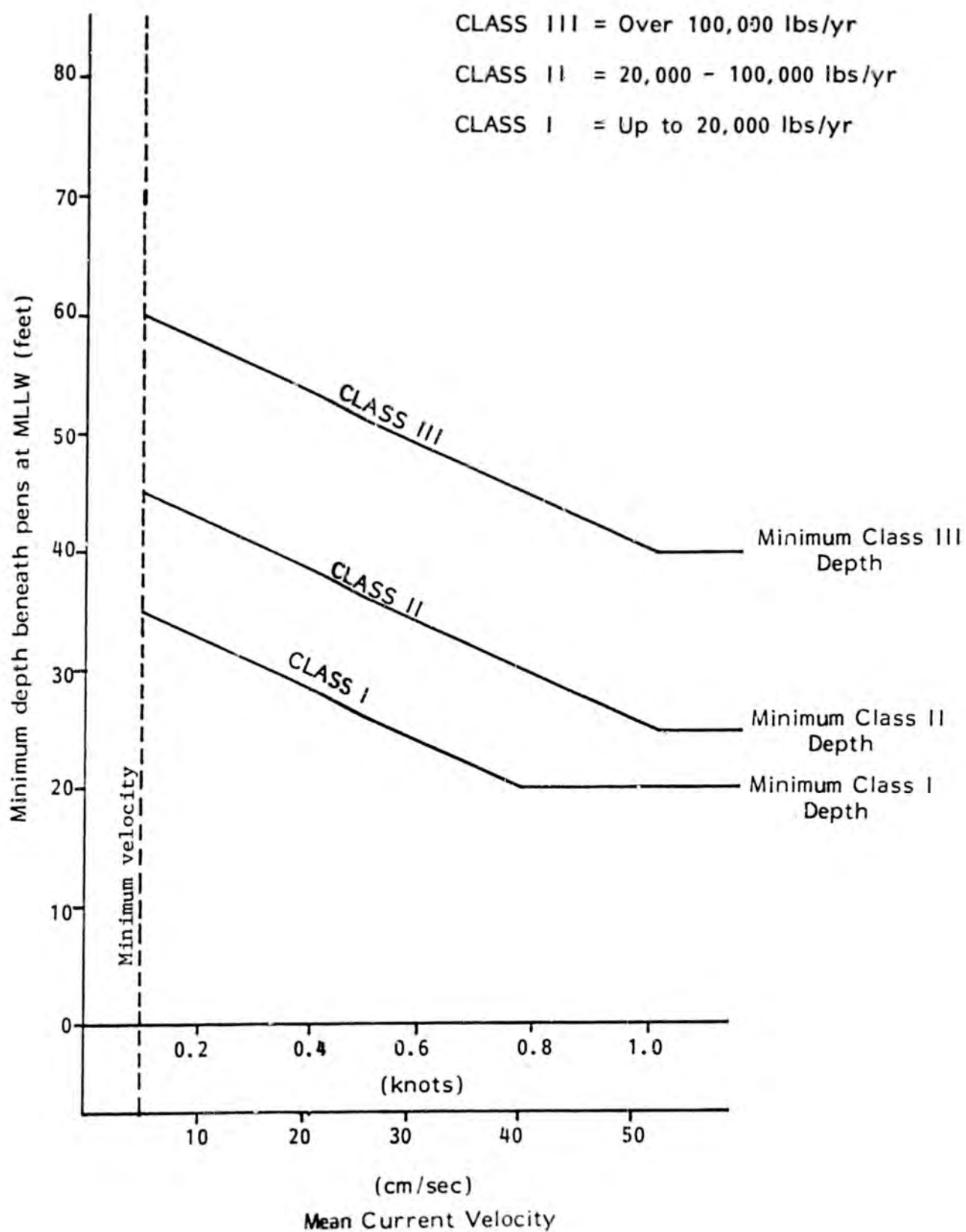
UW to get funds for aquaculture facility

Associated Press 992

The University of Washington will get \$500,000 to establish an aquaculture research facility, following congressional approval of funds for four similar facilities nationwide.

Rep. Don Bonker, D-Wash., said the UW research center will serve a region covering Washington, Oregon, Alaska, Idaho and California. The center will coordinate and support research in the farming of fish and shellfish.

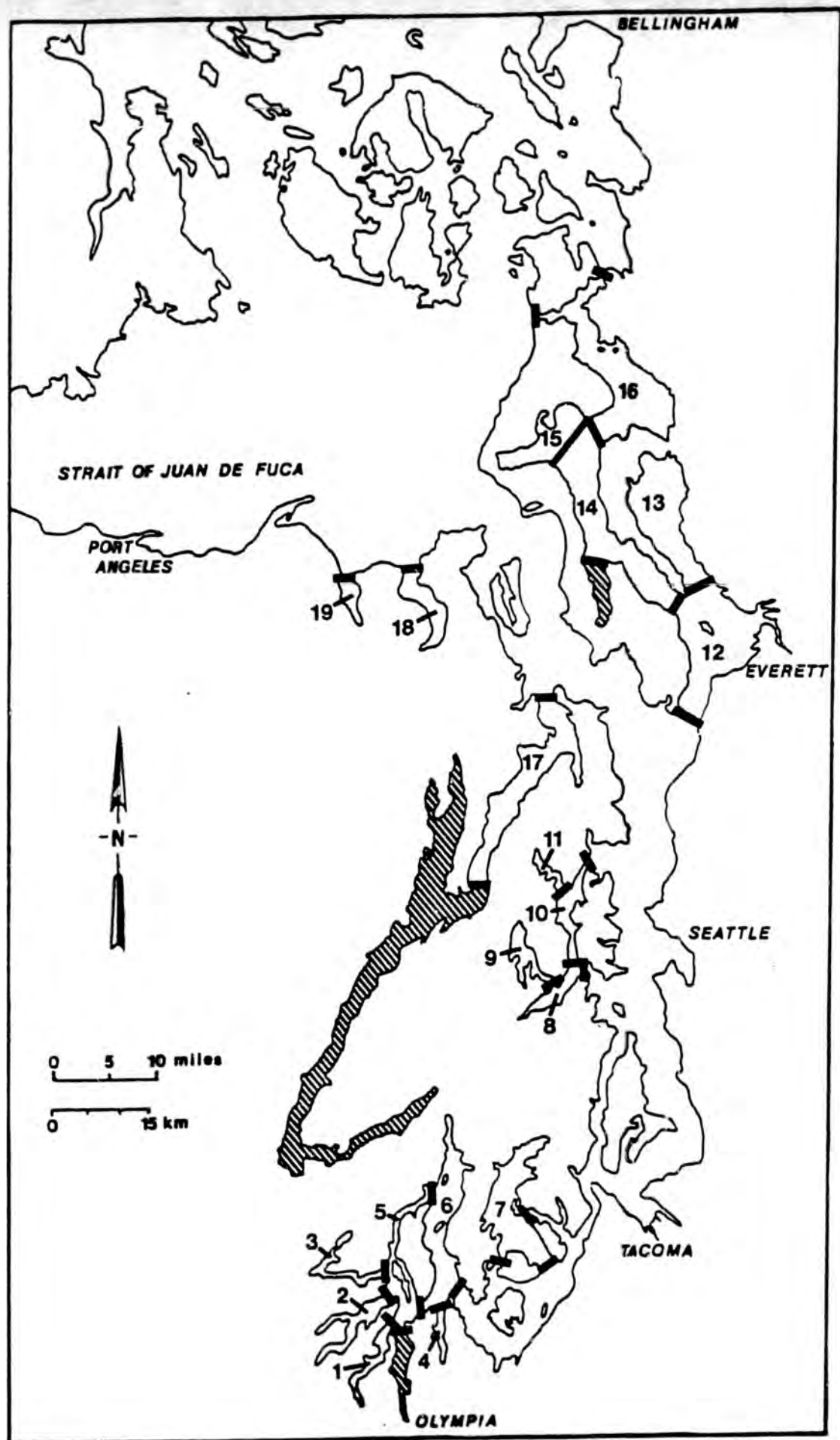
Now \$750,000 for 1987
Nov. 1-'86



MINIMUM DEPTH AND CURRENT VELOCITY FOR NET-PEN SITING

WATER QUALITY CONSIDERATIONS IN NET-PEN CULTURE

- **Dissolved oxygen**
 - Reduced through respiration and decomposition of organic matter
- **Nutrients**
 - Toxicity
 - Stimulation of phytoplankton growth
- **Mitigation strategies**
 - Avoid areas with existing chronic water quality problems
 - Avoid areas with poor flushing
 - Avoid a high density of pens in a small area



OTHER INTERIM GUIDELINES

- **150 to 300 ft from habitats of special significance**
- **1500 ft from critical bird and mammal habitats**
- **Unpelletized wet feed should not be used**
- **Predator control measures must comply with federal and state regulations**
- **Tributyltin should not be used as an antifouling agent**
- **Only FDA licensed antibiotics should be used. They should be used on a short term basis and not administered prophylactically over extended periods.**
- **Transfer and importation of fish in accordance with state and federal regulations**
- **An operations plan must be prepared including project description, and anticipated operational practices.**
- **A site characterization survey should be done before permit approval**
- **Annual monitoring should be performed at all Class II and III facilities**

EXCERPTS FROM:

**Proceedings
of the
Governor's Ad-Hoc
Mariculture
Advisory Committee**

**September 16-17, 1985
Juneau, Alaska**

FOR: MR. DAVE BENTON: OFFICE OF THE GOVERNOR

Coordinated by the Office of Commercial Fisheries Development,
Alaska Department of Commerce and Economic Development
in Cooperation with the Fisheries Rehabilitation Enhancement
and Development Division, Alaska Department of Fish and Game

Project Coordinators: Bill Paulick
Tom Kron

CONTENTS

<u>TAB</u>		<u>PAGE</u>
I.	Forward Introductory Remarks/Overview -- Bill Paulick Agenda -- September 1985 Meeting Panel Members Attendance List -- September 1985 Meeting Governor's Charge -- March 11, 1985 Memo to Mini-Cabinet	1
II.	Proceedings Narrative Transcription of the September 1985 Meeting Remarks by Dr. Gerald Bowden	8
III.	Follow-up Comments/Questions/Issues Submitted by Members	42
IV.	Legal Opinions Memorandum from Attorney General	79
V.	Socioeconomic Data The Outlook for Salmon and Shrimp Aquaculture in World Markets (excerpt) Potential for Alaska: Excerpts from Recent Study Completed for Sealaska Corporation	90
VI.	Biological Data Draft Report: Initial Performance of Chinook Salmon Cultured in Seapens in Southeast Alaska 11/85	174
VII.	What Others Think - What Others Are Doing The North Pacific Fisheries Delphi Project (See specifically internally numbered pages 29, 32 and 69) Travel Report - Bill Heard, N.M.F.S.: to Puget Sound and British Columbia for Mariculture Including British Columbia Fish Farm Statistics, Canadian Salmon Aquaculture and a Reference Section on Salmon Culture Criteria for Siting a Marine Fish Farm (Canadian)	184
VIII.	Selected News Articles - Aquaculture	274
IX.	Draft Policy Statement for Discussion	358
X.	Agenda for Mariculture Council Meeting December 16-17, 1985 in Juneau	359

11/26/85

Introduction

In March of this year, Governor Sheffield requested his fisheries mini-cabinet appoint an ad hoc advisory group to address issues related to development of an Alaskan mariculture industry. Additionally, the group was requested to formulate a public policy ensuring that the industry develop in such a manner as to complement our existing seafood industry and maximize Alaskan participation.

In response, a twelve-member panel representing industry and the public sector was convened in Juneau, September 16-17, 1985. This workbook documents the proceedings of that meeting (tab II) and includes questions, issues and comments from the members (tab III), the preliminary legal opinion from the Attorney General's office (tab IV), socioeconomic and biological data (shrimp and salmon, tabs V and VI), an idea of what forces are driving the development of this industry (tab VII), a reference section to assist in further readings (tab VII), selected news articles on the topic of pen-rearing of finfish (tab VIII), a draft policy statement for discussion (tab IX), and the December meeting agenda (tab X).

This workbook does not attempt to address each individual question or issue, rather, it is designed as a reference workbook to provide the most recent industry-data available on a wide range of topics. Members able to review the articles and information herein should find themselves amply prepared to address individual issues and questions at the December 16-17 meeting. We greatly appreciate the time and effort expended by members in preparing the questions and issues responses. The individual responses can be found under Tab III and will form the basis for discussion at the meeting.

The following points were generally agreed upon by the majority of the members and will, therefore, not be addressed at the December gathering:

- a) Shellfish/Sea Vegetable mariculture is noncontroversial and should be endorsed in our policy statement.
- b) This body does not need to do anything legislatively with the shellfish industry this year.
- c) The idea of a spat hatchery is acceptable and the method of putting it together is a technicality that can be worked out between industry and the State.
- d) We need to speed up analysis for PSP and support the concept of a diagnostic laboratory
- e) We need to develop a policy statement on mariculture that the Governor would endorse and which would give direction for State agency action and communicate clear intentions to the public.

The goal of the December meeting is to provide Governor Sheffield, through his fisheries mini-cabinet, a concise policy statement on mariculture (all forms or specified).

Our hope is that the following material will aid you in attaining this goal!

MEMORANDUM

State of Alaska

TO: Fisheries Mini-Cabinet

DATE: March 11, 1985

FILE NO:

TELEPHONE NO:

FROM: Bill Sheffield
Governor

SUBJECT: Policy Development
Strategy for Mariculture/Aquaculture

Alaska's position in the world marketplace as a producer of seafood products has changed dramatically since statehood. There is every indication that an equally dramatic change will occur in the next decade. A number of world-wide developments, over which we in Alaska have little or no control, have had and will have an impact on our domestic and international seafood markets. The increasing use of aquaculture or sea farming techniques to supplement or complement traditional wild stock harvest strategies stands out among these trends. In my opinion, this trend requires our careful development of a public policy response by the State.

Alaska's abundant, high quality water resources, the close ties between many of our coastal communities and our marine environment suggest that some forms of sea farming may represent an opportunity for economic growth and diversity. However, it is critical that State policy insure that such development complements, rather than conflicts with, our valuable traditional seafood industry. To accomplish the timely formulation of public policy and any legislative or regulatory changes that might be required, I instruct the Fisheries Mini-Cabinet to take the following steps:

1. Appoint an ad hoc advisory group representative of harvesting, processing, mariculture, and community interests to review the mariculture/sea farming issues.
2. In those instances where little or no conflict appears to exist between sea farming and traditional fisheries (e.g. shellfish), develop the legislation or regulations necessary to encourage an orderly development that maximizes Alaskan participation.
3. In those cases where sea farming may be in conflict with our traditional fisheries (e.g. pen reared salmon), move ahead cautiously to examine all facets of the issue, including:
 - a) the effect of sea farming on the markets for our traditional seafood products;

March 11, 1985

- b) the experiences of other nations with sea farming development;
 - c) how such developments might supplement or complement our existing industry, and how maximum Alaskan participation could be encouraged.
4. Report to me regularly on your progress in dealing with these issues.

BS/GB/mst0089g
021985a

cc: Fisheries Mini-Cabinet Staff
Cass Parsons, United Fishermen of Alaska
Rick Lauber, Pacific Seafood Processors Association

00007

MEMORANDUM

State of Alaska

TO: Steve Pennoyer
Deputy Commissioner
Department of Fish and Game

DATE: December 11, 1984

FILE NO: 366-187-84

Norman C. Gorsuch
Attorney General

TELEPHONE NO: 465-3600
216-305

FROM: By: Larri Irene Spengler
Assistant Attorney
Department of Law

SUBJECT: Marine net pen
salmon rearing

Attached is a draft response to your department's request for an opinion on whether marine net pen salmon rearing is currently authorized. I would appreciate any suggestions or comments in the next two weeks, after which time the memorandum will be issued.

Thank you.

LIS:dlm

Attachment

cc w/attachment: Norman Cohen
Stan Moberly ✓
Kevin Duffy

DEC 13 1984

366-187-84 [66DC84] Dorian

Hon. Don Collinsworth
Commissioner
Dept. of Fish and Game

Norman C. Gorsuch
Attorney General

By: Larri I. Spengler
Assistant Attorney General
Department of Law

December 13, 1984

366-187-84

465-3600

Marine net pen
salmon rearing

You have asked whether marine net pen salmon rearing is authorized under current fish and game statutes and regulations, and if it is not, what steps would be needed to do so. As discussed below, it appears that fish farming is not prohibited currently, and that it does not pose any constitutional problems.

As explained by your department, marine net pen salmon rearing differs from a private nonprofit hatchery program authorized and operated under AS 16.10.375-475 in that salmon are not released into the open ocean where they are subject to the common property fishery. The rearing takes place in enclosures that either float or are grounded on the ocean bottom under state or federal leases. The salmon in the enclosures are propagated and placed there by the operator of the fish farm.

Fish farming is clearly contemplated by existing statutes. It is defined in AS 16.05.940(12) as:

the business of propagating, breeding, raising, or

Honorable Don Collinsworth
Commissioner
Department of Fish and Game
Our File No. 366-187-84

December 13, 1984
Page 2

producing fish ... in captivity for the purpose of marketing the fish ... or their products, and "captivity" means having the fish ... under positive control, as in a pen, pond, or an area of land or water which is completely enclosed by a generally escape-proof barrier.

A fish farming license costs \$100 and is to be obtained from the Department of Revenue. AS 16.05.340(a)(14) AS 16.05.360.

Just after statehood, the Attorney General's Office determined that salmon farming as defined now in AS 16.05.940(12) would not violate the Alaska Constitution. 1959 Inf. Op. Att'y Gen. (June 10, Gregg). The question arose because article VIII, section 15 of the Alaska Constitution provides in part:

No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State.

This provision is "based on section 1 of the White Act of June 6, 1924, 43 Stat. 464, under which Alaska's fisheries were regulated prior to Alaska's statehood." Bozanich v. Reetz, 297 F.Supp. 300, 306 (D. Alaska 1969), reversed on other grounds, sub nom Reetz v. Bozanich, 397 U.S. 82 (1970). The leading case considering the White Act is Hynes v. Grimes Packing Co., 337 U.S. 86, (1949), which noted:

Congress did not propose that these rich fishing

0000

Honorable Don Collinsworth
Commissioner
Department of Fish and Game
Our File No. 366-187-84

December 13, 1984
Page 3

grounds should be monopolized ... the legislative history of the White Act only emphasizes what the statute clearly says, that is, no special privileges in Alaskan fishing preserves.

337 U.S. at 120. The case enjoined a closure of certain Alaskan waters to fishing by all but residents of the Karluk Indian reservation and their licensees. It is that kind of exclusive right or special privilege that article VIII, section 15 is designed to prohibit; no fishing opportunity may be made available to a closed class. As the court in Hynes noted, the provision prohibits a grant to a single individual, corporation, or any special group or number of people. 377 U.S. at 122.

In the case of marine net pen salmon rearing, the opportunity to operate a fish farm would not be available only to an established, closed class of individuals. It is not an exclusive right or special privilege of fishery as envisioned by article VIII, section 15. The salmon farming would occur as an exercise of a property right, via state or federal leases. Salmon already legally reduced to possession for propagative purposes under a permit from the Commissioner of Fish and Game pursuant to AS 16.50.340(b) and 5 AAC 41.005 would be raised in water leased by the operator, within "a generally escape-proof barrier." AS 16.05.940(12).

Honorable Don Collinsworth
Commissioner
Department of Fish and Game
Our File No. 366-187-84

December 13, 1984
Page 4

An analysis of whether tidelands fishery leases for commercial set nets violate article VIII, section 15, is helpful in evaluating the constitutionality of fish farming. The Attorney General's Office has concluded that leasing tideland sites for commercial set net fishing does not create an exclusive right or special privilege of fishery. 1983 Op. Att'y Gen. No. 3 (March 13). This conclusion is based on the fact that what is granted is a property right, not a right of fishery 1/ The same would be true of a state or federal lease to use marine waters. In fact, for fish farming the conclusion that article VIII, section 15, is not violated is even clearer than for set net sites, because the salmon in the net pens would have been propagated from fish already legally reduced to possession.

As noted above, the Commissioner of Fish and Game issues permits for transportation, possession, and release of live fish for "scientific, educational or propagative purposes." AS 16.05.340(b); 5 AAC 41.001 and 005. The salmon to be used for propagative purposes in marine fish farms in state waters may not be imported from outside Alaska. 5 AAC 41.070(a); compare 5 AAC

1/ Similarly, the lease of tidelands and submerged lands for shellfish culture involves a property right, not an exclusive right of fishery. 1983 Inf. Op. Att'y Gen. (Sept. 26; 366-119-84).

Honorable Don Collinsworth
Commissioner
Department of Fish and Game
Our File No. 366-187-84

December 13, 1984
Page 5

39.975(13) and 5 AAC 75.995(31) (defining "waters of Alaska").
The decision to issue a permit to transport, possess, or release
live fish is made based on considerations of the continued health
and perpetuation of native, wild or hatchery stocks. See 5
AAC 41.005(c)(1); 5 AAC 41.010(a)(5)(6) and (9); 5 AAC 41.020; 5
AAC 41.030; 5 AAC 41.050, and 5 AAC 41.080.

In summary, marine net pen salmon rearing is not pro-
hibited by current fish and game statutes and regulations, and
would not constitute an exclusive right or special privilege of
fishery.

LIS:dlm

cc: Steve Pennoyer
Norman Cohen
Stan Moberly
Kevin Duffy

MEMORANDUM

State of Alaska

TO: Hon. Don Collinsworth
Commissioner
Dept. of Fish and Game

DATE: January 31, 1985

FILE NO: 366-187-84

Norman C. Gorsuch
Attorney General

TELEPHONE NO: 465-3600

FROM: ^{LIS} By: Larri I. Spengler
Assistant Attorney General
Department of Law

SUBJECT: Marine net pen
salmon rearing

You have asked whether marine net pen salmon rearing is authorized under current fish and game statutes and regulations, and if it is not, what steps would be needed to do so. As discussed below, it appears that fish farming would not pose any constitutional problems, but that it is not now statutorily authorized.

As explained by your department, marine net pen salmon rearing differs from the private nonprofit hatchery program authorized and governed by AS 16.10.375 -- 16.10.475 in that the salmon are not released into the open ocean where they are subject to the common property fishery. Additionally, the salmon are not hatched from eggs as part of the operation, but rather smolts are reared in enclosures that either float or are grounded on the ocean bottom under state or federal leases. The salmon in the enclosures are placed there by the operator of the fish farm.

Fish farming is clearly contemplated by existing statutes. It is defined in AS 16.05.940(12) as

the business of propagating, breeding, raising, or producing fish ... in captivity for the purpose of marketing the fish ... or their products, and "captivity" means having the fish ... under positive control, as in a pen, pond, or an area of land or water which is completely enclosed by a generally escape-proof barrier.

A fish farming license costs \$100 and is to be obtained from the Department of Revenue. AS 16.05.340(a)(14); AS 16.05.360.

Just after statehood, the attorney general's office determined that salmon farming as defined now in AS 16.05.940(12) would not violate the Alaska Constitution. 1959 Inf. Op. Att'y Gen. (June 10; Gregg). The question arose because article VIII, section 15, of the Alaska Constitution provides in part:

No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State.

00000

This provision is "based on section 1 of the White Act of June 6, 1924, 43 Stat. 464, under which Alaska's fisheries were regulated prior to Alaska's statehood." Bozanich v. Reetz, 297 F. Supp. 300, 306 (D. Alaska 1969), rev'd on other grounds sub nom Reetz v. Bozanich, 397 U.S. 82 (1970). The leading case considering the White Act is Hynes v. Grimes Packing Co., 337 U.S. 86 (1949), which noted:

Congress did not propose that these rich fishing grounds should be monopolized ... [t]he legislative history of the White Act only emphasizes what the statute clearly says, that is, no special privileges in Alaskan fishing preserves..

337 U.S. at 120. The case enjoined a closure of certain Alaskan waters to fishing by all but residents of the Karluk Indian reservation and their licensees. It is that kind of exclusive right or special privilege that article VIII, section 15, is designed to prohibit; no fishing opportunity may be made available to a closed class. As the court in Hynes noted, the provision prohibits a grant to a single individual, corporation, or any special group or number of people. 337 U.S. at 122.

In the case of marine net pen salmon rearing, the opportunity to operate a fish farm would not be available only to an established, closed class of individuals. It is not an exclusive right or special privilege of fishery as envisioned by article VIII, section 15. The salmon farming would occur as an exercise of a property right, via state or federal leases. Salmon already legally reduced to possession would be raised in water leased by the operator, within "a generally escape-proof barrier." AS 16.05.940(12).

An analysis of whether tidelands fishery leases for commercial set nets violate article VIII, section 15, is helpful in evaluating the constitutionality of fish farming. The attorney general's office has concluded that leasing tideland sites for commercial set net fishing does not create an exclusive right or special privilege of fishery. 1963 Op. Att'y Gen. No. 3 (March 13). This conclusion is based on the fact that what is granted is a property right, not a right of fishery. */ The same would be true of a state or federal lease to use marine waters. In fact, for fish farming the conclusion that article VIII, section 15, is not violated is even clearer than for set net sites, because the salmon raised in the net pens would have been already legally reduced to possession.

*/ Similarly, the lease of tidelands and submerged lands for shellfish culture involves a property right, not an exclusive right of fishery. 1983 Inf. Op. Att'y Gen. (Sept. 26; 366-119-84).

Honorable Don Collinsworth
Commissioner
Department of Fish and Game
Our File No. 366-187-84

January 31, 1985
Page 3

However, there is no mechanism under current fish and game statutes for smolts to be legally reduced to possession to transfer to rearing pens. Currently, no person may possess live fish without a permit from the Commissioner of Fish and Game. Permits may be used for transportation, possession, and release of live fish for "human consumption or sport fishing purposes" or for "scientific, educational or propagative purposes." AS 16.-05.340(b); 5 AAC 41.001 and 5 AAC 41.005. Raising salmon for sale -- commercial purposes -- is not encompassed. The salmon to be reared in marine fish farms in state waters may not be imported from outside Alaska. 5 AAC 41.070(a); compare with 5 AAC 39.-975(13) and 5 AAC 75.995(31) (defining "waters of Alaska"). Further, they could not be purchased from hatcheries within the state, for AS 16.10.420 prohibits sale or transfer of eggs or fry from hatcheries to anyone other than the department or other hatcheries.

Because of the existing statutory framework, there is no legal basis for regulations that would authorize the acquisition from hatcheries within the state of smolts for rearing and eventual commercial sale. In order to accomplish such a result, a mechanism for obtaining the smolts would need to be enacted, such as an amendment to AS 16.10.420 regarding possible sale of hatchery fry. Alternatively, the Board of Fisheries under AS 16.65.251(9) could amend 5 AAC 41.070 to allow importation of smolts. Further, in either case, the board would need to amend 5 AAC 41 under AS 16.05.251 to authorize release and possession of the smolts in the marine pens, for rearing and eventual sale.

In summary, marine net pen salmon rearing would not constitute an exclusive right or special privilege of fishery, but is not currently authorized by fish and game statutes and regulations.

LIS:dlm

cc: Steve Pennoyer
Norman Cohen
Stan Moberly
Kevin Duffy

MEMORANDUM

State of Alaska

TO: Honorable Bill Sheffield
Governor

DATE: March 6, 1986

FILE NO.:

THRU:

TELEPHONE NO.:

SUBJECT: Aquaculture
Policy Proposal

FROM: Fisheries Mini-Cabinet

Please find attached the final recommendation of the Ad Hoc Aquaculture Advisory Committee to your Fisheries Mini-Cabinet. We have reviewed the recommendations of the advisors and are in concurrence with their suggested approach. Prior to forwarding our recommendations to you we requested the Departments of Commerce and Economic Development, Fish and Game, Natural Resources and Environmental Conservation to review the fiscal impacts associated with full and complete implementation of the recommendations. Although the total cost of full implementation would be substantial, the current revenue situation and the need to maintain existing fisheries management and development programs lead us to recommend the funding of only two portions of the recommendation. We suggest providing \$39,000 for public forums/education and \$50,000 for the proposed socioeconomic impact study. We would recommend that a total of \$95,000 be appropriated in the FY 87 budget, in the form of a C.I.P., to the Department of Commerce and Economic Development.

We collectively recommend acceptance of the basic policy regarding all forms of aquaculture with the exception of pen rearing of fin-fish. After the suggested study and public awareness process have been funded and completed and the public has had a chance to react, we will recommend further action regarding the pen rearing of fin-fish. In our view, a critical component of this policy development and implementation is the need to form and maintain a close partnership between your office and the Legislature as suggested by the Committee. We perceive there is presently a strong difference of opinion among members of the fishing community regarding whether or not fin-fish farming should be allowed. The communication link suggested above would maximize our chances for obtaining an accurate picture of the public desire to allow development of this industry to proceed in Alaska.

WP/sa0348g
30686b

Attachments: A Philosophy For Aquaculture Development in Alaska
Proposed Aquaculture Policy for Alaska

TO: Governor's Fisheries Mini-Cabinet

DATE: January 20, 1986

FILE NO.:

THRU:

TELEPHONE NO.:

SUBJECT: A Philosophy for Aquaculture
Development in Alaska

FROM: Aquaculture Advisory Committee

On July 15, 1985, Governor Sheffield appointed a Mariculture Advisory Committee, consisting of fishermen organizations, fish processors, a Native corporation, governmental agencies, the universities, and individuals in the private sector interested in mariculture development in Alaska. The committee was charged with the responsibility of formulating a workable and effective mariculture policy to guide the State in development of the mariculture industry in Alaska. The committee modified its original charge to include culture of all aquatic plants and animals in both the fresh and saltwater environments. Hence, this consensus document outlining an aquaculture policy is submitted.

The issues confronting the further development of aquaculture have been examined by the committee. These developments include fish, crustaceans, mollusks and aquatic plants. It is important, in light of world aquacultural developments and growing interest in aquaculture potential in Alaska to generate a policy that should enable the orderly development of an Alaskan aquaculture industry. However, many biological, technical and social questions must be resolved before allowing full implementation of any plan. The committee strongly recommends that every effort be made to assure that the developing aquaculture industry:

1. be complementary to, and not in conflict with, the existing fishing industry.
2. be economically viable and self-sustaining.
3. provide opportunities for family and other small scale businesses.
4. provide an overall enhancement to the marketing image of all Alaskan seafood products.
5. give due consideration to wild stocks.

Some shellfish aquaculture projects are currently underway. While we have found a need to tailor the existing permit and lease process in order to promote aquaculture development, and have identified a need to improve dissemination of technological data, it appears that the early success of these projects holds the promise of another positive use of Alaska's resources and should be supported.

January 20, 1986

The culture of aquatic plants may also offer new opportunities. There is a need to further assess opportunities and develop appropriate technology.

The farming of finfish (other than nonprofit ocean-ranching of salmon) has not been introduced, although experimental work has shown promise. We need to continue and expand grant research efforts between the State of Alaska and the National Marine Fisheries Service to gather data on the biological and technical aspects of pen-rearing. The possibility of social and economic conflicts with existing fisheries warrants a more cautious approach than for shellfish and aquatic plants.

The committee recommends that aquaculture be a self-sustaining industry with the exception of public investment in plant and animal health diagnostics, public health and initial biological research. In the meantime, there is a need to develop public policy regarding such issues as a regulation of the aquaculture industry (either as a farm or fishery), size and location of sites, federal land issues, organization of the permitting process, ownership questions, taxation, disease, and so forth.

Attached is our proposed policy document consisting of a generic policy statement followed by a number of comments regarding specific issues. This committee would be available for further deliberations on specific issues stemming from public review and comments to this policy.

AAC/wfs1331M
12086i
Attachments

GOVERNOR SHEFFIELD'S
AQUACULTURE ADVISORY COMMITTEE

PUBLIC MEMBERS

Brian Allee, PWSAC
Jack Cadigan, (Cass Parsons), UFA
Bill Clapp, Pelican Seafood
Nancy Gross, Unalaska
Richard Harris, Sealaska
Jim Hemming, Mussel Grower
Earl Krygier, A.T.A.
Robin Larsson, A.S.G.A.
Rick Lauber, P.S.P.

LEGISLATIVE MEMBERS

Senator Richard Eliason
Representative Peter Goll
Representative Adelheid Herrmann
Senator Fred Zharoff

UNIVERSITY & GOVERNMENT
AGENCY REPRESENTATIVES

Greg, Baker, ADC&ED
Ron Dearborn, U of A, Sea Grant
Bill Heard, NMFS
Ole Mathisen, U of A
Stan Moberly, ADF&G
Dick Neve, Office of the Governor
George Snyder, NMFS

SPECIAL ASSISTANT

Gerald Bowden, UCSC

Proposed Aquaculture Policy

It is the policy of the State to promote the development of a successful aquaculture industry in a manner that will contribute to the economic well-being of the citizens of the State, the commercial fishing and seafood industry, and all communities of the State, particularly the coastal areas.

GENERAL FINDINGS

1. There is an urgent need to inform the public of the potential socio-economic impacts, benefits and opportunities surrounding aquaculture, especially salmon farming, and to solicit public comments through a series of hearings. These efforts will provide necessary information to enable both the public and government to determine the future course of aquaculture and to provide for its orderly development. The process will:
 - A. address the concerns of fishermen, the fishing industry, coastal residents, and the citizens of the State for the development of aquaculture in Alaska;
 - B. serve to educate the public and the State about aquaculture;
 - C. serve as a mechanism to collect ideas and recommendations for the further development of Alaska's aquaculture policy;
 - D. include a review of the aquaculture development options envisioned; and
 - E. enable all concerned individuals to review and comment on any draft laws and proposed regulations prepared in response to public participation and comment.
2. The State, in considering the uses of public lands, water and other resources, should develop procedures to ensure an orderly and controlled use of the State's resources for aquaculture. The procedures instituted by the State should:
 - A. provide maximum opportunity for family and other small scale businesses;
 - B. require that leases be active, thereby avoiding speculation; and
 - C. avoid creating artificial wealth through possession of leases or permits.

State and other land planning programs should include inventories of potential aquaculture sites. These inventories should be responsive to existing State and federal regulatory requirements and establish uses.

3. In light of the growing competition caused by the growth of world aquaculture, the State should increase efforts to enhance the image and value of Alaskan seafood products. We specifically suggest instituting a program that promotes more stringent quality controls in grading and labeling, and further improves the general public perception of Alaskan seafood. Such action encourages promotion of a more competitive product.

SPECIFIC RECOMMENDATIONS

1. Shellfish and Seaweed

The State should review all existing statutes and regulations governing culture of shellfish and aquatic plants, and should, if necessary, institute programs to actively further promote and facilitate the culture of these organisms. There is a clear need to:

- A. tailor the State's permitting and leasing procedures to better accommodate the needs of the industry and to provide broader technological support;
- B. improve programs for testing of paralytic shellfish poisoning (PSP) including inspection and certification time frame;
- C. establish or certify diagnostic labs near shellfish culture areas; and
- D. encourage private oyster spat and other shellfish hatcheries.

2. Ocean Ranching

The success of the existing State and nonprofit salmon ocean-ranching programs is recognized, and efforts in this area should be expanded. Recent developments regarding product form and expanding markets indicate there will be a greater demand for additional salmon in the future.

3. Salmon and Other Finfish Farming

The form of aquaculture that poses the most controversy is the farming of large-sized salmon and trout, because these product forms may compete with the salmon fishing industry for markets.

Salmon farming is currently not allowed in Alaska, however, there is a growing interest to develop the industry. Prior to contemplating salmon farming, the State should initiate an unbiased study to identify and evaluate social and economic impacts and consider various implementation options to determine the greatest benefits for Alaskans.

Some finfish species and product forms such as pan-sized salmon and trout may not be in direct competition with the Alaska commercial fishing industry and, therefore, may not be as controversial as other forms of salmon farming. The State should commence a review to determine if the culture of pan-sized salmon, trout and other finfish are permissible under current statutes. Public comments should be solicited to determine if there is an interest or concern regarding these product forms.

FINAL

To accomplish the public education and research necessary for the orderly development of aquaculture in Alaska, a strong partnership commitment from the executive and legislative branches of State Government, federal agencies, Alaskan universities, industry and interested individuals will be required.

M A R I C U L T U R E I N A L A S K A

An Examination of Government Programs
by the Alaska Mariculture Technical Work Group
December 1986

STATE OF ALASKA /

STEVE COWPER, GOVERNOR

December 16, 1986

Mr. Rodger Painter
Alaska Mariculture Association
P.O. Box 020704
Juneau, AK 99802-0704

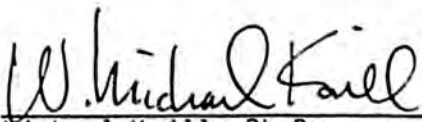
Dear Mr. Painter:

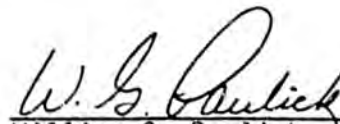
As chairmen of our respective technical subcommittees, we are pleased to present the enclosed documents representing the product of our committee's deliberation on a variety of topics relating to development of a mariculture industry in Alaska.

Our purpose is to provide, to the extent possible, an unbiased and accurate analysis of issues relating to a potential mariculture industry in Alaska. We recognize that final decisions must be made by the people of Alaska working through the public process. Because of the complexity and uncertainty of these often new issues, decision makers should find the enclosed documents very useful.

On behalf of the entire technical committee, we would like to thank you for your role in this important effort. We expect that the educational process will continue as Alaska moves forward into this new area of resource development. Hopefully, the information provided here will be of continuing use.

In the interest of public education, we would appreciate the widest possible dissemination of this information.


Michael Kaill, Ph.D.
Alaska Department of Fish & Game
Co-Chair, Siting and
Operations Subcommittee


William G. Paulick
Alaska Department of Commerce
and Economic Development
Co-Chair, Development and
Research Subcommittee

MK/WGP/wfs4926W
121686a
Enclosure

Susan Braley, A.D.E.C., Co-Chair
Amy Kruse, A.D.E.C.
Dick Stokes, A.D.E.C.
Dave Gibbons, USFS
Diane Mayer, DGC
Bob Clasby, ADF&G
Paula Burgess, ADNR
Bill Smoker, UAJ

Ole Mathisen, UAJ, Co-Chair
Bill Heard, NMFS
Dolly Garza, M.A.P.
Kellus Sewell, Consultant
Bill Woolf, ASMI
Ted Meyers, ADF&G
Bob Palmer, ADNR

T A B L E O F C O N T E N T S

Introduction.....	i
Executive Summary.....	ii
Siting.....	1
Permitting.....	4
Finfish/Shellfish Health & Genetics.....	6
Public Health.....	8
Brood Stocks.....	11
Research & Development.....	13
Training & Education.....	14
Taxes.....	16
Investment Incentives.....	17
Market Development.....	18
Policy & Administration.....	20

Reference Materials

Alaska Mariculture Technical Work Group
Broodstock Development--Bill Heard, NMFS
Feed Development & Research Facilities--Ole Mathisen, UAJ
Investment Incentives/Financing--Kellus Sewell, Nordic Alaska
(These discussion papers are available through the Alaska Mariculture Association, P.O. Box 020704, Juneau, AK 99802-0704.)

The Environmental Effects of Floating Mariculture in Puget Sound
Donald P. Weston, School of Oceanography, University of Washington
August 1986

Marine Net Pen Salmon Rearing
Larri Spengler, Alaska Department of Law, Memo, 1/31/85

DNR Tideland Permit for Shellfish Culture
Bob Palmer, Alaska Department of Natural Resources, Memo, 9/19/86

US Forest Service Permitting of Uplands Use for Alaska Oyster Farmers
Michael Barton, U.S. Forest Service Regional Forester, Letter,
7/25/86

A Philosophy for Aquaculture Development in Alaska
Governor Sheffield's Aquaculture Advisory Committee, Memo, 1/20/86

I N T R O D U C T I O N

Mariculture--or sea farming--is the for-profit captive culture of shellfish, finfish and sea vegetables in the marine environment. This is distinct from Alaska's existing salmon ranching program which involves the release of juvenile fish into the ocean to intermingle with wild stocks. The latter also is non-profit and returning fish are a common property resource.

Food products from sea culturing operations are becoming increasingly important throughout the world as seafood consumption climbs and wild fisheries landings remain relatively static. The world aquaculture production (fresh water and marine culture) was estimated at 22 billion pounds in 1983, and is expected to reach 48 billion pounds by the turn of the century.

The productive, unpolluted waters of Alaska's many sheltered bays and fjords are considered ideal for mariculture operations.

The first mariculture operations in Alaska involved the experimental culturing of oysters near Ketchikan in the early 1900s. Several oyster and mussel farms are now in operation and other farms are underway or are under consideration in Southeast, Southcentral and Southwest Alaska.

The State of Alaska recently began a joint project with Japan to test the feasibility of growing scallops in Kodiak and giant kelp (Macrocystis) in Sitka. The National Marine Fisheries Service also is cooperating with the state in an experimental research station in Southeast dealing with problems related to salmon farming.

A general need for policy and issue clarification was recognized by state and federal agencies, potential fish farmers and industry. The Alaska Mariculture Technical Work Group was formed at the invitation of the Alaska Mariculture Association. This cooperative effort represented here could assist in meeting the need for an information base to be used by policy makers.

EXECUTIVE SUMMARY

Legal Status--The legal status of mariculture in Alaska is unclear. While there is recognition of sea farming in statutes, clear regulatory processes are not available to guide individuals wishing to engage in many mariculture activities.

The Department of Law has said that technically the only species for which an applicant can presently receive a fish farming permit is oysters, a non-indigenous shellfish. However, there are mechanisms that allow individuals to harvest some undersized species and hold the animals in a farming environment until they reach salable size.

Specific regulations must be passed by the Board of Fisheries and Department of Fish and Game before sea farmers can obtain permits to collect and hold most native species of shellfish and finfish. Current statutes do not allow state or nonprofit salmon hatcheries to sell or transfer surplus eggs to private farmers.

Siting--The environmental impacts of mariculture operations are site- and species-specific. When siting mariculture facilities, it is important to consider the water circulation in the area and flushing action in the immediate vicinity. Concerns that water quality would be degraded beyond the immediate vicinity of mariculture operations are generally unwarranted. Such conditions would exist only in areas of extremely limited flushing or if culture density was very great.

Mariculture is one of many potential uses of Alaska's tidelands and adjacent uplands. The current decision-making process for these land use decisions involves weighing mariculture against a host of other potential uses.

Permitting--Mariculture is likely to become a significant use of Alaska's tidelands and adjacent uplands. This has prompted the Department of Natural Resources to work on a new tideland permitting process for shellfish operations that would require permittees to meet certain benchmarks to ensure project viability. The new permitting process also provides the mariculture developer greater security than the present system.

Disease and Genetics--Alaska's existing disease and genetics policies appear to provide adequate safeguards for the protection of native and cultured stocks. Endemic disease agents are ubiquitous in wild stocks and the marine environment. Many are opportunistic, causing disease in fish primarily when they are crowded or stressed. Although it is possible for such disease to be transmitted from cultured to wild stocks, catastrophic mortalities from indigenous pathogens would not be expected because of the lack of stress factors in the receiving populations and the wide environmental dispersion of host animals. Mariculture would produce no further risk to wild stocks than the current salmon ranching program provided state disease and genetic policies are followed.

Public Health--Growth of a mariculture industry presents no special public health concerns as existing state regulatory programs governing sanitary practices and seafood product wholesomeness appear to be adequate to provide proper protections.

Brood Stocks--The availability of brood and seed sources will be a major factor in shaping the initial growth of a mariculture industry in Alaska. Orderly development of mariculture would be enhanced by a policy of allowing access to necessary seed and brood sources from wild stocks, but sea farmers should develop captive brood sources for many species over a period of time. Acquisition of brood stocks for salmon and some other fully allocated species may require changes in statutes and regulations. Proper protection of Alaska's wild fisheries resources will require the cautious development of mariculture brood sources. Brood stock programs for captive culture populations should follow appropriate policy guidelines for disease, genetic and exotic species issues.

Research and Development--The success of mariculture throughout the world is largely due to government research in disease prevention and control, broodstock development, and nutritional requirements, including use of local fish meals. The industry is likely to look at government to continue fulfilling these functions.

Training and Education--One of the best methods for the State of Alaska to encourage a strong resident involvement in mariculture is through training, education and extension service programs. Particularly important to local involvement in mariculture operations is the availability of these programs to residents of rural areas. Education and training programs should (1) provide a novice with enough knowledge to allow him or her to start a mariculture business with a reasonable chance of success and (2) train Alaskans to work as technicians at sea farms or hatchery operations.

Taxes--The Department of Revenue was seeking at the time of this report legal clarification of the applicability of the Fisheries Business Tax on cultured seafood. This issue also is important to municipalities, however, since half of the tax is shared with local governments.

Investment Incentives--There appears to be a number of strategies available to the State of Alaska to encourage mariculture development or to influence the composition of the industry. A clear state policy supportive of mariculture is perceived to be a vital factor, while incentives such as credits on the Fisheries Business Tax may influence growth. Resident participation in mariculture could be encouraged through state loans and other non-conventional financing.

Market Development--Although overall consumer demand for high quality seafood is strong and growing, a critical factor to development of a strong mariculture industry is establishment of specific market channels. Early development could help farmers avoid holding products for which there are no markets. It would be helpful to gather market information in an easily accessible format.

Policy and Administration--Selection of a lead state agency has been recommended by a leading mariculture expert, but much more important is development of a strong and clearly articulated state policy regarding mariculture.

I. SITING

A. Species Requirement Criteria

Each species of cultured plant or animal has a unique and specific set of environmental needs. Consideration of the environmental requirements of the species targeted for a sea farm will help assure that the site will be suitable for the proposed operation. Conditions, such as salinity, temperature, flushing action, depth of water at the site and other factors may vary from species to species. For example, oysters are tolerant of salinity changes and exposure to air, while scallops are quite sensitive to those factors.

This procedure could allow for evaluation of permit applications to assure that the site is suitable for the proposed farming operation.

B. Requirements for Aquatic Environmental Protection

Mariculture facilities have several possible environmental impacts on areas adjacent to their location. These effects include changes in water current circulation, an increase in sedimentation and various changes in water quality. These environmental impacts are species- and site-specific, depending on the size of the operation.

When siting mariculture facilities, it is important to consider the water circulation in the area and flushing ability in the immediate vicinity. The placement of mariculture facilities in the water (either rafts with suspended mesh bags or trays for shellfish, or net pens for finfish) will alter the water-current patterns. These structures will decrease water movement which may in turn result in an increase in sedimentation from food particles, feces, and shell debris. The concentration of ammonia-related compounds generated from decomposing organic material may increase, and the amount of dissolved oxygen may decrease. All of these factors may combine to effect the quality of the seafood product being cultured.

Generally, floating facilities have less problems with sedimentation than bottom-culture operations. One way to alleviate a water circulation problem is to place multiple net pens or rafts in a line parallel to the direction of water flow. Proper spacing between nets or rafts should be maintained to allow adequate water circulation. Choosing a site with adequate flushing capabilities will eliminate much of the sedimentation problem. The culture structure should be far enough off of the bottom to allow normal water flow beneath it.

The effects of finfish culture and shellfish culture on water quality of surrounding areas are quite different. Shellfish cultures feed on indigenous phytoplankton and so do not introduce any 'new' nutrients into the area. As much as 40% of the total nutrients can be removed from the water column by these shellfish. Shellfish excrete relatively small amounts of ammonia and related compounds. Finfish cultures may increase the concentrations of ammonia, organic and total nitrogen, phosphate, and total phosphorous and Biological Oxygen Demand (BOD) in the surrounding area. Surrounding concentrations of dissolved oxygen may decrease. Generally, this phenomena is not a problem in culture areas with good water circulation because the metabolic wastes are diluted over a short distance.

The culture of finfish and shellfish results in the release of nutrients and the consumption of dissolved oxygen. A net increase in environmental nutrient levels may be expected in salmonid culture because of nutrient input in the form of feed. Culturing molluscs requires no addition of feed, so no input of "new" nutrients to the marine ecosystem results. However, molluscs do enhance the recycling of nutrients in the water column as they ingest phytoplankton and return a portion of the nutrients to the water column and sediments, making those nutrients available to primary producers again. The filter-feeding activities of the molluscs also serve to concentrate nutrients from a wide area into the area of the sea farm.

Concerns that water quality would be degraded beyond the immediate vicinity of mariculture operations are generally unwarranted. Such conditions would be anticipated only in areas of extremely limited flushing or if culture density was very great. In the few cases where measurable water-quality changes have been noted, the effects have been largely confined within the culture structure.

C. Site-Use Determination

Mariculture is one potential use among many of Alaska's tidelands and the uplands. The current decision-making process for these land-use decisions involve weighing mariculture against a host of other potential uses, including recreation, subsistence, personal use, log transfer sites, commercial fishing, and wilderness, as well as social, political, and economic factors associated with these uses. The most logical procedure to determine site usage is to have potential mariculture locations identified (using a set of predetermined, proven site criteria) and then included in the State Land Use Plans, such as the Prince of Wales Island area and

the Prince William Sound area plan. These plans attempt to balance many disparate and sometimes competing interests. If the potential mariculture sites were included in such a plan, site decisions would be straightforward and timely. While these area plans would be developing mariculture policies within the planning areas, statewide mariculture policies could result from these efforts. Another option is the development of a new plan similar to the ones generated by the Private Nonprofit Hatchery Program, which are presently working quite well. The development of a new plan does not seem currently possible because of the time and resources needed to develop such a plan. The inclusion of potential sites into state plans also seems unlikely due to the present lack of state funding for future plans. Thus, it seems that the present and future basis for the site decision making will be made on a case-by-case basis by all state and federal agencies involved with either permitting or resource review. These decisions will involve, for example, on federal public lands, wilderness capability analyses using the Alaska National Interest Lands Conservation Act (ANILCA) Sections 507(a) and 1315(b and d), and subsistence evaluations using ANILCA Section 810. Subsistence, as defined by ANILCA, provides for the customary and traditional consumptive uses of fish, wildlife, and other wild renewable resources by rural Alaska residents on federal public lands. It does not preclude the use of other resources but requires that an evaluation of effects be made. In Section 804, the nonwasteful subsistence uses of fish and wildlife shall be accorded a priority over the taking of fish and wildlife on public lands for other purposes. Another determination, which may be and probably will be required, is a cumulative effects analysis. This determination will probably be the result of legal actions and the expected large number of mariculture sites. These two determinations, and especially the case-by-case determinations, will necessitate more work by all the agencies involved as well as time delays for the applicants.

II. PERMITTING

A. Statutory/Regulatory Status

The legal status of mariculture in Alaska is unclear. While there is legal recognition of sea farming in statute, clear regulatory processes are not available for applicants to engage in many mariculture activities. Unclear are issues such as the ability of individuals to gather brood stock in limited fisheries, use of gear not authorized in the commercial fishery, and the harvesting of juveniles for culturing in fisheries with size limitations.

The Department of Law has determined that private, for-profit mariculture is covered by existing statutes. However, the department said, the Board of Fisheries and ADF&G must enact specific regulations before sea farmers can obtain permits to hold live fish or shellfish. To date the board has approved the farming of a non-indigenous species--oysters. Current statutes do not allow state or private nonprofit hatcheries to sell surplus salmon eggs to private salmon farmers.

There is no clear regulatory structure supportive of the development of a mariculture industry, although there are mechanisms to allow some activities. For instance, it is legally possible to obtain a permit to commercially harvest some undersized species and to hold the animals in a farming environment until they reach salable size. This method would appear to be most suitable in fisheries where there are no size and sex restrictions and little competition for the resource, such as mussels. There also is provision in law (AS 16.05.050 (11)) under which the Commissioner of ADF&G can authorize interim-use permit holders to engage in the experimental taking of fisheries resources. This statute may be a vehicle to allow the collection of brood stock for farming purposes in some fisheries.

ADF&G and the Department of Commerce and Economic Development are conducting a joint project with Japan to test the feasibility of culturing scallops in Kodiak. Local "cooperators" participating in the experiment have been issued scientific/educational permits for the collection of spat, and will be allowed to hold scallops for experimental purposes. However, the cooperators are not allowed to engage in "commercial" activities such as the sale of spat, juvenile or adult scallops.

B. Agency Coordination

Oyster farmers follow the established permitting path for use of state tidelands, and production and sale of shellfish products. The most critical permitting process is physical aquatic siting. This generally involves the Departments of Natural Resources, Fish and Game, and Environmental Conservation, the Army Corps of Engineers, and the Environmental Protection Agency. Permits for uplands usage at individual sites may require the additional involvement of the U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, or other federal agencies.

Coordination of state and federal agency responses to the physical siting process is handled by the Division of Governmental Coordination (DGC) in the Office of Management and Budget. The DGC's review process is designed to

coordinate federal, state, and local review of projects in the coastal areas of the state. It is oriented to address any land management or resource regulatory issue related to physical siting and design of proposed projects. A key component of the process is review of the "consistency" of the proposed project with the standards of the Alaska Coastal Management Plan. Mariculture projects will be reviewed for their consistency with recreation, subsistence, habitat, and with air, land, and water quality standards. Applications for mariculture projects are reviewed on a 50-day schedule, which means the DGC will complete its review within 50 days unless non-consistency or other problems are raised.

New permitting systems required for mariculture development should fit within the existing DGC review process and timetable.

C. Project Development

Based on the growing interest in sea farming, mariculture is likely to become a significant use of Alaska's tidelands and adjacent uplands. As such, land managers and upland owners are interested in ensuring that sites are utilized for permitted activities and do not result in speculation. At the same time, these land managers have interest in developing a system that responds to the needs of the individual grower and results in a strong, diverse mariculture industry. ADNR currently is working on a new tidelands permitting process for shellfish operations that would require permittees to meet certain benchmarks to ensure project viability, while providing greater security for the mariculture developer than the present permitting system.

The characteristics and the scope of a mariculture project will be determined during the permit process. The applicant's development plan will become a part of the permits and they will describe: (1) what species will be raised; (2) size and location of the project; (3) type of structures used for growing; (4) whether upland support facilities will be allowed; (5) environmental safeguards that will be implemented; and (6) a timetable that will be used to monitor the progress during construction and development.

During the early stages of development, ADNR will be using these permits and develop a plan to monitor the progress of a project. ADNR will be emphasizing the need to use the land for its intended purpose within a specified period of time. The intent of this monitoring is to ensure the land speculation is not occurring and that approved sites are available to create a land base large enough to support a self-sustaining industry.

As the project gets into the production phase, the monitoring by ADNR will become less important and the roles of ADF&G and ADEC will become more important in regulating water quality, protecting public health, and certifying brood sources.

To ensure mariculture develops into a self-sustaining industry, ADNR is considering modification of land-use permits and leases to meet the need of a grower. At the present time, there is no guarantee for the grower that starts out with a land-use permit and then requests a lease with a term of more than ten years. The site will be put up for bid at a public auction and the grower may lose the site if he is outbid. A lease term of less than ten years may be negotiated if the director finds it in the best interest of the state.

III. FIN/SHELLFISH HEALTH AND GENETICS

A. Fin/Shellfish Health

1. Importation of exotic diseases

Current regulations (5AAC 41.070) prohibit importation of exotic finfish or shellfish species into Alaska except Pacific Northwest-cultured, Japanese oysters and ornamental fish for non-release only. Oysters can be imported only after disease certification by the ADF&G, Division of Fisheries Rehabilitation, Enhancement and Development's Fish Pathology Section and only after the importing party obtains a Fish Transport Permit (5AAC 41.005), which must also be evaluated by the Fish Pathology Section. Adequate control to prevent importation of exotic diseases is in effect.

2. Potential dissemination of indigenous aquatic animal diseases within the State of Alaska by movement of mariculture species

Possession or transport of any live fish or gametes thereof requires a Fish Transport Permit, as above, the application of which is evaluated regarding various concerns, including finfish or shellfish disease within the stock or brood source on which the permit is approved or denied (5AAC 41.020; 41.030). The definition of a fish includes all invertebrates and amphibians (AS 16.05.940). In addition, disease control is required at hatchery or rearing facilities (5AAC 41.080) through disinfection procedures and yearly hatchery inspections by a qualified fish pathologist. Disease outbreaks must be reported to the Fish Pathology Section which is governed by these

regulations in recommending to the Commissioner the disposition of said diseased fish. Current regulations appear adequate to control movement of finfish and shellfish diseases affecting mariculture practices.

3. Transmission of diseases from cultured finfish or shellfish species to wild stocks

Future mariculture practices would produce no further risk to wild stocks than practices currently employed. Certain disease agents are already ubiquitous in the environment and opportunistic, infecting fish only when they are crowded or stressed artificially by aquaculture practices. Other disease agents which are obligate pathogens could possibly transmit from cultured finfish/shellfish to wild stocks. Although this would be undesirable, most generally clinical disease or catastrophic mortalities do not result in the receiving wild populations due to the lack of stress factors and wide environmental dispersion of host animals.

Although some risk is present now and will be present in future mariculture endeavors, there are adequate, current regulations cited previously for monitoring cultured fish/shellfish stocks for disease, and control of such diseases to protect both wild and other cultured stocks.

4. Environmental contamination by therapeutic drugs or chemicals used in mariculture practices

There are no data on which to evaluate this possibility. However, certain premises suggest that this is an unlikely concern: (1) The great magnitude of dilution of such drugs in the water column would make the final exposure concentration so far below efficacious levels that natural fauna and flora should be unaffected; (2) the infrequency of use would prevent chronic exposure of natural flora; (3) in most instances, a systemic chemotherapeutant is the only practical method to treat a disease affecting thousands of captive fish. Consequently, the drug is administered in the diet and metabolized with very little of the medicated feed left to allow leaching of the drug into ambient water.

Circumstantial information suggests that drugs used in mariculture operations present a negligible risk to the environment.

5. The increasing demand on state pathology laboratories to conduct disease surveillance for private enterprise

will incur additional costs that must be borne by the state in order to maintain control of disease occurrence within cultured and wild stocks of finfish and shellfish.

B. Genetics

ADF&G has a detailed policy statement developed dealing with the issue of genetics, including transportation of stocks and importation of non-indigenous species. Exceptions to this genetics policy will be made on a case-by-case basis. While it appears that there is considerable opportunity for genetic engineering as part of mariculture activities, that field is largely unknown.

IV. PUBLIC HEALTH

The Alaska Department of Environmental Conservation (ADEC) is responsible for ensuring sanitary control and product wholesomeness of all phases of the seafood industry. This responsibility is addressed in 18 AAC 34, the Fish Inspection Regulations.

With regard to the shellfish industry, ADEC certifies all shellfish waters for harvesting on the basis of sanitary quality and public health safety, regulates the harvesting of shellfish, makes laboratory examinations of shellfish and shellfish waters, and restricts the harvesting of shellfish from particular areas in public health emergencies.

Processing of other mariculture products also would be dealt with through existing ADEC regulations to protect the sanitary quality and public health safety of the particular mariculture product.

A. Water Quality

Water quality of a shellfish growing area must meet minimum standards established by the federal Food and Drug Administration, "National Shellfish Sanitation Program (NSSP)." Prior to harvesting a shellfish growing area, ADEC conducts a sanitary and biological survey of the area before approving it to allow shellfish harvesting for sale for human consumption.

The examination is verified by laboratory findings when needed to indicate that pathogenic microorganisms, radio-nuclides, pesticide chemicals, harmful industrial wastes, and sewage wastes do not reach the area in dangerous concentrations and do not pollute the shellfish in the area.

Laboratory water samples from the sanitary survey are analyzed by the ADEC Palmer Laboratory to ensure that the samples do not exceed standards established by the NSSP.

Factors which may affect water quality are location of nearby pollutant sources, other users of the growing site, vessel traffic, freshwater streams, float houses, human habitation, and point source pollution.

The use of nets treated with tri-n-butyl tin (TBT) has been extensive in Norway and other countries involved in sea farming. This compound is used as an antifoulant to reduce labor costs associated with cleaning nets. Public health concerns have been raised over the use of TBT, a heavy metal.

However, the use of TBT in connection with mariculture in Alaska is not likely to be a problem since the ADEC presently is not approving permit applications for aquaculture operations using TBT-treated nets.

For information on requirements of the "National Shellfish Sanitation Program", refer to the program's Manual of Operations, Part 1. Sanitation of Shellfish Growing Areas, U.S. Department of Health and Human Services, Food and Drug Administration, 1986 Revision.

B. Food Quality of Mariculture Products

ADEC is responsible for ensuring that all seafood products intended for human consumption are wholesome and uncontaminated.

Shellfish (clams, mussels, and oysters) possess the ability to filter and concentrate pathogenic microorganisms and toxic substances from the water. Furthermore, shellfish are packed whole and alive and are often consumed raw or lightly cooked. For these reasons, the public health significance of consuming shellfish for food is very important.

Other mariculture products intended for sale for human consumption would need to be evaluated and protected from potential contamination or adulteration that could result from pathogenic microorganisms and toxic substances.

1. Paralytic shellfish poisoning

Paralytic shellfish poisoning, or "PSP", is a very serious illness caused by poisons concentrated in some varieties of dinoflagellates, a kind of microorganism. Since shellfish feed on these organisms, they can absorb and store the PSP toxin. The presence of PSP in Alaska has been well documented, and shellfish intended for commercial markets must be quarantined and tested for the toxin before being released for sale for human consumption.

Currently, testing for PSP is done through the ADEC laboratory in Palmer. The only test currently certified by the Food and Drug Administration is a mouse bioassay. Research is ongoing at several universities to establish other testing methods for PSP, but none have been certified to date.

2. Coliform testing

The National Shellfish Sanitation Program has minimum coliform standards for shellfish meat that must be met before shellfish can be commercially marketed. The need for actual coliform testing of the meat is determined by an ADEC review of the sanitary survey to see if actual or potential pollution may be present.

3. Sanitation

Harvesting and processing areas must meet state and federal regulations currently in existence to guarantee proper sanitation and product wholesomeness. This includes, for example, separation of raw and finished product, transporting under refrigeration, and holding shellfish during PSP and/or bacterial testing.

V. BROOD STOCKS

Development of dependable, high quality brood stock sources in sufficient quantity to meet initial and long-term needs will be a critical step in providing a strong foundation for mariculture. During the initial phases of growth, general availability of brood and seed sources will likely be a major factor in deciding which species are developed and where development occurs.

Proper protection of Alaska's wild fisheries resources will require the cautious development of mariculture brood sources. Brood stock programs for captive culture for profit populations should follow specific policy guidelines for disease, genetic, indigenous and non-indigenous species issues.

Orderly development of mariculture would be enhanced by adoption of a policy by the State of Alaska to assist in initial access to necessary seed and brood sources from appropriate wild stocks. Over the long term, however, sea farmers should develop captive brood sources for many species. This will be particularly important in brood sources secured from fully allocated common property resources.

Acquisition of brood stocks and seeds also may require changes in statutes and regulations. For instance, the sale of surplus eggs from existing hatcheries to private farmers appears to be prohibited by state law. Legal issues also are raised by the capture of under-sized juveniles, use of gear not authorized in the commercial fishery, captures when the commercial fishery is closed and ability to capture wild brood sources in limited fisheries.

A. Salmon

Most interest in salmon farming in Alaska revolves around chinook and coho stocks. Alaska now has well developed public and private hatchery programs releasing large numbers of smolts of these species. Many of these programs achieve large enough returns to satisfy brood needs, provide catches to common property fisheries and allow terminal area cost recovery harvests. Present performance and estimates of survival rates and other factors suggest that these hatchery programs could provide large enough surpluses of chinook and coho eggs to satisfy the initial needs of a salmon farming industry in Alaska.

The food quality of returning hatchery salmon deteriorates rapidly, and many fish harvested in terminal areas for cost recovery would be more valuable as egg sources for salmon farming. A higher value for cost recovery catches could mean more fish are made available to the common property fisheries. It is estimated that 10 to 20 million surplus chinook and coho eggs per year could be made available for farming purposes under a strategy of allowing cost recovery

egg sales. Statutes would have to be amended to allow surplus egg sales from private or public hatcheries for salmon farming.

B. Trout, Char, Steelhead

There are no current brood stock surpluses in Alaska's hatchery programs for these species. Farming brood stock development for these species probably would be modeled after the conservative, carefully controlled egg take schedules from wild stocks taken already for our existing salmon ranching programs. These salmon egg takes are conducted on the healthiest wild stocks on varied schedules to ensure protection to the donor populations.

C. Non-indigenous Salmonids

Atlantic salmon is the most intensely farmed salmonid in the world. Some British Columbia and Washington State farms are now growing Atlantic salmon, partially because of limited sources of Pacific salmon brood stocks. The State of Alaska's disease and genetics policies and regulations currently prohibit the importation of live salmon or eggs.

D. Black Cod

Present interest in black cod (sablefish) farming is based upon the concept of capturing early life-stage juveniles from wild populations, and growing the fish to marketable size. Farming of black cod is being conducted on an experimental basis in British Columbia. High market prices have created strong competition for Alaska's black cod, and the state's only in-shore fishery already has been limited. Knowledge of this species is somewhat limited, suggesting that black cod farming should proceed cautiously.

E. Oysters

Several oyster farms are presently operating in Southeast with seed spat being imported primarily from Washington. Logistical problems in importing this spat have resulted in significant losses to many operators and remain a primary concern of existing farmers. While it may be necessary to develop an oyster seed hatchery in Alaska to ensure continuous dependable supplies, present sources of spat appear adequate to meet foreseeable demand.

F. Mussels

Mussel farming is based upon the collection of wild spat. In this case, Alaska has an abundant, widely distributed and unutilized resource, and there does not appear to be any biological need for constraints upon collection of wild spat.

G. Scallops

Interest in scallop farming has grown rapidly, particularly in the Kodiak area where a feasibility study is being conducted on collection of weathervane scallop spat using Japanese techniques. The distribution of natural populations is limited, but scallops produce enormous quantities of gametes and continuous collection of wild spat for farming probably won't pose biological or allocation problems.

H. Abalone

Abalone farming in Alaska probably would follow the development of culturing programs in Japan and California where hatcheries are used to produce spat for brood purposes. Competition is strong for Alaska's relatively small abalone resource open to commercial harvest.

VI. RESEARCH AND DEVELOPMENT

The success of mariculture is largely due to progress in three areas: (1) controlled breeding of domesticated broodstock; (2) understanding of the nutritional requirements of cultured organisms; and (3) control and prevention of disease. All three elements are involved in development of any mariculture operation, including shellfish, finfish and sea vegetables. Even if mariculture development is industry-driven in Alaska, there's a major role for government to play in research and development.

A. Broodstock Development

The biggest initial problem facing shellfish farmers in Alaska is location of dependable sources of spat. Indeed, the collection of spat is a major concern of established shellfish farming industries throughout the world. For the short term, the farming of indigeneous shellfish probably will rely upon the capture of wild spat or juvenile animals. Hatchery production of shellfish spat is an option for development of dependable sources for farming operations, but technical obstacles must first be overcome for some species.

The Norwegian success in salmon farming can be partially linked to the establishment of an experimental government genetics laboratory. A variety of salmon stocks were tested for growth characteristics, food conversion, fecundity, disease resistance, maturity schedules and other desired characteristics. The few stocks selected form the basis of an ongoing selection program. The University of British Columbia is undertaking a similar broodstock development program for Canadian farmers using coho hatchery stocks.

Development of salmon farming in Alaska would pose similar needs involving chinook and coho. Broodstock development using hatchery stocks would help guide farmers to the most suitable brood stock sources. Selection of the right broodstock could be critical to the success of fish farming.

B. Fish Nutrition and Dietary Requirements

Since about 60 percent of the production cost of farmed fish is procurement of food and feeding, a successful fish farming industry creates a demand for local production of food. An important research need is experimental work to develop the proper diet for Alaska conditions using ingredients that can be procured locally. While there is substantial agreement to the ratio of fish meal, dry ingredients and the fresh fish components of a diet, it is desirable to utilize stocks of local fish which aren't currently harvested in a commercial fishery. This would create new fishing opportunities and provide raw product to feed mills at low cost. Some waste products from processing plants also can be utilized in fish food.

C. Experimental Facility

A variety of fisheries research programs exist in Alaska, but no single agency has the resources to undertake the research outlined in this document. One potential solution is a coordinated approach to mariculture research involving a number of state and federal programs, resulting in a pooling of talent and financial resources under a single program. An important potential source of operating funds for such an experimental facility could be proprietary research for individuals and companies.

D. Database

Orderly development of a mariculture industry will be assisted by the gathering and organization of solid statistical data on the growth and performance of the industry. This database will be particularly helpful in market development and the growth of in-state support industries. The state could incorporate reporting requirements for quantities of brood or seed, production and product on hand into licensing programs.

VII. TRAINING AND EDUCATION

One of the best methods available to the State of Alaska to encourage a strong resident involvement in mariculture is through education, training and extension service programs. A special effort should be undertaken to make these programs available to residents of coastal communities to ensure local involvement.

Education and training programs should focus on two separate objectives: (1) provide a novice with enough knowledge to allow him or her to embark upon a mariculture business with a reasonable chance of success; and (2) train Alaskans to work as technicians at sea farms or hatchery operations.

A. Components of a Comprehensive Program

The most effective program would provide education and training at all levels: high school, post-secondary, vocational and extension services. High school technical training will serve to inform young Alaskans about jobs and career opportunities in mariculture. Post-secondary mariculture education helps ensure a resident pool of expertise, while vocational-technical courses provide focused education aimed at providing local residents with operational job skills needed by the industry. Extension services are particularly important to residents desiring to develop small scale mariculture operations and support services.

B. Coordination

Components of this comprehensive program are likely to be located throughout Alaska's diverse educational system, including local school districts, University of Alaska, Marine Advisory Program, community colleges, private institutions (Sheldon Jackson College), vocational education programs, and services offered by various governmental agencies (Office of Commercial Fisheries Development, FRED Division). Coordination of these programs could help avoid duplications and identify gaps in programs.

C. Training Areas

Education and training should cover the spectrum of planning, operational and regulatory concerns, including but not limited to physical operations, biological operations, economics, regulatory programs and technology.

1. Physical operations--site selection, physical plant design, equipment, utilities, support services, chemicals, transportation, processing, product quality
2. Biological operations--brood stock acquisition and development, disease management, nutrition, environmental quality
3. Economics--business management, operational costs, supply and demand, marketing, cash flow, financing, short- and long-term financial and operational planning
4. Regulatory--explanation of the regulatory process involving training and applicant manuals, helpful agencies and nonprofit organizations

5. Technology--dispersal of information regarding technological advances in equipment, nutrition, disease and other operational concerns

VIII. TAXES

Development of a clear and stable taxing policy is an important ingredient of governmental response to a developing industry such as mariculture. While municipal taxing authority over locally raised mariculture products appears clear, the applicability of existing seafood taxes levied by the state is uncertain. Clarification of this issue will be important to the state, local governments and prospective farmers alike.

A. Fisheries Business Tax

The Fisheries Business Tax currently imposed on commercially processed or exported seafoods ranges from one to six per cent of the product value at its first point of sale or export. Except for limited circumstances, the tax is based upon the amount paid a harvester by a processing company or broker. If mariculture products were to be taxed under the current structure, most mariculture farmers would be taxed at three per cent of the export product value. In-state sales of fresh product probably would not be taxed.

After studying the statutes and regulations, the Department of Revenue decided it should seek a legal advice from the Department of Law concerning the applicability of the Fisheries Business Tax on mariculture products. The Department is uncertain whether the tax was designed as a severance or product tax. Since state law provides municipalities with 50 percent of the collections of the Fisheries Business Tax within their jurisdiction, the issue is important to local governments.

B. Local Taxing Authority

Recent revisions to Title 29 broadened the taxing authority of local governments. All municipalities appear to have the authority to impose local sales taxes on seafood products purchased or sold within their taxing jurisdictions. Several local governments currently levy such taxes ranging from one to three percent of the initial purchase value.

C. Seafood Marketing Assessment

The Alaska Seafood Marketing Institute is partially funded through the Seafood Marketing Assessment which is a tax applied to processing operations and round fish exports or in limited cases to seafood brokers or distributors. This tax currently is fixed at .2 percent of the initial purchase

or export value. It appears to be applicable to mariculture products.

IX. INVESTMENT INCENTIVES

There appear to be a number of strategies available to the State of Alaska to encourage mariculture investments or influence the composition of the industry. In crafting these strategies, social and economic objectives should be carefully weighed. For instance, local employment and resident ownership may be achieved through divergent policies, and economic stability may come through involvement of a blend of corporate and family farming operations.

Large corporations or companies desiring to develop mariculture operations generally have access to venture capital through existing collateral bases or established relationships with financial institutions. These investors also can afford to hire experienced professionals to craft a financial prospectus, deal with difficult regulatory processes or manage a farm. Individual Alaskans interested in small to moderate farms generally lack the collateral base, trust of financial institutions and operational experience. These competitive disadvantages can be partially offset through non-conventional financing and other incentives designed to encourage resident investment.

Important to note is that other countries with developed mariculture industries have used combinations of incentives and regulatory devices to achieve socio-economic goals. Examples can be found in Norway where the government has restricted production size of salmon farms and extended licensing preference to local residents to encourage small operations in rural locations. These policies are directed at reversing population migrations to urban areas. The Japanese government has actively encouraged the development of cooperative farms involving local residents of coastal communities who often combine fishing and farming activities.

A. Regulatory/Political Climate

A clear policy supporting and encouraging mariculture development throughout the state's regulatory structure is perceived to be extremely vital to the growth of sea farming. A strong governmental policy supporting salmon farming has been critical to the rapid development of pen-rearing operations in British Columbia. This also has been true in Hawaii, Japan and Norway. Conversely, the growth of salmon farming in Washington State has been hampered by confusing and conflicting policies between various state agencies and county governments.

B. Taxes

A major attraction to venture capital in the British Columbia salmon farming industry has been a government program allowing tax-free profits up to \$500,000 (Canadian currency) from qualified farming investments. This policy helped attract millions of dollars in investment capital. This avenue would be open to the State of Alaska through amendments to its corporate tax laws.

If the Fisheries Business Tax is applied to mariculture products, another potential incentive available to the state would be tax credits or a temporary moratorium on Fisheries Business Taxes on new facilities. A model for a tax credit program could be found in legislation approved by the 1986 Legislature. The legislation (House Bill 58) was designed to encourage the building of new shore-based processing facilities, expansion of existing plants, diversification of product lines, and improvement of product quality. This incentive also could be accomplished by a moratorium on the Fisheries Business Tax during the first years of production of a new farming operation.

C. Non-conventional Financing

The state could encourage resident involvement in mariculture through establishment of a state loan program or loan guarantee fund. These non-conventional financing arrangements could be geared toward small to medium sized projects to qualified Alaskans. This program could potentially be targeted to assist residents of economically depressed rural communities. Non-conventional financing could be particularly important to family-sized mariculture operations.

Another option could be to focus on amendments to national agricultural loan funds to include financing for small-scale mariculture projects.

D. Non-cash Incentives

Another method to entice investment capital is through long term tideland leases, water rights and lease or grants of state-owned uplands for staging facilities. These non-cash incentives and tax advantages could be offered to firms which meet certain state objectives, such as employment of residents from areas of high unemployment or with commercial fishing backgrounds, or providing equity participation by Alaskans.

X. MARKET DEVELOPMENT

Although overall consumer demand for high quality seafood is

strong and growing, a critical factor to development of a strong, diversified mariculture industry is establishment of specific market channels. This market development ideally occurs before farms reach the production stage, so farmers don't end up with products at the marketing stage that cannot be sold. Failure rates in mariculture can be affected by the early establishment of market development programs.

A. Market Information

A large body of knowledge exists concerning seafood quality and marketing of Alaska products. While most is directed at products of wild origin, much of the information also will be applicable to cultured seafood. The information has not been gathered in an easily accessible format that could benefit prospective sellers of cultured--or wild--seafood products. Consequently, each interested individual must invest significant amounts of time and energy into essentially duplicative research.

B. Market Research

A good market research program would focus on development of specific market-related information on target species prior to commercial production. Critical market problems and opportunities should be identified for each species on a priority basis.

C. Alternative Markets

Cultured seafood products may not follow existing marketing channels, forcing farmers to focus on development of specialty or select markets. In analogous situations this need has led to the creation of private marketing entities conducting common promotion and assuming direct involvement in the sales process.

D. Quality

A primary benefit of cultured seafood is the relative ease of providing consistently high quality products. The early development of minimum and target quality standards for each product would benefit pioneering farmers and prevent problems as the industry grows and operational patterns are developed.

E. Transportation

The cost of moving product to market will play a significant role in siting of farms and market price of the finished product. Concentration of Alaska's mariculture activities or development of innovative transportation systems will help allow economies of scale in shipping and make Alaska cultured seafood price competitive.

F. Generic Promotion

The Alaska Seafood Marketing Institute's programs are designed to promote the benefits of all Alaska seafood products and do not make such distinctions as "troll-caught" or "net-caught," and "wild" or "cultured." However, some differentiations are possible under ASMI's enabling statutes but must not create competitive advantages for specific companies or regions of the state. ASMI promotions are determined by its industry board of directors which generally allocates the promotional budget in proportion to the value of Alaska's seafood production sold in U.S. markets. These amounts are adjusted to reflect market conditions and other factors.

XI. POLICY AND ADMINISTRATION

As outlined in this document, government will play a major role in the development of an Alaska mariculture industry. The specific roles of state agencies in that process will be determined through policy direction from the governor and legislature. One critical policy decision will be the determination of how the various agencies involved should interact, and whether a lead agency for mariculture should be designated. In determining the appropriate governmental structure, it might be useful to view the primary functions of agencies in terms of development advocacy and regulatory functions.

A. Lead Agency

A leading U.S. aquaculture law specialist brought to Alaska in early 1986 to discuss mariculture development strongly recommended the designation of a lead agency. The lead agency should be a development advocate with the ability to pull together state, local, federal and private resources to ensure success. The goal for this lead agency would be to streamline the permitting process and strengthen advocacy programs, while the objective would be to put Alaskans to work and create new wealth with the sale of a finished product.

While this concept is sound, the present structure of state agencies do not easily facilitate a lead agency with both advocacy and regulatory functions. The Department of Commerce and Economic Development has a strong advocacy program, but lacks regulatory jurisdiction and staffing. This also is the case with the Department of Community and Regional Affairs. At the same time, the resource agencies (DNR, ADEC and ADF&G) and the Division of Governmental Coordination in the Office of Management and Budget have strong regulatory and permitting functions but lack economic development staffs.

The present structure of state government might be more easily adapted to a cooperative approach with lead advocacy and permitting agencies. This concept would have prospective farmers making initial contacts at the lead advocacy agency which would in turn provide permitting road maps directing applicants to the proper lead permitting agency.

B. Policy Development

Regardless of which agency is considered lead, the parade should be led by a strong, clearly articulated state policy regarding mariculture development. This policy should give clear guidance to the agencies for making such value judgments as:

- (1) The balance between creation of jobs and the maximum amount of industrial capital.
- (2) Balance of environmental protection and economic development.
- (3) The importance of mariculture as a use of state tidelands and uplands.
- (4) Role of mariculture in efforts to diversify Alaska's economy.
- (5) Weight of specific social objectives (local employment, Alaska equity, tax revenues, etc.).
- (6) Recovery of private wealth created from common property resources.

Resource Development Council for Alaska, Inc.

807 "G" Street, Suite 200, Anchorage, Alaska 99501-3440
Box 100516, Anchorage, Alaska 99510-0516 - 907/276-0700

EXECUTIVE DIRECTOR
Paula P. Easley

EXECUTIVE COMMITTEE
Boyd J. Brownfield, President
John Forceskie, Vice Pres.
J. Shelby Stastny, Vice Pres.
Joseph R. Henri, Vice Pres.
O.K. "Easy" Gilbreth, Sec.
Larry Laughman, Treasurer
Sharon E. Anderson
Stephen M. Ellis
Robert Gilliland
Uwe L. Gross
Karen J. Hofstad
Phil R. Holdsworth
Charles H. Johnson
John T. Kelsey
Ethel H. "Pete" Nelson
E. Thomas Pargeter
John Rense
Lin S. Sloane
Darrell F. Smith
R. D. Stock
Doug M. Webb
Charles R. Webber

DIRECTORS
Lenny Arsenault
Earl H. Beistline
Ric H. Bendio
Rex I. Bishopp
Terry Brady
Robert A. Breeze
Kelly M. Campbell
Alexander J. Capasso
Joy E. Clark
Ric Davidge
Larry Dinneen
James V. Drew
James G. "Bud" Dye
Fred O. Eastaugh
Roy Ewan
Don L. Finney
Lee E. Fisher
Robert W. Fleming
Dan R. Fondell
Mano Frey
Ray D. Gardner
Paul Glavinovich
Randy Goodrich
Dick Griffin
John L. Hall
Jon Halliwell
Donald L. Hansen
Dave Harbour
Hazel Heath
Dave Heatwole
M. A. Higgins
William J. Hornung
Kurt A. Humphrey
Dorothy A. Jones
John K. Kim
Phillip L. Locker
Dennis W. Lohse
Chris McAfee
Len McLean
Richard A. Peluso
Stephen M. Rehnberg
Thomas H. Reynolds
William E. Schneider
Mary Jane Sutliff
Dale Teel
Joe J. Thomas
Richard W. Tindall
Rudy J. Trosclair
Dale P. Tubbs
Joseph E. Usibelli, Jr.
Lyle Von Bargen
George P. Wuerch

EX-OFFICIO MEMBERS
Senator Ted Stevens
Senator Frank Murkowski
Congressman Don Young

March 2, 1987

The Alaska Legislature
Juneau, AK 99811

re: Mariculture legislation

Dear Alaska Legislator:

The Resource Development Council supports HB 108 and SB 106 as a means of diversifying the seafood industry and creating resident employment through mariculture development. It is important that we have legislation in place which addresses all types of mariculture projects.

Existing law bans many forms of aquatic farming in Alaska. We must legalize all shellfish, sea vegetable and finfish operations if we are to take advantage of the market opportunities that mariculture presents.

Mariculture products compete in markets completely separate from commercially caught and processed seafood products. By penetrating these new markets and introducing consumers to new, high-quality Alaska seafood products, all Alaska seafoods will benefit from a more positive image.

Mariculture operations require full-time, year-round labor forces. Not all regions of the state will be suitable for mariculture, but where it is feasible, it can provide a much-needed expansion and stabilization of local employment. For some communities where traditional fisheries are declining and little or no opportunities exist in other industries, mariculture may be the brightest spot on the horizon.

HB 108 and SB 106 provide a framework within which all areas of mariculture can be developed with concern for the environment and existing fishery activities. The Resource Development Council supports passage of these bills to help diversify and stabilize Alaska's economy.

Sincerely,

RESOURCE DEVELOPMENT COUNCIL
for Alaska, Inc.


Paula P. Easley
Executive Director

**SOUTHERN SOUTHEAST REGIONAL
AQUACULTURE ASSOCIATION, INC.**

1621 Tongass Ave., #103

(907) 225-9605

Ketchikan, Alaska 99901

Senator Dick Eliason
Alaska State Legislature
P.O. Box V
Juneau, AK 99801

March 4, 1987

Dear Senator Eliason:

I am writing to encourage you to oppose those portions of Senate Bill 106, "an act relating to aquatic farming" that address the private pen rearing of salmon. The Board of Directors of the Southern Southeast Regional Aquaculture Association (SSRAA) urges you to exempt salmon from this act. The reasons for opposing this act are:

- (1) The state of Alaska is already actively and successfully practicing salmon mariculture and, therefore, the proposed legislation for salmon is not needed.
- (2) The act will create limited economic and user benefits for Alaskans.
- (3) The act will create negative competition with private nonprofit aquaculture corporations and commercial user groups.
- (4) The act will place the current nonprofit aquaculture program at risk.
- (5) The net effect of the act would have a negative impact on state employment opportunities.

The Alaska legislature passed an act in 1974 that authorized the private ownership of salmon hatcheries by qualified nonprofit corporations. Following legislation in 1976 that authorized the formation of Regional Aquaculture Associations, SSRAA as well as other Regional Aquaculture Associations, incorporated and initiated projects to contribute, by artificial means, to the rehabilitation of the state's depleted and depressed salmon fishery. A common practice in operating salmon enhancement

PRIVATE NON PROFIT HATCHERIES

S.S.R.A.A.

projects is to short-term rear the salmon in marine net pens before releasing them to migrate to the sea. The major difference in pen farmed salmon and those produced by private nonprofit corporations (PNP) is that salmon produced by PNP corporations are grown in the open ocean and harvested by the common property fishery; whereas, those produced by pen farming are never released and are grown to harvest size in the net pens.

Those salmon produced by PNP corporations are harvested by the common property fishery providing economic benefit to all user groups, including recreational fishermen, commercial fishermen, processors, subsistence fishermen, the visitors, and all segments of the community. This program is just ten years old and is still developing. The benefits are now being realized and there is still much growth potential. Pen culture of salmon, however, will benefit just a few individuals and mostly large corporations. Experience from Oregon and Washington has shown that most small operations will fail.

If netpen culture of salmon becomes part of the mariculture bill, it will create competition with the PNP corporations for sites. The availability of suitable sites for further expansion of the PNP corporations will be reduced because they will be occupied by the netpen farmers.

Salmon farming would also compete for the available broodstock. Chinook salmon have been determined to be the most desirable. Currently, these broodstocks are being used to supply the expanding enhancement programs of the state and PNP corporations as well as for the rebuilding of the Alaskan wild stocks. Further demand for chinook eggs or other salmon eggs by salmon pen farmers would reduce the current production levels or come from the reduction in harvest in our wild stocks. This would result in fewer salmon being released or harvested to provide the broodstock for salmon farmers. This is undesirable in view of the U.S./Canada treaty and the quota imposed on Alaskan fishermen. This current situation exists in Canada in which the rush for salmon farms has created demand for 38 million chinook eggs from a surplus supply of only 1.3 million.

At present, the PNP programs are providing the broadest economic benefit to all Alaskans and the potential exists for further expansion. The state has already made a financial commitment of over \$40 million in the enhancement loan fund to help assure the success of the PNP corporations, and now that the PNP corporations are becoming established they are investing large amounts of their own funds for further growth. Why should the state risk the success of the current PNP program for a questionable unproven salmon farm program? Where is the most benefit to Alaskan residents?

It has been proposed that salmon farming will provide year-round employment. The current PNP corporations are already doing this and are capable of expanding. Just how many new jobs will salmon farming create and how many will be lost from the current user groups? Where is the net benefit?

S.S.R.A.A.

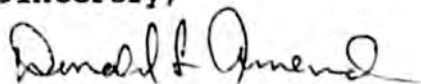
It has been proposed that farmed salmon are superior to commercially harvested salmon because farmed salmon can be provided all year long. It has also been argued that Alaska should enter this market because it is already happening around the world. Technology has vastly improved the frozen products, and the commercial fishermen and processors have made considerable improvements in handling salmon to keep them fresh. Continued improvements will diminish the argument about freshness; furthermore, Alaska has a developing winter king salmon fishery which will continue to provide year-round fresh salmon. The solution for Alaskans is to maintain a high volume of salmon to remain competitive, not more farm raised salmon which will directly compete in the market place with our commercial salmon. The PNP corporations are in the best position to provide a continued high harvest level which contributes to the economic benefit to the most Alaskans. Alaska is not going to lose its productivity for salmon as other countries have.

If it is desirable to pen rear salmon, why must it be by profit corporations? Alaska determined ten years ago that salmon production should be nonprofit. What has changed in the last ten years? If absolutely necessary, the PNP corporations are already capable of salmon farming. Salmon farming by PNP corporations could be used to help offset cost recovery needs and help repay the state loans. There is no need to have profit salmon farming.

The enclosed tables show the production record of SSRAA since 1984 and forecast the harvest through 1992, assuming the current production capabilities. SSRAA started operations in 1978 and released the first production in 1980. In this short period, the harvest has had a significant impact on the commercial fishery and the recreational benefits near Ketchikan have improved dramatically. The future promises even more benefits and this is the record of only one PNP corporation.

In conclusion, I again emphasize that Senate Bill 106 is not needed for salmon farming and salmon should be excluded from the bill. The potential for salmon farming already exists in the PNP corporations and, in fact, private salmon farming could negatively impact the future success of the existing PNP program which has a broad economic benefit to Alaskans. Your help to exempt private salmon farming from Senate Bill 106 would be greatly appreciated.

Sincerely,



Donald F. Amend
General Manager

Enclosures

cc: Alaska Trollers Association
Southeast Alaska Seine Boat Owners and Operators
United Southeast Alaska Gillnetters Association

1986 ADULT RETURNS

16-Feb-87

Species	Location	Brood	SSRAA Harvest	SHA Harvest	Sport Harvest	Commercial Harvest	Total
Chinook	Neets Bay	2,500	1,282	590	1,500	5,700	11,572
	Whitman Lake	559	0	0	100	100	759
	Subtotal	3,059	1,282	590	1,600	5,800	12,331
summer chum	Nakat	10,100	540	0	0	81,103	91,743
	Neets Bay	16,000	15	430	0	21,503	37,948
	Subtotal	26,100	555	430	0	102,606	129,691
fall chum	Neets Bay	47,885	94,218	49,677	0	40,550	232,330
coho	Whitman Lake	6,227	28,823	0	2,556	107,700	145,306
	Neets Bay	22,530	41,568	4,613	4,047	158,000	230,758
	Subtotal	28,757	70,391	4,613	6,603	265,700	376,064
TOTAL		105,801	166,446	55,310	8,203	414,656	750,416
PERCENT		14.1	22.2	7.4	1.1	55.3	

	TERMINAL	COMMON PROPERTY
Number	272,247	478,169
Percent	36.3	63.7

SSRAA FRY/SMOLT RELEASE

	1980	1981	1982	1983	1984	1985	1986	1987 GOAL
COHO								
W.L.	196,000	224,300	219,400	208,000	300,500	856,600	234,200	150,000
N.B.	280,000	560,000	340,000	980,000	950,000	2,153,000	2,356,000	2,300,000
E.W.C.	0	0	0	94,000	0	0	100,300	200,000
NAKAT	0	0	0	0	0	0	99,000	90,000
SUBTOTAL	476,000	784,300	559,400	1,282,000	1,266,500	3,009,600	2,789,500	2,740,000
CHINOOK								
W.L.	0	0	145,500	0	0	27,200	119,000	90,000
N.B.	0	0	0	135,000	144,000	231,400	930,000	750,000
C.I.	0	0	0	0	0	0	51,000	800,000
E.W.C.	0	0	0	0	0	0	97,500	300,000
SUBTOTAL	0	0	145,500	135,000	144,000	258,600	1,197,500	1,940,000
S. CHUM								
NAKAT	1,342,000	3,145,000	5,078,000	6,240,000	0	4,840,000	4,100,000	4,000,000
N.B.	0	0	0	1,146,100	2,844,000	8,300,000	9,500,000	9,000,000
E.W.C.	0	0	0	0	0	0	1,219,000	1,500,000
SUBTOTAL	1,342,000	3,145,000	5,078,000	7,386,100	2,844,000	13,140,000	14,819,000	14,500,000
FALL CHUM								
NAKAT	0	0	0	0	0	10,040,000	2,360,000	3,500,000
N.B.	1,348,000	15,437,200	8,272,900	14,600,000	24,500,000	31,900,000	17,015,000	33,000,000
SUBTOTAL	1,348,000	15,437,200	8,272,900	14,600,000	24,500,000	41,940,000	19,375,000	36,500,000
SOCKEYE	0	0	0	0	0	0	102,000	100,000
GRAND TOTAL	3,166,000	19,366,500	14,955,800	23,403,900	28,834,500	58,356,200	38,283,000	55,780,000
ZEROS								
COHO								
W.L.	0	0	0	0	153,000	0	0	0
N.B.	0	0	0	0	754,000	0	0	0
TOTAL	0	0	0	0	907,000	0	0	0
CHINOOK								
W.L.	0	0	0	0	0	12,600	0	0
N.B.	0	0	0	0	205,900	407,200	2,300,000	1,500,000
C.I.	0	0	0	0	0	0	290,000	250,000
TOTAL	0	0	0	0	205,900	419,800	2,590,000	1,750,000

11

NUMBER OF FISH - ALL SPECIES

GEAR GROUP	ACTUAL			05-Mar-87					
	1984	1985	1986	1987	1988	1989	1990	1991	1992
TROLL	45,294	73,600	196,603	137,650	155,018	180,234	202,273	210,092	210,092
SEINE	372,451	185,412	136,042	209,969	296,242	287,651	468,934	660,016	675,841
GILLNET	90,300	128,200	116,505	131,891	227,748	278,563	455,842	651,965	692,891
SHA-NEETS BAY	465,142	145,826	138,060	494,165	647,377	573,857	857,271	1,006,649	984,009
TOTAL	973,187	533,038	587,210	973,675	1,326,385	1,320,305	1,984,320	2,528,722	2,562,833

*SSRAA ONLY

SHA OTHER SITES	5,000	3,000	35,050	23,378	99,585	92,871	195,302	240,606	257,818
GRAND TOTAL	978,187	536,038	622,260	997,053	1,425,970	1,413,176	2,179,622	2,769,328	2,820,651

VALUE OF ALL GEAR GROUPS

GEAR GROUP	ACTUAL			05-Mar-87					
	1984	1985	1986	1987	1988	1989	1990	1991	1992
TROLL	\$706,400	\$788,100	\$2,057,882	\$1,584,202	\$1,944,104	\$2,865,645	\$3,801,123	\$4,148,740	\$4,200,000
SEINE	\$1,361,000	\$794,700	\$796,397	\$1,153,555	\$1,596,739	\$1,630,651	\$2,616,512	\$3,659,142	\$3,749,561
GILLNET	\$464,900	\$647,800	\$691,067	\$752,034	\$1,393,784	\$1,457,485	\$2,123,129	\$3,176,287	\$3,455,539
TOTAL	\$2,532,300	\$2,230,600	\$3,545,346	\$3,489,791	\$4,934,627	\$5,953,781	\$8,540,764	\$10,984,169	\$11,405,100

SSRAA PRODUCTION ALL S.E. ALASKA

TROLL-2	28%	35%	58%	45%	39%	48%	45%	38%	37%
SEINE-2	54%	36%	22%	33%	32%	27%	31%	33%	33%
GILLNET-2	18%	29%	19%	22%	28%	24%	25%	29%	30%



JOSEPH W. GELDHOFF

ASSISTANT ATTORNEY GENERAL

STATE OF ALASKA
DEPARTMENT OF LAW
CIVIL DIVISION

(907) 465-3600 POUCH K
STATE CAPITOL
JUNEAU, ALASKA 99811

IN THE SUPERIOR COURT FOR THE STATE OF ALASKA
FIRST JUDICIAL DISTRICT AT JUNEAU

WILDERNESS ACQUISITIONS, INC.,
an Alaska corporation,

Appellant,

v.

ALASKA DEPARTMENT OF NATURAL
RESOURCES,

Appellee.

No. 1 JU 86-2429 Civ.

AFFIDAVIT OF SERVICE

STATE OF ALASKA

FIRST JUDICIAL DISTRICT

)
: ss.
)

JEAN FEAKES, being first sworn, deposes and says:

I am a citizen of the United States of America, over the age of 19 years, and not a party to this proceeding; I am a legal secretary in the Office of the Attorney General, Juneau, Alaska; on April 15, 1987, I personally gave a correct copy of the BRIEF OF APPELLEE, DEPARTMENT OF NATURAL RESOURCES (with attachments, Appendix A and AFFIDAVIT OF STEVEN PENNOYER (An unsigned copy of Mr. Pennoyer's affidavit is being filed as he is out of town. The original signed affidavit will be submitted to the court and Appellant's attorney on April 16, 1987 when Mr.

/////

/////

/////

/////

1 Pennoyer returns to Juneau.) in this proceeding to the
2 following: Jan Van Dort, 603 East 4th Street, Juneau, AK 99801
3

4 Jan Feakio

5 SUBSCRIBED AND SWORN TO before me this 15th day of
6 April, 1987.

7 Lance L Baker

8 Notary Public, State of Alaska
9 My commission expires: 5/9/87

10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
ATTORNEY GENERAL, STATE OF ALASKA
STATE CAPITOL
P.O. BOX K, JUNEAU, ALASKA 99811
PHONE 465-3600

IN THE SUPERIOR COURT FOR THE STATE OF ALASKA
FIRST JUDICIAL DISTRICT AT JUNEAU

WILDERNESS ACQUISITIONS, INC.,)
an Alaska corporation,)
Appellant,)
v.) No. 1 JU 86-2429 Civ.
ALASKA DEPARTMENT OF NATURAL)
RESOURCES,)
Appellee.)
(DC))

APPEAL FROM THE DECISION OF THE STATE OF ALASKA,
DEPARTMENT OF NATURAL RESOURCES

BRIEF OF APPELLEE, DEPARTMENT OF NATURAL RESOURCES

GRACE BERG SCHAIBLE
ATTORNEY GENERAL

By:

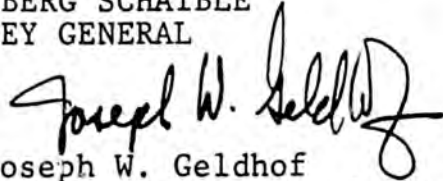

Joseph W. Geldhof
Assistant Attorney General
for Appellee
Department of Law
P.O. Box K
Capitol Building
Juneau, AK 99811

TABLE OF CONTENTS

	PAGE
TABLE OF CONTENTS.....	i
TABLE OF CASES.....	ii
STATUTORY AND OTHER PROVISIONS PRINCIPALLY INVOLVED.....	iii
JURISDICTIONAL STATEMENT.....	1
ISSUE PRESENTED FOR REVIEW.....	2
STATEMENT OF THE CASE	
A. FACTS.....	3
B. PROCEEDINGS FROM BELOW.....	6
ARGUMENT	
I. Introduction and Summary.....	7
II. Standard of Review.....	9
III. DNR Had a Reasonable Basis for Refusing to Approve Appellant's Request for a Water Allocation.....	12
CONCLUSION.....	18

TABLE OF AUTHORITIES

<u>CASES</u>	<u>PAGE</u>
<u>Alaska Conservation Council, Inc.</u> <u>v. State</u> , 665 P.2d 544 (Alaska 1983).....	12
<u>Alaska International Industries, Inc.</u> <u>v. Musarra</u> , 602 P.2d 1240 (Alaska 1979).....	17
<u>Alaska Public Utilities v. Chugach Electric</u> <u>Association</u> , 580 P.2d 687 (Alaska 1978).....	9,11
<u>Alaska Public Utilities Commission v.</u> <u>Greater Anchorage Borough</u> , 534 P.2d 549 (Alaska 1975).....	10
<u>City and Borough of Juneau v. Thibodeau</u> , 595 P.2d 626 (Alaska 1979).....	9
<u>City of Fairbanks v. Public Utilities</u> <u>Commission</u> , 611 P.2d 493 (Alaska 1983).....	10
<u>Jager v. State</u> , 537 P.2d 1100 (Alaska 1975).....	10
<u>K&L Distributors, Inc. v. Murkowski</u> , 486 P.2d 351 (Alaska 1971).....	12
<u>Matanuska-Susitna Borough v. Hammond</u> , 726 P.2d 166 (Alaska 1986).....	9
<u>Ship Creek Hyd. Syn. v. State</u> , 685 P.2d 715 (Alaska 1984).....	12
<u>State, Alcoholic Beverage Control Board</u> <u>v. Decker</u> , 700 P.2d 483 (Alaska 1985).....	9
<u>Storrs v. State Medical Board</u> , 664 P.2d 547 (Alaska 1983).....	9,10
<u>United States v. RCA Alaska</u> <u>Communications, Inc.</u> , 597 P.2d 489 (Alaska 1978)..<	9,10
<u>OTHER AUTHORITIES</u>	
6 AAC 50.060.....	5
Alaska Constitution, art. VIII, sec. 3.....	16

STATUTORY AND OTHER PROVISIONS PRINCIPALLY INVOLVED

AS 46.15.010. DETERMINATION OF WATER RIGHTS. The Department of Natural Resources shall determine and adjudicate rights in the waters of the state, and in its appropriation and distribution.

AS 46.15.020. AUTHORITY AND DUTIES OF THE COMMISSIONER.

(a) The commissioner shall exercise all those powers and do all those acts necessary to carry out the provisions and objectives of this chapter. The commissioner may

(1) enter into contractual agreements necessary to carry out the provisions of this chapter including agreements with federal, state and local agencies;

(2) apply for, accept, administer and expend grants, gifts, and loans from the federal government and any other public or private sources for the purposes of this chapter, and adopt procedures and do acts not otherwise restricted by law which are necessary to qualify the state to receive grants, gifts and loans;

(3) establish a division of water in the Department of Natural Resources and assign to that division the responsibility for carrying out the provisions of this chapter.

(b) The commissioner shall

(1) adopt procedural and substantive regulations to carry out the provisions of this chapter, taking into consideration the responsibilities of the Department of Environmental Conservation under AS 46.03 and the Department of Fish and Game under AS 16;

(2) keep a public record of all applications for permits and certificates and other documents filed in his office; and shall record all permits and certificates and amendments and order affecting them and shall index them in accordance with the source of the water and the name of the applicant or appropriator;

(3) cooperate with, assist, advise and coordinate plans with the federal, state and local agencies in matters relating to the appropriation, use, conservation, quality, disposal or control of waters and activities related thereto;

(4) prescribe fees or service charges for any public service rendered.

AS 46.15.030. WATERS RESERVED TO THE PEOPLE. Wherever occurring in a natural state, the waters are reserved to the people for common use and are subject to appropriation and beneficial use and to reservation of instream flows and levels of water, as provided in this chapter.

AS 46.15.040. RIGHT TO APPROPRIATE. (a) A right to appropriate water can be acquired only as provided in this chapter. No right to the use of water either appropriated or

unappropriated shall be acquired by adverse use or possession.

(b) A right to appropriate water shall be obtained by first making application to the commissioner for a permit to appropriate. The commissioner shall by regulation prescribe the form and contents of the application and the procedure for filing the application. If a permit is granted and the means of appropriation is constructed, a certificate of appropriation may be obtained.

(c) All applications to the commissioner for a permit to appropriate water, filed subsequent to July 1, 1986, shall be considered as having been simultaneously filed with the Department of Fish and Game under AS 16 and the Department of Environmental Conservation under AS 46.03.

(d) The commissioner's issuance of a permit under AS 46.15.080 or of a certificate under AS 46.15.065 or 46.15.120 does not represent a guarantee by the state in the permittee or certificate holder that water will be available for appropriation at a certain volume, quality, artesian pressure, or cost. This subsection does not, however, alter the right a permittee or certificate holder may have against a later appropriator, including a government agency.

AS 46.15.050. PRIORITY. (a) Priority of appropriation gives prior right. Priority of appropriation does not include the right to prevent changes in the condition of water occurrence, such as the increase or decrease of stream flow, or the lowering of a water table, artesian pressure, or water level, by later appropriators, if the prior appropriator can reasonably acquire his water under the changed conditions.

(b) Priority of appropriation made under this chapter dates from the filing of an application with the commissioner.

(c) Priority of appropriation perfected before July 1, 1966, shall be determined as provided in AS 46.15.065.

AS 46.15.080. CRITERIA FOR ISSUANCE OF PERMIT. (a) The commissioner shall issue a permit if he finds that

(1) rights of a prior appropriator will not be unduly affected;

(2) the proposed means of diversion or construction are adequate;

(3) the proposed use of water is beneficial; and

(4) the proposed appropriation is in the public interest.

(b) In determining the public interest, the commissioner shall consider

(1) the benefit to the applicant resulting from the proposed appropriation;

- (2) the effect of the economic activity resulting from the proposed appropriation;
- (3) the effect on fish and game resources and on public recreational opportunities;
- (4) the effect on public health;
- (5) the effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation;
- (6) harm to other persons resulting from the proposed appropriation;
- (7) the intent and ability of the applicant to complete the appropriation; and
- (8) the effect upon access to navigable or public waters.

AS 46.15.090. PREFERENCE IN GRANTING PERMITS. When there are competing applications for water from the same source, and the source is insufficient to supply all applicants, the commissioner shall give preference first to public water supply and then to the use which alone or in combination with other foreseeable uses will constitute the most beneficial use.

AS 46.15.100. TERMS OF PERMIT. The commissioner may grant a permit for less than the amount of water requested, but in no case may he issue a permit for more water than can be beneficially used for the purposes stated in the application. He may require modification of plans and specifications for the appropriation. He may issue a permit subject to terms, conditions, restrictions, and limitations he considers necessary to protect the rights of others, and the public interest. However, the permit shall be subject to termination only as provided in this chapter.

AS 46.15.110. TIME FOR CONSTRUCTION AND COMPLETION. A permit may place a time limit for beginning construction and perfecting appropriation. Reasonable extensions of time shall be permitted for good cause shown.

AS 46.15.133. NOTICES; OBJECTIONS. (a) Upon receipt of an application, the commissioner shall prepare a notice containing the location and extent of the proposed appropriation, the name and address of the applicant and other information he considers pertinent. The notice shall state that within 15 days of publication or service of notice, persons may file with the director written objections, stating the name and address of the objector, and any facts tending to show that rights of the objector or the public interest would be adversely affected by the proposed appropriation.

(b) The commissioner shall publish the notice at the applicant's expense in one issue of a newspaper of general distribution in the area of the state in which the water is to

1 be appropriated. The commissioner shall also have notice served
2 personally or by certified mail upon an appropriator of water or
3 applicant for or holder of a permit who, according to the
4 records of the division of lands, may be affected by the
5 proposed appropriation and may serve notice upon any
6 governmental agency, political subdivision or person; notice
7 shall also be served upon the Department of Fish and Game and
8 the Department of Environmental Conservation.

9 (c) Within 15 days of publication or service of notice, an
10 interested person may file an objection. The commissioner may
11 hold hearings upon giving due notice and shall grant, deny, or
12 condition the application in whole or in part within 30 days of
13 receipt of the last objection or, if the commissioner elects to
14 hold hearings, within 180 days of receipt of the last objection.
15 Notice of the order or decision shall be served personally or
16 mailed to any person who has filed an objection.

17 (d) If no objection is filed, the commissioner may proceed
18 to make his determination upon the application.

19 (e) A person aggrieved by the action of the commissioner
20 or by the failure of the commissioner to grant, deny, or
21 condition an application in accordance with (c) of this section
22 may appeal to the superior court.

23 (f) The commissioner may, by regulation, designate types
24 of appropriations which are exempt from this section and provide
25 simplified procedures for ruling on the applications.

26 AS 46.15.145. RESERVATION OF WATER. (a) The state, an
agency or a political subdivision of the state, an agency of the
United States or a person may apply to the commissioner to
reserve sufficient water to maintain a specified instream flow
or level of water at a specified point on a stream or body of
water, or in a specified part of a stream, through a year or for
specified times, or

(1) protection of fish and wildlife habitat,
migration, and propagation;

(2) recreation and park purposes;

(3) navigation and transportation purposes; and

(4) sanitary and water quality purposes.

(b) Upon receiving an application for a reservation under
this section, the commissioner shall proceed in accordance with
AS 46.15.133.

(c) The commissioner shall issue a certificate reserving
the water applied for under this section if he finds that

(1) the rights of prior appropriators will not be
affected by the reservation;

(2) the applicant has demonstrated that a need exists
for the reservation;

(3) there is unappropriated water in the stream or
body of water sufficient for the reservation; and

(4) the proposed reservation is in the public
interest.

(d) After the issuance of a certificate reserving water, the water specified in the certificate shall be withdrawn from appropriation and the commissioner shall reject an application for a permit to appropriate the reserved water.

(e) A reservation under this section does not affect rights in existence on the date the certificate reserving water is issued.

(f) At least once each 10 years the commissioner shall review each reservation under this section to determine whether the purpose described in (a) of this section for which the certificate reserving water was issued and the findings described in (c) of this section still apply to the reservation. If the commissioner determines that the purpose, or part or all of the findings, no longer apply to the reservation, the commissioner may revoke or modify the certificate reserving the water after notice, hearing when appropriate, and a written determination that the revocation or modification is in the best interests of the state.

AS 46.15.150. PREFERRED USE. (a) An applicant who asserts and proves a preferred use shall be granted a permit and shall be granted preference over other appropriators. A preferred use of water is for a public water supply.

(b) To be entitled to a preference an applicant must show that his use will be prevented or substantially interfered with by a prior appropriation; the use is a preferred use; the applicant agrees to compensate a permit or certificate holder for the prior appropriation for any damages sustained by the preferred use, and other information which the commissioner requires by regulation.

6 AAC 50.060. SCOPE OF PROJECT TO BE REVIEWED. The scope of activities which are to be reviewed for consistency with the ACMP as part of a project will be determined based on statements of the applicant, the information provided in the coastal project questionnaire, and any additional information which DGC or a resource agency finds necessary to request. If there is disagreement among the agencies, DGC will make the final decision. If DGC determines that a project under review by a resource agency is one requiring a federal permit, or the permits of two or more state agencies, DGC will immediately notify the applicant and the resource agency that the consistency review will be coordinated by DGC, and will commence as provided in 6 AAC 50.070 when DGC has received completed applications for all necessary permits and a completed coastal-project questionnaire.

ATTORNEY GENERAL, STATE OF ALASKA
STATE CAPITOL
PO BOX 1, JUNEAU, ALASKA 99811
PHONE 465-3600

1 Alaska Const. art. VIII, sec. 3

2 Section 3. COMMON USE. Wherever occurring in their
3 natural state, fish, wildlife, and waters are reserved to the
4 people for common use.
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

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

JURISDICTIONAL STATEMENT

This is an appeal from the decision of the commissioner of the Alaska Department of Natural Resources (DNR), Esther Wunnicke, entered October 14, 1986 (R. 107-114). The decision by the commissioner stemmed from a previous decision by the director of the DNR Division of Land and Water denying appellant Wilderness Acquisitions, Inc.'s (WAI) application for a permit to appropriate water (R. 85-86).

Notice of appeal from the decision by the DNR commissioner was filed on November 14, 1986, within the time prescribed by Alaska Appellate Rule 602. Jurisdiction of the superior court is proper based on Appellate Rule 601-607.

ATTORNEY GENERAL, STATE OF ALASKA
STATE CAPITOL
P.O. BOX K, JUNEAU, ALASKA 99811
PHONE 465-3600

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

ISSUE PRESENTED FOR REVIEW

The State of Alaska concurs with WAI's statement that the only issue presented for review in this appeal is whether the DNR commissioner acted in an unreasonable, arbitrary or capricious manner, contrary to law or beyond the scope of administrative authority in denying WAI's application for a permit to appropriate water.

ATTORNEY GENERAL, STATE OF ALASKA
STATE CAPITOL
PO BOX K, JUNEAU, ALASKA 99811
PHONE 465-3600

STATEMENT OF THE CASE

A. FACTS

Appellee, State of Alaska, Department of Natural Resources (Alaska) disagrees with portions of the factual submission contained in WAI's opening brief (Appellant's Brief at 1-5). The facts in this dispute are relatively simple. Unfortunately, many of the facts in the brief submitted by WAI and especially the materials which have implications and overtones pertaining to the legality of mariculture are not germane to the instant appeal. The relevant facts leading to the decision by Alaska to deny WAI's application for a permit to appropriate water are straight forward.

On November 18, 1985 Alaska received an application from WAI for a permit to appropriate water from Baranof Lake (R. 10-19). The application requested water rights for several ill-defined activities, including a king salmon hatchery project, power generation and certain other purposes. This application for a permit to appropriate water was date stamped but never serialized nor assigned a DNR Land Administration System (LAS) case file number (R. 113) prior to WAI's request to amend on December 20, 1985.

This initial WAI application for a permit to appropriate water was made with respect to proposed activities located near the head of Warm Springs Bay, a small bay on the east side of Baranof Island in the Alexander Archipelago. WAI apparently intended to appropriate water from Baranof Lake.

1 This lake feeds the Baranof River which flows in an easterly
2 direction before joining the saltwater at the head of Warm
3 Springs Bay. (R. 100). It was WAI's apparent desire to
4 construct an aquaculture facility in, at, or near Warm Springs
5 Bay. (R. 100-101). Warm Springs Bay has been described by the
6 Alaska Department of Fish and Game as "probably the best
7 undeveloped large-scale hatchery site left in southeastern
8 Alaska" (R. 100).

9 In furtherance of WAI's desire to construct some as
10 yet undefined aquaculture facility in, at or near Warm Springs
11 Bay, a second and third application for a permit to appropriate
12 water were received by Alaska from WAI on December 20, 1985.
13 These additional applications were respectively numbered LAS
14 4068 (R. 28-44) and LAS 4069 (R. 115-131). The new applications
15 were related to various water uses; to increase the amount of
16 water requested; to replace the incomplete November 18
17 application for a permit to appropriate water; and for a power
18 generation facility respectively (R. 112). The first of these
19 new applications for a permit to appropriate water related to a
20 "world class" smolt hatchery was serialized using State of
21 Alaska, DNR LAS 4068 and is the subject of the current dispute. 1/

24
25 1/ As background, the various complete and incomplete permit to
26 appropriate water applications pertaining to water from the
(Footnote Continued)