

ALASKA LEGISLATURE COMMITTEE FILES 1987-1988 8672

4927 HRES HB 108 (FILE 1)

99

stream to an inspection area as authorized by the commission, and may examine all fish for the purpose of identifying those fish reared and released by the permittee.

- (f) No unmarked fish may be transported from the trapping facility other than to be returned to state waters.
15906. The provisions of this chapter shall be applicable only to the waters of Davenport Landing Creek which are within the County of Santa Cruz and located near the town of Davenport Landing. Any activities conducted pursuant to this chapter are conducted as a pilot program for the release and capture of anadromous fish reared in a registered aquaculture facility.
15907. This chapter shall remain in effect only until January 1, 1991, and as of that date is repealed, unless a later enacted statute, which is enacted before January 1, 1991, deletes or extends that date.
15908. (a) The department shall, from time to time, require reports from a permittee operating pursuant to this chapter on the permittee's operations, and the department shall then make findings regarding the operations available to the commission.
- (b) The department shall prepare and submit to the Joint Committee on Fisheries and Aquaculture and to the standing committee of each house of the Legislature that has jurisdiction over fishery issues a report, on or before July 1, 1985, including the data obtained from the permittee pursuant to subdivision (a) and its findings and recommendations.

FISH AND GAME COMMISSION REGULATIONS
TITLE 14
CALIFORNIA ADMINISTRATIVE CODE

Part 1. Fish, Amphibians and Reptiles

Chapter 7. CAPTURE, TRANSPORTATION, POSSESSION,
AND SALE OF FRESHWATER FISH FOR BAIT FOR PROFIT

200.29 Sources of Live Freshwater Bait Fish for Commercial Purposes.

(a) Sources of live fin fish for bait are limited to the following:

(1) Fish reared by a registered aquaculturist.

(2) The following species taken under the authority of a commercial fishing license:

(A) Longjaw nudsucker (*Gillichthys mirabilis*)

(B) Staghorn sculpin (*Leptocottus armatus*)

(C) Oriental gobies

Chapter 3. MISCELLANEOUS

227. Sale of Live Aquaculture Products by Aquarium or Pet Stores.

- (a) No live aquaculture products shall be maintained or sold by aquarium or pet stores except the following.
- (1) Tropical species of ornamental marine or freshwater plants and animals not utilized for human consumption or bait purposes;
 - (2) Goldfish;
 - (3) Koi;
 - (4) Albino channel catfish;
 - (5) White sturgeon not to exceed 8 inches in total length;
 - (6) Giant freshwater prawn (*Macrobrachium rosenbergi*);
 - (7) Brine Shrimp;
 - (8) Worms of the family Tubificidae;
 - (9) Crustaceans of the order Amphipoda that are native to California water;
 - (10) Mosquitofish, *Gambusia affinis*, except that mosquitofish may not be sold by aquarium or pet stores in Inyo, Mono, San Bernardino, Riverside and Imperial counties;
 - (11) Abalone.
- (b) White sturgeon and abalone shall be sold under an Aquarium Dealer's Permit issued by the department to the owner of the aquarium or pet store. Applications shall be made on a department form available upon request from the department's Wildlife Protection Branch, Sacramento. The permit shall be issued free of charge on a calendar year basis, or part thereof. Aquarium dealer permittees shall maintain a log of all sales and shipments of live sturgeon and abalone, the name of the individual, company or organization taking possession of the product, the date of sale, and the number sold. The log shall be shown upon request by an authorized department official.
- (c) All abalone sold under an aquarium dealer's permit shall be marked as provided by Section 238(e)(1)(B) of this title.
- (d) Under no condition shall any live aquaculture product sold at an Aquarium or Pet Store be planted in any waters of the state.

Chapter 9. AQUACULTURE

235. Aquaculture Registration

- (a) Registration Required. Pursuant to the provisions of Section 15101 of the Fish and Game Code, all aquaculture facilities must be registered with the Department of Fish and Game each year. For purposes of this section, an aquaculture facility is one that is devoted to the propagation, cultivation, maintenance and harvesting of aquatic plants and animals in marine, brackish or freshwater. This registration does not apply to: the maintenance

of koi and goldfish in closed systems for personnel, pet or hobby purposes; the sale or cultivation of brine shrimp; and the sale or cultivation of tropical species of ornamental marine or freshwater plants or animals, not utilized for human consumption or bait purposes, but maintained in closed systems for personal, pet industry or hobby purposes.

- (1) Who Shall Register. The owner of each aquaculture facility shall register each year on forms provided by the department. Individual forms must be completed for each aquaculture facility location. Application forms and a list of laws and regulations governing aquaculture are available from the department's aquaculture development section, 1416 Ninth Street, Sacramento, CA 95814 and from the department's regional offices in Redding, Yountville, Rancho Cordova, Fresno, Long Beach and Menlo Park, on request.
 - (2) Cost of Registration. The registration fee shall be ~~_____~~ dollars ~~_____~~ for each registered owner or operator.
 - (3) Where to Submit Applications. Application forms together with the ~~_____~~ dollar ~~_____~~ registration fee shall be submitted to one of the department's regional offices listed in Section (1) above. Applications will be processed within five working days after approval.
- (b) Registration Limitation. The applicant must certify that he/she has read, understands and agrees to be bound by the regulations of the Commission and the Fish and Game Code sections governing aquaculture and its products.
- (c) Duration of Registration. The annual term of registration shall be January 1 to December 31, or if issued after the beginning of such term, for the remainder of that calendar year. Aquaculturists must reregister their facilities by March 1 of each year. Anyone failing to register under this section shall be operating unlawfully.
- (d) All permits specified in this chapter, in addition to the aquaculture registration issued pursuant to Section 15101 of the Fish and Game Code, shall be issued under the following conditions:
- (1) Where Issued. Requests for permits required in Chapter 9, unless specifically directed otherwise, shall be submitted to the Department of Fish and Game, Aquaculture Development Section, 1416 Ninth Street, Sacramento, California 95814.
 - (2) Cost of Permit. All permits required in Chapter 9 are issued free of charge.
 - (3) Permit Fee. The department shall return permit application forms to the applicant within three days of receipt. Completed permits will be returned to the applicant within

five working days following receipt of completed permit applications.

- (4) Duration of Permits. Except as otherwise provided, permits will be issued on a calendar year basis, or if issued after January 1, for the remainder thereof.

- 235.1 Screening Requirements for Aquaculture Facilities. All bodies of water or private hatcheries registered for aquaculture purposes shall be entirely within the exterior boundaries of the land owned or leased by the owner of the facility. No aquaculture facility shall be built or operated on a natural water course or lake without the prior written approval of the department. Prior written approval is not required for aquaculture facilities constructed below a spring rising on private property.

For purposes of this section, waters existing seasonally or intermittently and not serving as a passageway or nursery area for anadromous fish are not required to be screened.

Except for those facilities using marine water, all artificial inlets and outlets of such bodies of water or private hatcheries used for aquaculture purposes shall be screened to prevent the ingress or egress of aquatic plants or animals.

The department may exempt anadromous fish facilities operating under conditions imposed by Section 235.3(i) from all or any portion of this section.

- 235.2 Permit to operate an aquaculture facility for anadromous fish on Davenport Landing Creek (Santa Cruz County).

Permits may be issued to operate a registered aquaculture facility for anadromous fish under the following general terms and conditions:

- (a) Any permit issued shall be on an experimental basis until its impact on the fishery resource can be ascertained. These regulations shall be applicable only to the waters of Davenport Landing Creek, contained within Santa Cruz County, until January 1, 1986, after which date these regulations and permit shall have no force or effect.
- (b) Persons desiring a permit to operate an anadromous fish aquaculture facility on Davenport Landing Creek shall file a request with the commission. Commission approval must be obtained following a public hearing as required by Section 6576 of the Fish and Game Code. If a permit is authorized by the commission, a free permit will be issued to the permittee by the Wildlife Protection Board within five working days following notification by the commission.
- (c) No permit will be issued which may tend to deplete the natural runs of anadromous fish, result in waste or deterioration of fish, or when the proposed operation is located on a stream or river

above or below a state or federal fish hatchery or egg-taking station.

- (d) All fish released into the wild under authority of any permit during the time they are in the wild will become the property of the state and may be taken under the authority of a sport or commercial fishing license.
- (e) Prior to release into state waters, fish may be examined by the department to determine that they are not diseased or infected with any disease which, in the opinion of the department, may be detrimental to the state fishery resources. If such fish are found to be diseased or infected, they shall not be released into state waters and shall be disposed of in accordance with department instructions. Cost of such inspection shall be paid by the permittee.
- (f) Importation of eggs or fish into the state by permittee shall be in accordance with Section 15600 of the Fish and Game Code, and Section 236(c) of these regulations.
- (g) Any liberation of fish by permittee into state waters shall be approved in advance by the department.
- (h) The department may require the permittee to mark specific numbers of fish prior to their release into state waters. Any marks used by permittee to identify fish released into state waters shall be approved in advance by the department.
- (i) Requirements for the screening of outlets are waived, under the following conditions:
 - (1) The department shall be notified and give approval prior to the removal of the required fish screens.
 - (2) Department approval to remove screens shall only be during the specific period when fish are being released and/or captured.
 - (3) At all other times the screens shall be in place and operational.
- (j) The permittee shall have the right to trap and retain all fish returning to the stream; the department shall be allowed to examine all fish trapped.
- (k) All live fish being transported by the permittee shall be in accordance with the provisions of Sections 2270-2282, 15005 and 15600 of the Fish and Game Code.
- (l) All dead fish being transported from facilities operated pursuant to this permit shall be tagged or packaged in accordance with the provisions of Section 238 of this title, and with Section 15005, Fish and Game Code.

- (m) The permittee shall file a report each January on forms furnished by the department at its headquarters office, 1416 Ninth Street, Sacramento, California 95814.
- (n) If, after a hearing, the commission finds that the operation described in the permit and conducted pursuant to this section is not in the best public interest, the commission may alter the conditions of the permit to mitigate such adverse effects, including but not limited to the immediate suspension of operation under the permit, as provided in Section 6575(b), Fish and Game Code.
- (o) The permittee shall reimburse the department for all actual costs incurred by the department in inspecting and monitoring the permittee's operations.
- (p) The permittee shall provide all necessary security measures to protect fish at the rearing, release, and trapping facilities.
- (q) Upon termination of the permit, the permittee shall remove all structures and facilities placed in the stream bed by the permittee, and shall return the watercourse to its original condition. In the event the permittee fails to do so, the state may restore the site at the permittee's sole cost. The permittee shall post a performance bond, signed by both the permittee and a corporate surety company, in the amount of \$15,000, to assure restoration of the premises to their original condition and to assure compliance with all other provisions of this permit.

236. Importation of Live Aquatic Plants and Animals.

No person shall import into this state any prohibited species of live aquatic plant or animal listed pursuant to Section 2118 of the Fish and Game Code, or Section 671 of these regulations. Brine shrimp and tropical species of ornamental marine or freshwater plants and animals, not specifically prohibited by these sections, may be imported without special authority but all other species of aquatic plants and animals may not be imported except in accordance with the following terms and conditions:

- (a) Importer's License. Live aquatic plants and animals obtained lawfully in any other state or country may be imported into California under an annual license obtained from the department as per instructions in Section 235(d).
- (b) Importation Permit. Importation of each load or lot of live aquatic plants and animals must also be authorized by an importation permit. The person who is to receive any shipments of aquatic plants and animals shall apply to the department for this importation permit.
 - (1) Application for an importation permit shall be made as directed in Section 235(d) and shall reach the department's headquarters office by certified mail at least 10 working days

in advance of the probable arrival date of the shipment. A copy of the permit authorized by the director or his agent, must accompany each load.

- (2) All live aquatic plants and animals imported into California may be inspected by the department, either at the place of entry into the state, or at other locations suitable to the department. The person importing the aquatic plants or animals may be required to provide facilities for inspecting and sorting them, and may be required to pay inspection costs, including salary and travel expenses of the inspector.
 - (3) Any lot or load of aquatic plants and animals found by the inspector to be diseased, parasitized, or to contain species not authorized by the importation permit must be immediately destroyed, or transported out of California within a period of time specified by the department. In such cases, the importation permit is automatically revoked.
- (c) Importation of Salmonid Eggs. Applications to import eggs of fishes of the family salmonidae (trout, salmon and char) shall be accompanied by a health certificate signed by a person competent in the diagnosis of fish diseases stating that the hatchery or other sources of the eggs to be imported and the eggs themselves are free of the following diseases: Infectious pancreatic necrosis (IPN); Whirling disease; Infectious hematopoietic necrosis (IHN); Viral hemorrhagic septicemia (Egtved).
- In questionable cases, the director of the department shall determine whether or not the person making the certification is technically qualified to do so.
- (d) If a change in date of shipment becomes necessary after a permit has been issued, the permittee shall notify the Chief, Wildlife Protection Branch, at least 5 days before the new date of shipment. Under special circumstances, the department may waive this 5-day notice requirement.
 - (e) The requirements of this section do not apply to live shellfish imported under the provisions of Section 236.1.

236.1. Importation and Planting of Live Bivalve Mollusks

- (a) For the purposes of this section bivalve mollusks include oysters, clams, mussels and scallops. Any person desiring to import or plant live bivalve mollusks under provision of Section 15000 of the Fish and Game Code, shall give the department's Marine Resources Regional Office, 411 Burgess Drive, Menlo Park, CA 94025 or other designated office a written notice by certified mail at least 10 working days in advance of the probable arrival date of the expected shipment and a forty-eight (48) hour notice of the time and place in California where such live bivalve mollusks may be inspected. Such live bivalve mollusks must be kept in dry storage or in a closed water system until inspection is made or a

planting certificate is issued by the department. A closed water system is a self-contained circulating system or a system discharging in such a manner that discharge waters shall not enter or may be caused to enter state waters. Regardless of any inspection, written permission to plant live bivalve mollusks must be secured and will be issued by the inspecting officer at the time of inspection if the shipment is certified.

- (b) Bivalve mollusk seed produced by a government certified hatchery, either foreign or domestic may be exempt from formal inspection if accompanied by a certificate from an accredited snailfish pathologist declaring the seed to be free of parasites or disease.
- (c) Naturally produced bivalve mollusk seed imported from the states of Oregon or Washington may be exempt from formal inspection prior to planting, provided each shipment is accompanied by a certification from the state of origin guaranteeing the shipment to be free of disease, predaceous drills or their progeny or other shellfish pests.
- (d) All shipments of bivalve mollusk seed from approved areas lacking government certification or shipments that spot checks have shown to contain pests that would be deleterious to native aquatic plant or animal life are subject to formal inspection.

At least 4% of these live bivalve mollusk shipments must be opened by the importer for inspection of a minimum of 10% of the contents of each container inspected.

- (e) One adult predaceous drill, young drill, or egg case or other pests found by an inspector indicates the shipment is deleterious to aquatic animal life. When only one pest is found during the course of an inspection, the inspection will be repeated, using another 4% sample of the shipment. The finding of two individual pests (or egg cases) of the same species will subject the shipment to rejection, or repacking by the importer and reinspection.
- (f) When individual shipments are made of live bivalve mollusks from different geographical areas and the units of the shipment are marked accordingly, 4% of the components from each such area is to be opened for inspection and destruction or reshipment will apply to that portion of the shipment of common origin which yields pests.
- (g) An inspection fee of ten cents per case, with a minimum fee of \$50 per shipment shall be paid by the applicant. The term "case" includes barrel, sack, box, or similar container comprising the shipment. A money order or check, made payable to the California Department of Fish and Game, must be received by the inspector before written permission to plant such live bivalve mollusks shall be given.
- (h) Live bivalve mollusks or shells of such shellfish grown on pest-infested beds within the state must be inspected by a

representative of the department and approved for planting before being returned to any waters of the state. This inspection is separate from that referred to hereinabove and no fee is required.

237. Leasing of State Water Bottoms for Aquaculture.

(a) Definitions. The following definitions are established for terms used in this section:

- (1) "Aquaculture Area" means any public waters or private waters contiguous to public waters set aside for the purpose of cultivating, harvesting or relaying of any aquatic plant or animal life.
- (2) "Aquaculture Agreement" means an agreement for the establishment of an aquaculture area on private water bottoms contiguous to state water bottoms which may include a permit for relaying or depuration of shellfish under authority of Fish and Game Code Division 12. Permits may include use of state or private lands for aquaculture purposes.
- (3) "Aquaculture Lease" means a lease of state water bottoms for the cultivation of aquatic plants and animals.
- (4) "Depuration" means the process by which shellfish cleanse themselves of contaminants in a controlled process water environment.
- (5) "Depuration Facility" means the physical structure, enclosure or device in which depuration is accomplished, including all appurtenances.
- (6) "Growing Area" means any offshore ocean, coastal estuarine or freshwater area suitable for natural shellfish growth or artificial shellfish propagation and shall include open seawater systems.
- (7) "Relaying" means the moving of shellfish from one water to another.
- (8) "Shellfish" in this section means native or nonnative bivalve mollusks.
- (9) "Classified Areas" include those waters that may be classified by the State Department of Health according to the following:
 - (A) "Approved Area" - a shellfish-growing area not adversely affected by sewage or other wastes.
 - (B) "Conditionally Approved Area" - a shellfish-growing area that may be occasionally affected by sewage or other toxic substances.
 - (C) "Prohibited Area" - a shellfish-growing area not certified

because of its proximity to a known waste discharge or because the area is influenced by other detrimental environmental factors.

- (D) "Restricted Area" - a shellfish-growing area subjected to a limited degree of pollution which makes it unsafe to harvest shellfish for direct marketing but where harvesting for relaying or depuration may be permitted.
- (10) "Lot" is a designated quantity of shellfish that is identifiable and may consist of one or more batches.
- (11) "Batch" is a measurable, identifiable unit such as bushel, and one or more batches will comprise a lot.
- (12) "Tidal Area" means the intertidal area between the high tide mark and 1,000 feet offshore. Commercial harvesting of native invertebrates in this area is subject to special permit requirements under Section 8500 of the Fish and Game Code.
- (b) Applications.
- (1) Applications for a lease of state water bottoms for aquaculture or for an aquaculture agreement or for a permit to relay or depurate shellfish shall be made to the commission.
- (2) Applications shall be accompanied by proof of ownership of, or a valid lease on the lands on which the operations are to occur, or description of the state lands which the applicant has leased or intends to lease and on which the operations are to occur.
- (3) Applications also shall be accompanied by a description of the area involved and a reference map clearly showing the exterior boundaries of the area. The description must be tied to monuments of record and maps must be in a form acceptable for recording in the county(ies) in which the aquaculture area is located. A copy of all maps shall be submitted by the commission to the State Lands Commission. No aquaculture agreement will be valid until the State Lands Commission has certified to the department that the area applied for is unencumbered or the private ownership is properly described, so as not to preclude its use for the proposed culture.
- (4) No aquaculture lease for state water bottoms will be approved until the commission has held a public hearing at least ninety days after notice thereof has been published in a newspaper of general circulation within the county involved. An aquaculture lease or aquaculture agreement is subject to repeal if a map of the area is not filed by the holder of such lease or agreement in the appropriate county(ies) within thirty days of approval by the commission.
- (5) No aquaculture agreement for private water bottoms will be

approved until the commission has held a public hearing at least thirty days after notice thereof has been published in a newspaper of general circulation within the county involved. An aquaculture agreement is subject to repeal if a map of the area is not filed by the holder of such aquaculture agreement in the appropriate county(ies) within thirty days of approval by the commission.

- (6) An explanation of the type of operation including the aquaculture practices, relay or depuration activities to be employed, shall be included in all applications for aquaculture leases or agreements.
- (7) The change of any authorized cultural practices as specified in the aquaculture lease or agreement must have approval of the commission before the change is put into effect.
- (8) The application shall include information as to whether each of the areas involved in the aquaculture relay or depuration operation has been classified by the Department of Health Services as approved, conditionally approved, prohibited, restricted, or unclassified.

(c) Aquaculture Leases and Agreements.

- (1) Aquaculture leases or agreements shall not be modified, amended, transferred, assigned or hypothecated without the approval of the commission.
 - (2) The holder of the aquaculture lease or agreement shall comply with the provisions of the Fish and Game Code and the rules and regulations of the commission and any special provisions set forth in the lease or agreement by the commission.
 - (3) Before an aquaculture lease or agreement is issued by the department, the applicant must present evidence that the applied for aquaculture area has been registered in compliance with Fish and Game Code Section 15101.
 - (4) The department may inspect the depuration facilities, culture or relay areas of a holder of an aquaculture lease or agreement at any time.
 - (5) Vessels used by holders of an aquaculture lease or agreement may be required to maintain clearly visible identifying numbers.
 - (6) The holder of an aquaculture lease or agreement shall record the size, numbers or pounds of shellfish or other marine life planted, relayed or taken in or from waters of the state on forms as designated by the department.
- (d) In addition to other requirements, a permit to relay or depurate shellfish shall contain the following conditions:

- (1) An operation conducted under an aquaculture agreement or a relay or depuration permit that receives shellfish from the licensee's or permittee's own lands or lands leased by it, is not required to be licensed as a wholesale fish dealer and preserver, but shall maintain such records as are required by the department to monitor such operations, including but not limited to: data with respect to each batch of shellfish depurated or relayed that will show: its origin and quantity; date of reception by the depuration facility or relay bed and the length of time held in the facility or bed; and their final disposition. All depurated or relayed shellfish shall be identified by a tag or label securely fastened to the shipping container and bearing the certificate number of the shipper, his name and address, the name and address of the consignee, and the kind and quantity of shellfish in the container and the batch or lot number.
- (2) The operator of a depurating facility receiving shellfish from other than the operator's owned or leased areas shall obtain a wholesale fish dealer's and preserver's license prior to the department's issuance of a permit and the permittee will maintain such records as required by the department.
- (3) A relay or depuration permittee, moving shellfish for the purpose of cleansing, shall satisfactorily identify each lot of shellfish harvested and maintain its identity separate from other shellfish throughout its relaying or depuration process until certification by the Department of Health Services that edible shellfish standards have been met.
- (4) Persons holding an aquaculture lease or agreement who receive shellfish from out-of-state for planting, shall comply with shellfish inspection procedures found in Section 236.1(a) and (f) of this title. Persons holding an aquaculture lease or agreement who relay shellfish from one area of the state to another, whether from private or public water bottoms, shall give the department notice two working days prior to the relay. Such notification shall be given to the department's office specified in the agreement.
- (5) No shellfish shall be relayed without obtaining written permission from the department.
- (6) Shellfish harvested from a conditionally approved or restricted area for relaying or depuration, shall be identified by a lot number. Shellfish so identified must be kept separate throughout the relaying or depuration process.
- (7) Oysters, clams and mussels harvested for human consumption from the waters of Districts 12 and 13 by commercial fishermen, shall be taken only for the purposes of relaying or depuration.
- (8) Shellfish produced by a registered aquaculture hatchery within

the state may be relayed at any time. Such shellfish shall be free of disease and parasites so as to pose no threat to the environment. Hatcheries producing shellfish to be planted in state waters shall be inspected by the department for the presence of disease organisms at least once a year and, following such inspection, a permit authorizing planting of specified species for the ensuing year may be issued.

In lieu of the hatchery inspection, at the option of the registrant, inspection of each lot from the hatchery that is to be planted in state waters shall be requested. Request for inspecting each lot shall be made by the registrant at least two working days prior to the transfer. The inspection fee for each lot and the manner paid shall be the same as in Section 236.1(i) of this title. A written permit authorizing the planting shall be obtained before planting the shellfish.

(9) Subsection (d)(8) does not preclude inspections under Section 1006 of the Fish and Game Code.

(a) Shellfish relayed from Districts 12 and 13.

(1) Native shellfish taken from Districts 12 and 13 under an aquaculture lease or agreement for purposes of purification, whether from public or private lands, are subject to a royalty of 0.0125¢ per pound after taking the shellfish from the relaying or depurating site. For the purpose of computing the royalty, the charge shall be based on the weight (including shell) of the shellfish after completion of the cleansing process. The royalty is payable within thirty days after close of the calendar month in which it became due. If not paid within sixty days after the close of the month for which it became due, a penalty equal to ten percent of the royalty shall be added to it.

(2) Nonnative shellfish relayed from Districts 12 and 13 and relayed for the purposes of purification, are subject to a 0.02¢ per pound fee after taking them from the relaying or depuration site. The fee is charged to cover administrative costs and is subject to adjustment and penalty as described in subsection (e)(1).

(f) Persons holding an aquaculture lease or agreement and using state water bottoms shall, in addition to the acreage rental fee for use of state water bottoms, be assessed a fee on all shellfish harvested not to exceed the privilege tax as provided in Fish and Game Code Section 15003. The fees shall be subject to the penalty and adjustment as described in subsection (e)(1). These fees shall not apply to the harvesting of shellfish from state or private water bottoms in Districts 12 and 13 for the purposes of cleansing. When water quality in Districts 12 and 13 permits direct use of the shellfish from state water bottoms or native shellfish from private water bottoms, the fee established by Fish and Game Code Section 15003 shall apply.

- (g) Agar-bearing plants taken from state waters are subject to the fees of Section 165(a)(2)(E) of this title.
- (h) Oysters, clams and mussels harvested from Districts 12 and 13 for commercial purposes must be taken by licensed commercial fishermen. In addition to a commercial fishing license, every fisherman when harvesting shellfish, must have in his possession a current permit issued pursuant to Section 123 of this title. Only those species listed on the permit for harvest from Districts 12 and 13 may be taken.
- (i) Improvements of aquaculture leases.

(1) Oyster Cultivation.

- (A) Bottom culture - leases must be improved at an average rate of at least two cases of seed-bearing shell (160 pounds of seed-bearing shell) or thirty bushels of shellfish one or more years of age per acre over the allotted acreage per year. Improvements by unattached, single seed (less than one year old) shall consist of planting an average rate of 10,000 single seed per acre per year over the allotted acreage. Term of improvement shall be four years for seed-bearing shell and three years for oysters one or more years of age.
- (B) Off-bottom culture - leases must be improved at an average rate of at least one case of seed-bearing shell (20 pounds of seed-bearing shell), or fifteen bushels of oysters one or more years of age per acre over the allotted acreage per year. Improvement by unattached single seed (less than one year old) shall consist of planting an average rate of 5,000 single seed per acre per year over the allotted acreage. Term of improvement shall be four years for seed-bearing shell, and three years for oysters one or more years of age.
- (C) Production requirements - the annual harvest rate shall be an average of 2,000 oysters per acre (over one year of age) over the allotted acreage effective three years after the effective date of the lease. Harvest reports shall be recorded in the form of a receipt in quadruplicate furnished by the department. The triplicate copy shall be delivered to the department on or before the first and sixteenth day of each month.

(2) Miscellaneous Aquatic Species.

- (A) A lease of state water bottoms for the cultivation of species other than oysters will include minimum planting and harvesting requirements for the species to be cultivated to insure that water bottoms so encumbered will be used for the purpose intended.

(B) Harvest amounts shall be recorded in the form of a receipt in quadruplicate furnished by the department. The triplicate copy shall be delivered to the department on or before the first and sixteenth day of each month.

(j) As proof of use, holders of aquaculture leases shall submit to the department office designated in the lease agreement, a written declaration under penalty of perjury showing the date, quantity of species and acreage in each planting, also including a map showing acres, amounts, and dates planted.

238. Sale and Transportation of Aquatic Plants and Animals.

This section does not apply to the importation of live aquatic plants and animals described in Sections 236 and 236.1 of these regulations.

No person shall sell or transport aquaculture products in this state except in accordance with the following general terms and conditions:

(a) All aquaculture products sold or transported under the provisions of this section must have been legally reared or imported by an aquaculturist registered in this state.

(b) Sales between registered aquaculturists.

(1) A registered aquaculturist may sell and transport live aquaculture products authorized by that registration to any other aquaculturist authorized to possess the same species.

(2) All shipments of authorized aquaculture products shall be accompanied by a duplicate of a sales invoice or waybill showing the name of the producer, the producer's aquaculture registration number, date of shipment, the species being transported, the weight, volume or count of each species in the shipment, and the name and address of the consignee.

(3) Duplicates of the required sale or shipping documents shall be retained for a period of one year from the date of sale. The records shall be shown upon written demand by the director of the department. The information contained in these documents is confidential except that such information may be disclosed in accordance with a proper judicial order in cases or actions instituted for enforcement of this section or for prosecution of violations of this section.

(c) A registered aquaculturist may sell and transport live those aquaculture products authorized by that registration to any of the following whose licenses or permits authorize the possession of the same live plants and animals for commercial purposes.

(1) Scientific or educational establishments;

(2) Aquarium Dealer Permittees (See Section 227 of these regulations);

(3) Live Freshwater Bait Fish Licenses (See Sections 200 through 200.32 of these regulations);

(4) To any other legal purchaser or possessor for whom possession is legal. Documents as described in Section 238(b)(2) shall accompany each shipment. Under no condition may these aquaculture products be stocked in any lake, pond, or stream.

(d) Except for live bivalve mollusks, the operator of any commercial establishment where aquaculture products are maintained alive for human consumption shall retain copies of all sales invoices or waybills received with the products. Such invoices or waybills shall be retained by the operator for a period of at least one year following receipt of the aquaculture products listed thereon, and such invoices or waybills shall be produced upon request of an official of the department. All aquaculture products, except live shellfish, sold and leaving the premises or the dealer shall be killed and accompanied by a sales receipt showing the date of purchase and name of business where purchased or be packaged in accordance with Section 240 of these regulations. Under no condition shall these aquaculture products be stocked in any waters of this state.

(e) Marking and Tagging Requirements.

(1) Abalone.

(A) All abalone produced by an aquaculturist registered pursuant to section 15101 of the fish and game code may be possessed, harvested, sold and transported, provided the abalone are identifiable as being cultivated.

Such abalone are exempt from the size limits established by Section 8304 of the Fish and Game Code.

(B) Abalone which spend part of their life in marine waters of the state, other than while in an aquaculture facility, must have an identifying mark or tag approved by the department. Such identifying mark must be approved, or a tag attached, prior to the abalone being placed in waters outside the aquaculture facility. For purposes of this section, the term "aquaculture facility" includes a hatchery, rearing facility, pen, cage or any similar structure or device.

(C) Any person other than a registered aquaculturist processing cultured abalone at the wholesale level must possess a wholesale fish dealer's and processor's license as provided by Section 8040 of the Fish and Game Code as well as a revocable processing permit for cultured abalone, as issued by the department.

(1) Retail sales of Aquaculture Products at an Aquaculture Facility.
All aquaculture products sold at an aquaculture facility shall be

dead at the time of sale except for:

- (1) Aquaculture products sold under the provisions of Sections 238(c) and 238.5.
- (2) Striped bass, steelhead trout and sturgeon sold pursuant to the provisions of Section 240.
- (3) Marine Aquaculture Products. Such retail sales of aquaculture products taken from the aquaculture facility by the purchaser need only be accompanied by a sales receipt showing the name and aquaculture registration number of the producer, the item(s) and quantity purchased and the date of purchase. All other shipments of aquaculture products shall be accompanied by a sales invoice or waybill as provided in Section 238(b)(2).

243. Take of Aquatic Plants, Invertebrates, Fishes and Bullfrogs From the Wild for Use as Broodstock for Aquaculture Purposes.

Pursuant to the provisions of Sections 5503 and 15300 of the Fish and Game Code, aquatic plants, invertebrates, fishes and bullfrogs (Pana gatesbeiana) may be taken from the wild for aquaculture purposes only in accordance with the following regulations:

(a) This section does not apply to the following:

- (1) The take of live freshwater fish for sale as bait (see Sections 8460-8463 of the Fish and Game Code and Sections 200-200.31 of Title 14, CAC).
- (2) The take of aquatic animals by commercial fishermen (see Section 226.7, Title 14, CAC).
- (3) The take of anadromous fish under restrictions applied to ocean ranching (see Sections 15900-15908 of the Fish and Game Code and Section 235.2, Title 14, CAC).

(b) The department may issue a revocable, nontransferable permit to collect aquatic plants, invertebrates, fishes and bullfrogs from the wild for use in developing a domesticated broodstock for aquaculture purposes. Permits shall not be issued for striped bass or white sturgeon except by specific commission authorization. No permits shall be issued for golden trout, steelhead trout, chinook salmon, or coho salmon; or for those animals listed by the state or federal government as endangered, threatened or fully protected. Permits shall state the name of permittee, permittee's aquaculture registration number, name of the collector(s) if different from permittee, species to be collected, number or total weight to be collected, collection locations and methods, period for which the permit is valid, and any special collection requirements.

(1) Who May Obtain Permits. Permits shall be issued only to the

owner or operator of an aquaculture facility currently registered according to Section 15101 of the Fish and Game Code and Section 235 of Title 14, CAC. The aquaculturist must be authorized by said registration to possess the species to be taken. The aquaculturist may designate, on the permit application, a person to collect for him.

- (2) Cost of the Permit. An administrative fee of \$25 shall be charged for processing the permit. The department shall assess an additional fee, equal to the actual costs to the department in salaries, travel expenses and equipment use, if any department personnel are required to assist in the collection or inspection of the wild broodstock.

The department may waive any portion of the fees, except the \$25 administrative fee, if the permittee agrees to restock into the wild a portion of the cultured progeny of wild broodstock. Fees waived may not be in excess of the current wholesale market value of the progeny stocked. The number of progeny and place to be stocked may be negotiated by the department and the permittee.

- (3) How to Apply for the Permit. Application for the permit shall be made on forms provided by the department. Application forms are available on request from the Aquaculture Development Section, Department of Fish and Game, 1415 Ninth Street, Sacramento, CA 95814.

Completed and signed application forms and the \$25 administrative fee shall be submitted to the Department of Fish and Game, Aquaculture Development Section, 1415 Ninth Street, Sacramento, CA 95814.

- (c) Who May Collect Wild Broodstock. Wild broodstock shall be collected only by those persons listed on the permit. At least one of the persons designated by the permit shall be present when animals are collected. Collectors shall have the collection permit in their possession while engaged in collection activities and while transporting species collected to the permittee's registered facility. Persons assisting the collector, and under their direct supervision, need not have a broodstock collection permit.

The department may require that an employee of the department be present to monitor collection operations, or that the broodstock be collected by department personnel. All costs to the department for monitoring or collecting shall be borne by the permittee. Any special conditions applied to the collection of wild broodstock shall be stated on the permit.

- (d) collection methods and gear. All aquatic plants and animals authorized to be taken by the permit shall be captured only in those waters and only with those types of gear specified in the permit. All species other than those specified in the permit

shall be returned immediately in good condition to the water of origin.

The permittee shall comply with department requirements concerning construction and deployment of collection gear. Locations and times of collecting and the amount taken may be restricted by the department to protect the wild populations of authorized species or other species found in the collecting area, or to reduce interference with angling.

- (e) Notification of Department. Before making any collection, the permittee shall notify the department's regional office having responsibility for the area where the permittee wishes to collect. Such notification shall reach the regional office by letter, telephone or personal contact at least 48 hours in advance of the collection date(s) and shall include the locality, dates and time(s) during which collecting is to be done.
- (f) Written Reports. Permittee shall submit a written report within six months of the permit's expiration date or prior to application for any additional broodstock collection permits, whichever is earlier. The report shall state the number of plants or animals collected, the location and condition of the wild broodstock, and the number or amount of progeny cultured.
- (g) Disposition of Wild Broodstock and Their Cultured Progeny. Wild plants and animals taken under the authority of this permit remain the property of the state and shall not be sold, bartered, or traded without written permission of the department. Wild broodstock shall be held only at an aquaculture facility registered by the permittee. The department may require that animals obtained under this permit be returned alive and in good condition to the water where taken, or donated to a charitable organization approved by the department.

The cultured progeny of plants and animals lawfully obtained under the authority of a broodstock collection permit are the exclusive property of that person who cultured them, or that person's successor in interest.

- (h) Permittees shall allow authorized department employees to inspect any and all wild broodstock authorized by this permit and their holding facilities. Inspections may be made during normal working hours or with prior notification, if some other time is agreeable to both parties.
- (i) Permit Denial or Revocation. The department may deny or revoke a permit to take wild plants and animals for use in developing a domesticated broodstock for the following reasons:
 - (1) To protect an aquatic resource.
 - (2) To protect public safety.

- (3) A commercial source is available.
- (4) The applicant does not have facilities or experience necessary to develop a domesticated broodstock from wild plants or animals.
- (5) The applicant or permittee has demonstrated repeated failure to develop a domesticated broodstock from wild plants or animals.
- (6) The applicant or permittee, his designated collector, or an employee or assistant has violated the terms of a permit issued for the collection of wild broodstock, or has been convicted by a court of competent jurisdiction of any violation of the Fish and Game Code or commission regulations pertaining to activities covered by this permit.

Denial or revocation may be appealed to the commission.

245. Aquaculture Disease Control Regulations.

(a) General Conditions.

- (1) All fish inspections and disease examinations shall be conducted in accordance with the 1979 edition of "Procedures for Detection and Identification of Certain Fish Pathogens" published by the Fish and Health Section of the American Fisheries Society (FHS Blue Book). All such inspections and examinations shall be conducted by a fish pathologist.
- (2) When a listed disease is identified by a fish pathologist in aquatic plants or animals in an aquaculture facility or in transit to or from such a facility which requires restrictive action by the department, the owner or consignee involved shall be notified by the department immediately. The owner or consignee may accept the original identification or may request that the department seek confirmation of the identification by another fish pathologist.
- (3) Upon confirmation, if requested, or acceptance of the identification of any listed disease which requires restrictive action by the department as set forth in subsection (c), a compliance agreement describing the action to be taken may be drawn up between the owner and the director. The department shall commence negotiation of the terms of the compliance agreement within 48 hours after acceptance or confirmation as defined in subsection (b). The agreement must be signed by the owner and the director within 30 days of acceptance or confirmation. If the compliance agreement is not signed within 30 days, a quarantine as specified in Fish and Game Code Section 15505 may be imposed while the owner appeals to the commission. The agreement shall be designed in consultation with the Aquaculture Disease Committee to bring the least amount of economic hardship

possible to the affected party while affording maximum protection to other growers and the fishery resources of the State.

- (4) If at any time a fish pathologist identifies one or more pathogens listed in this section anywhere within the State of California, he must immediately report the identification to the director of the department.
- (5) Methods for disposal of aquatic plants and animals and for disinfection of aquaculture equipment and facilities shall be specified in the compliance agreement in accordance with the disease category and the threat to other aquatic plant or animal life or aquaculture facilities.
- (6) Any live aquatic plants, animals, or eggs originating outside the United States shall be certified by a fish pathologist as disease- and parasite-free before a permit for importation is issued.
- (7) Anyone interested in conducting research on those diseases designated as catastrophic must submit a written research proposal to the director of the department and obtain written approval from the director before the causative agent is brought to their facility. Anyone denied approval pursuant to this subsection may appeal such denial to the commission.
- (8) Upon identification of a disease which presents a threat to the aquaculture industry or aquatic animal or plant life, but which is not listed in this section, the director of the department shall immediately consult, by phone if necessary, with the Aquaculture Disease Committee, impose an immediate holding action, and develop a plan of action.

(b) Definitions.

- (1) Compliance Agreement. A written agreement between the director of the department and the owner or consignee of the diseased or parasitized aquaculture product which outlines the steps for disposal of the diseased or parasitized aquatic plants or animals and the procedures, both chemical and mechanical, for clean up of the facility.
- (2) Confirmation. The second identification of a disease agent from the original sample or source by another fish pathologist.
- (3) Disposal. The destruction or marketing of animals by methods prescribed in a compliance agreement.
- (4) Eradication. The elimination of disease-causing agents.
- (5) Fish Pathologist. A department virologist or fish pathologist, or a fish pathologist certified by the board or

Certification of the Fish Health Section of the American Fisheries Society pursuant to their guidelines adopted effective January 1, 1982.

- (6) Immediate Holding Action. A prohibition of moving any plant or animal from an aquaculture facility for up to 30 days.
 - (7) Other Holding Action. Restrictions outlined in the compliance agreement on plant or animal movement to specific markets, watersheds, or geographic areas deemed necessary by the department to protect other aquaculture facilities and the aquatic plants and animals of the State.
 - (8) Q Diseases. Diseases for which there is so little information they cannot be given a permanent classification.
- (c) Disease Categories. The diseases of concern are grouped in four categories as to their seriousness and the specific action to be taken when diagnosed.
- (1) Significant Diseases. On identification by a fish pathologist and confirmation, if requested, of any of these diseases, the director shall immediately consult, by phone if necessary, with the Aquaculture Disease Committee, and shall impose an immediate holding action, other holding action, or no restrictions as the director in consultation with the Aquaculture Disease Committee may deem necessary.
 - (A) Furunculosis (Aeromonas salmonicida).
 - (B) Enteric Redmouth (ERM) (Yersinia ruckeri).
 - (C) Vibriosis (Vibrio sp.)
 - (D) Copepod (Genera Lernaea, Salmincola, and Ergasilus).
 - (E) Golden Shiner Virus.
 - (F) Oyster Fungus Disease (Labyrinthomyxa marina).
 - (G) MSX Oyster Disease (Minchinia neisoni).
 - (H) Ichthyophonus (Ichthyophonus hoferi).
 - (2) Serious Diseases. On identification by a fish pathologist of any of these diseases, the director shall immediately consult, by phone if necessary, with the Aquaculture Disease Committee, and shall impose an immediate holding action until confirmation, if requested, is obtained; then the action will be disposal or other holding action the director in consultation with the Aquaculture Disease Committee may deem necessary, as specified in the compliance agreement.
 - (A) Infectious Hematopoietic Necrosis (IHN).
 - (B) Ceratomyxosis (Ceratomyxa shasta).
 - (C) Bacterial Kidney Disease (Renibacterium salmoninarum).
 - (D) Pleistophora ovariae.
 - (E) Proliferative Kidney Disease (PKD).
 - (F) SSO (Minchinia costalis).
 - (G) Microcell disease of oysters.

(3) Catastrophic Diseases. On Identification by a fish pathologist of any of these diseases, the director shall immediately consult, by phone if necessary, with the Aquaculture Disease Committee, and shall impose an immediate holding action until confirmation, if requested, is obtained; then other holding action, disposal, and eradication shall be required, as specified in the compliance agreement.

- (A) Viral Hemorrhagic Septicemia (VHS), Egtved Virus.
- (B) Infectious Pancreatic Necrosis (IPN).
- (C) Channel Catfish Virus Disease (CCVD).
- (D) Whirling Disease (Myxosoma cerebralis).

(4) Q Diseases. On identification by a fish pathologist and confirmation, if requested, of any of these diseases, the director shall immediately consult, by phone if necessary, with the Aquaculture Disease Committee, and shall impose an immediate holding action pending determination of a course of action for diseases in this classification.

- (A) Viral Erythrocytic Necrosis (VEN).
- (B) Herpesvirus salmonis (HPV).
- (C) Spring Viremia of Carp (Rhabdovirus carpio).
- (D) Edwardsiella ictaluri.
- (E) Denman Island Disease of Oysters.

(d) Aquatic Diseases and Host Organisms. Pursuant to Section 1550 of the Fish and Game Code, the commission has compiled a list of diseases and parasites and the aquatic plants and animals they are known to infect or parasitize. Infected plants or animals are considered detrimental to the aquaculture industry and to wild stocks of aquatic plants and animals.

<u>Disease</u>	<u>Host</u>
1. Viral Hemorrhagic Septicemia (VHS)	Rainbow trout
2. Infectious Pancreatic Necrosis (IPN)	Salmonids
3. Channel Catfish Virus (CCVD)	Channel catfish
4. Whirling Disease - <u>Myxosoma cerebralis</u>	Salmonids, tubifex
5. Infectious Hematopoietic Necrosis (IHN)	Salmonids
6. Ceratomyxosis - <u>Ceratomyxa shasta</u>	Salmonids
7. Bacterial Kidney Disease - <u>Renibacterium salmoninarum</u>	Salmonids
8. <u>Pleistophora ovariae</u>	Golden shiner, fathead minnow
9. Proliferative Kidney Disease (PKD)	Salmonids
10. SSO - <u>Minchinia costalis</u>	Oyster
11. Microcell Disease of Oysters	Oyster
12. Furunculosis - <u>Aeromonas salmonicida</u>	All fin fish
13. Enteric Redmouth (ERM) - <u>Yersinia ruckeri</u>	Salmonids
14. Vibriosis - <u>Vibrio</u> sp.	All fin fish
15. Copepod (Genera: <u>Lernaea</u> , <u>Salmincola</u> , and <u>Ergasilus</u>)	Freshwater fin fish
16. Golden Shiner Virus	Golden shiner
17. Oyster Fungus Disease - <u>Labyrinthomyxa marina</u>	Oysters

- | | |
|--|-----------------------------------|
| 18. MSX Oyster Disease - <u>Minchinia nelsoni</u> | Oysters |
| 19. Ichthyophonus - <u>Ichthyophonus hoferi</u> | All fin fish |
| 20. Viral Erythrocytic Necrosis (VEN) | Marine and anadromous
fin fish |
| 21. <u>Herpesvirus salmonis</u> (HPV) | Rainbow trout |
| 22. Spring Viremia of Carp - <u>Rhabdovirus carpio</u> | Carp |
| 23. <u>Edwardsiella ictaluri</u> | Channel catfish |
| 24. Denman Island Disease of Oysters | Pacific oyster |

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

APPLICATION FOR LEASE OF STATE WATER BOTTOMS FOR AQUACULTURE

Applicant Name: _____ Phone No. () _____

Address: _____

Aquaculture Registration No. _____ Expiration Date _____

Species of plants or animals to be cultured:

Application is hereby made to the Fish and Game Commission of the State of California for a lease of State water bottoms in the area described in the attached exhibit entitled "Exhibit A-Legal Description", and as shown on the map attached hereto marked "Exhibit B". Each exhibit bears the name of this applicant. Such lease will be for the purpose of aquaculture involving the species designated above. In support of this application, the applicant hereby submits the following explanation of the type of operation and cultural practices to be employed:

- A. Purpose of operation - research and development or production.
- B. Plan of development and proposed production schedule.
- C. Type of cultural method(s) to be employed; bottom, longline, buoyed habitats, etc.
- D. Department of Health Services growing water classification; approved, conditionally approved, prohibited, restricted or unclassified.

(Attach additional sheets for detailed explanation)

Date: _____ Signed(X) _____

(See instructions on the back)

1. Prepare application form in duplicate and send to Fish and Game Commission, 1416 Ninth Street, Sacramento, California 95814.
2. Attach a legal description marked "Exhibit A" and a map in duplicate marked "Exhibit B" to the application. The name of the applicant should be clearly shown on both the legal description and the map. The map must reflect the legal description of the lease area in the application, must show the acreage (or square footage if less than one acre) and be in a form acceptable for recording in the county(ies) in which the requested lease is located. Ties to monuments of record, the scale of the drawing, and where available, high and low tide lines should be shown. The nearest public access should be shown or the route of proposed access to the lease area from the nearest public access to the lease area described.
3. The application must show the name of the applicant and indicate whether a single ownership, a partnership, or a corporation.
4. The application must be dated and signed below the name indicated. The title of the person(s) signing the application should be shown. If a single ownership, the title "Owner" should be shown. If a partnership, all the partners' names should be shown, and the application should be signed by at least one "general partner." If a corporation, the duly authorized "Corporation Officer(s)" must sign their title(s) shown.
5. Appropriate fee must accompany the application. The present law requires that \$100.00 be remitted with the application. Payment may be made by check or money order. Do not send cash in mailing the application to the State.
6. Assistance in completing and filing this application may be obtained from the Marine Resources Branch of the Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814, or from Marine Resources Region offices at 245 West Broadway, Long Beach, California 90802, or 411 Burgess Drive, Menlo Park, California 94025.

EXAMPLE

EXHIBIT A

Legal description of the proposed water bottom lease for cultivation of oysters by Empire Shellfish Company, Ltd.

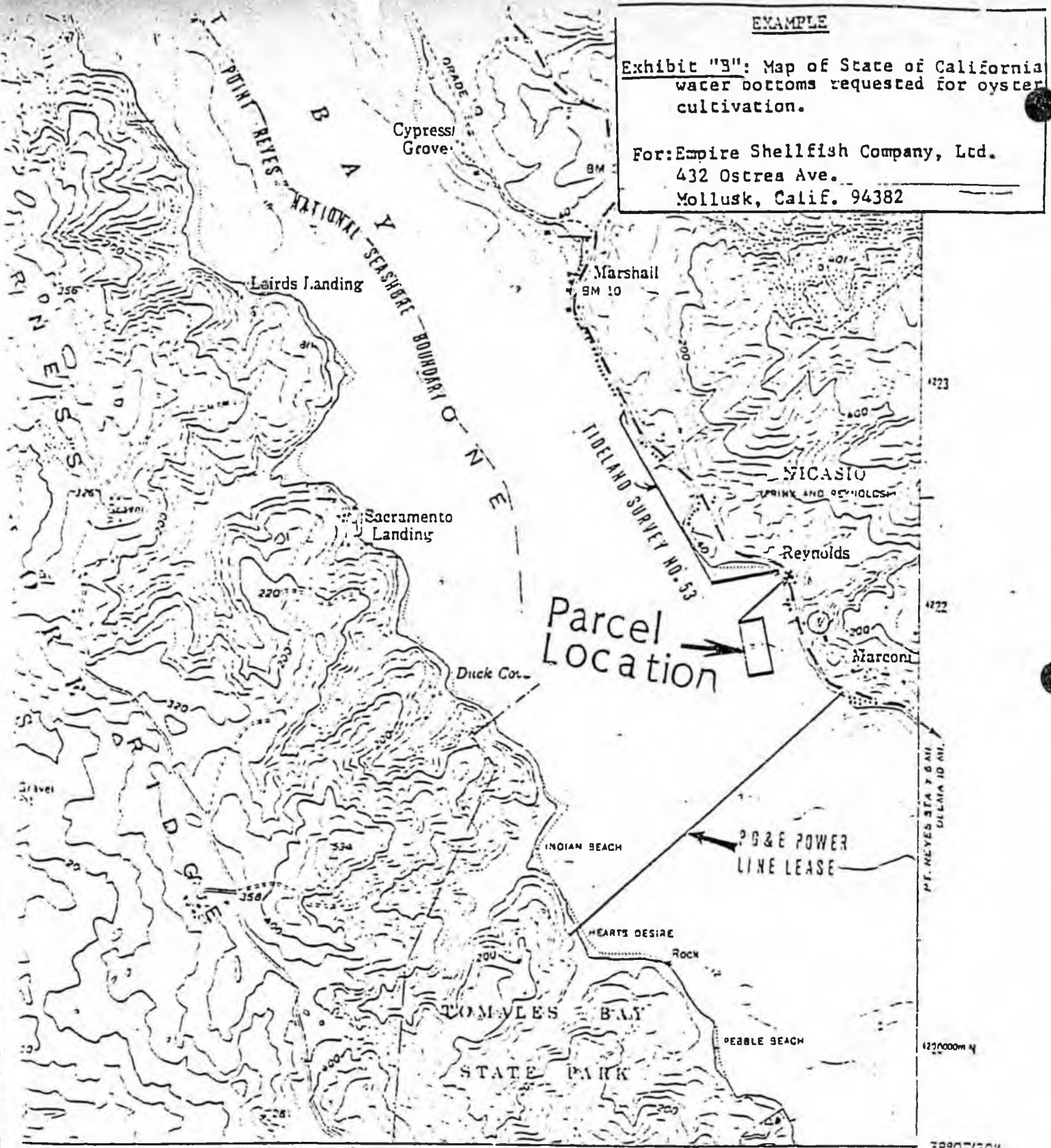
LOCATION

In Tomales Bay, Marine County, State of California, starting from the "Bench Mark 9" located at approximately 38° 8' 53" North latitude and 122° 52' West longitude on the Tomales quadrangle, California Marin County 7.5 minute series, Topographic, U.S. Dept. of the Interior, Geological Survey; South 45° West, 1000' to the point of beginning, then South 12° East, 300' then North 78° East, 400', then North 12° West, 800', then South 78° West, 400' to the point of beginning; containing an area of 3 ± acres.

EXAMPLE

Exhibit "B": Map of State of California water bottoms requested for oyster cultivation.

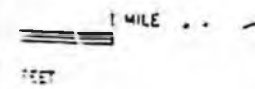
For: Empire Shellfish Company, Ltd.
432 Ostrea Ave.
Mollusk, Calif. 94382



Parcel Location

P&E POWER LINE LEASE

122°52'30" 33°07'30" 109 1:25000 E



ROAD CLASSIFICATION

- Medium duty ————
- Light-duty - - - - -
- Unimproved dirt
- State Route ○



QUADRANGLE LOCATION

TOMALES, CALIF.

NW1/4 POINT REYES 1st QUADRANGLE
N3807.5 - W 12252.5 / 7.5

UNVERIFIED
1:25000

NOTE: A separate application form must be completed for each location registered.

Registration no. _____
Date issued _____
Issued by _____
Office _____

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

APPLICATION FOR AQUACULTURE REGISTRATION
Pursuant to Sections 15000-15803 of the Fish and Game Code

Name of business: _____ Phone no. () _____

Owner's name(s): _____

Mailing address: _____
Street or P. O. Box _____ City _____ Zip code _____

Address of facility: _____
(or plant) Street _____ City _____ Zip code _____

Species to be maintained (use only approved names): _____

Location of facility to be registered: County: _____

FOR FRESHWATER AQUACULTURE. FILL OUT THE FOLLOWING SECTION

Nearest town _____ Road or highway _____
Township _____ Range _____ Section _____

Name and describe fully the source from which water is obtained, and the location and type of diversion _____

Attach a sketch showing arrangement of ponds and points at which inlet and outlet are screened. (SEE REVERSE SIDE)

FOR SALTWATER AQUACULTURE. FILL OUT THE FOLLOWING SECTION

Our cultivation areas are located as follows: (Please indicate whether State-leased or private)

Bay or area	Lot numbers or descriptions
_____	_____
_____	_____
_____	_____
_____	_____

General description of kind of work or business engaged in (please check ALL appropriate boxes)

_____ research and development _____ private consumption/use _____ fishout ponds
_____ rearing product for sale _____ commercial _____ noncommercial (no sales)
_____ other _____

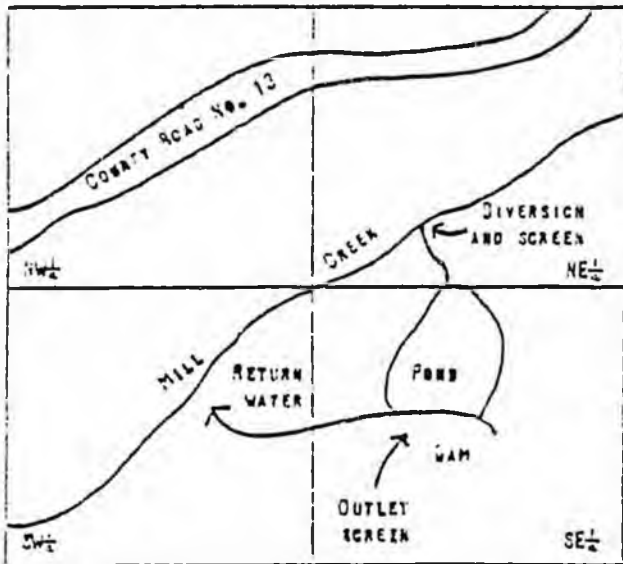
INSTRUCTIONS FOR PREPARING MAPS FOR FRESHWATER AQUACULTURE

1. Give location number of point of diversion.
2. Show the location of the spring or stream, and give name.
3. Show the point of diversion (i.e., the point at which water is to be taken from the stream or spring).
4. Show location of the main ditch or pipeline and points where screened.
5. Indicate clearly the proposed place of use of the water. For ponds, show the number and location of each. (See sketch below.)

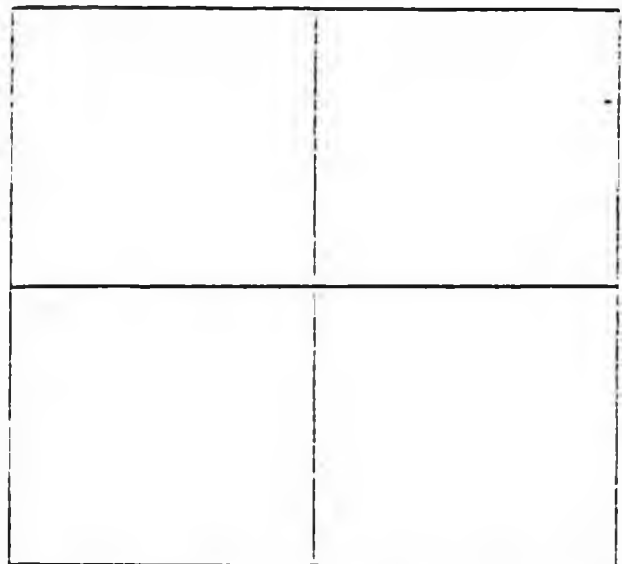
(EXAMPLE)

Township 25N Range 1W Section 6
1/4 1/4
 Base and meridian

Township _____ Range _____ Section _____
1/4 1/4
 Base and meridian



Section 6 NW 1/4



I have read the Fish and Game Commission regulations governing registered aquaculturists and Sections 15000 through 15803 of the Fish and Game Code, and will operate in conformity with them.

Signed _____ Title _____ Date _____
 (if a company)

NOTE: There is a \$100.00 registration fee for each company registering their facilities, regardless of the number of locations. On receipt of \$100.00 and completed registration applications, and if all applicable provisions of the Fish and Game Code and the Fish and Game Commission regulations have been complied with, certificate of registration will be issued.

Inspected by _____ Approved by _____
 Date _____ Date _____

THE DEPARTMENT OF AGRICULTURE
AND RURAL DEVELOPMENT

DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT
OFFICE OF THE SECRETARY
FOR DEVELOPMENT AND RESEARCH OF AGRICULTURAL FACILITIES

FINAL DRAFT

JANUARY 9, 1987

Canada draft regulations
for Agriculture

TABLE OF CONTENTS

	PAGE
<u>I INTRODUCTION</u>	1
1.1 PURPOSE AND SCOPE	1
1.2 ENVIRONMENTAL IMPACTS	2
1.3 LEGISLATIVE MANDATES AND RESPONSIBILITIES	2
<u>II AQUACULTURE ENTERPRISE LICENCES</u>	3
2.1 LICENCING PROCEDURES	3
2.2 ELIGIBILITY	3
2.3 TERMS AND CONDITIONS	4
2.4 LICENCE FEATURES	4
<u>III MARINE FISH BEARING FACILITIES</u>	6
3.1 ENVIRONMENTAL ASSESSMENT	6
3.2 SITING CRITERIA	6
3.3 OPERATIONAL REQUIREMENTS	7
3.4 ABANDONMENT REQUIREMENTS	9
<u>IV LAND BASED FACILITIES</u>	10
4.1 ENVIRONMENTAL ASSESSMENT	10
4.2 SITING CRITERIA	10
4.3 OPERATIONAL GUIDELINES	10
4.4 ABANDONMENT REQUIREMENTS	12
<u>V FISH INSPECTION AND FARM PROCESSING</u>	13
5.1 ENVIRONMENTAL ASSESSMENT	13
5.2 SITING CRITERIA	13
5.3 HANDLING, PROCESSING AND INSPECTION REQUIREMENTS	13
5.4 OPERATIONAL REQUIREMENTS	14
5.5 LIVE TRANSPORT OF FISH	14
<u>VI PACIFIC REGION FISH HEALTH POLICY</u>	15
6.1 REASONS FOR FISH HEALTH POLICY	15
6.2 OBJECTIVES OF FISH HEALTH POLICY	15
6.3 DISEASES	15
6.4 INTRODUCTION OF SALMONIDS INTO PACIFIC REGION	17
6.5 TRANSPLANTS OF FISH WITHIN B.C./YUKON	17
6.6 SITING OF FISH CULTURE FACILITIES	17
6.7 PROCESSING PLANTS	19
6.8 DISPOSAL OF DEAD FISH AND OFFAL	18
6.9 WASTE OF FISH	18
6.10 CO-CULTURE OF SPECIES	18
6.11 CONTROL OF FISH DISEASES	18

TABLE OF CONTENTS CONT'D

	page
<u>VII FEDERAL/PROVINCIAL POLICY FOR IMPORTATION OF LIVE SALMONIDS</u> <u>INTO BRITISH COLUMBIA</u>	19
7.1 GENERAL	19
7.2 ATLANTIC SALMON	19
7.3 LIVE SALMONIDS RESEARCH	20
7.4 ATLANTIC SALMON QUARANTINE CONDITIONS	20
7.5 MARINE REARING OF FIRST GENERATION ATLANTIC SALMON	21
7.6 PROCEDURES	21

APPENDICES

	page
I LEGISLATIVE MANDATES AND RESPONSIBILITIES	22
II DFO INFORMATION REQUIREMENTS FOR EVALUATING MARINE AQUACULTURE FACILITIES	23
III DFO INFORMATION REQUIREMENTS FOR EVALUATING PROPOSED LAND BASED FACILITIES	25
IV RECOMMENDATIONS RESPECTING SITING AND OPERATION OF AQUACULTURE FACILITIES	28
V DEPARTMENT OF FISHERIES AND OCEANS KEY CONTACTS	29

I INTRODUCTION

1.1 PURPOSE AND SCOPE

Aquaculture - the farming and husbandry of marine and freshwater plants and animals is a rapidly expanding industry in B.C. The recent growth in the industry has placed new demands on both freshwater and marine environments which may be incompatible with existing resource uses. The characteristics which make sites attractive for aquaculture purposes are often the same characteristics that make these areas productive fish habitat or important fishery areas: with the increased demand for aquaculture sites and the potentially significant impacts which can result from intensive culturing and processing activities, the likelihood of resource conflicts and impacts increases.

The Department of Fisheries and Oceans maintains that an aquaculture industry can be developed in British Columbia in conjunction with continued maintenance of wild fisheries provided that great care is taken to ensure that aquaculture facilities are properly sited. These guidelines have been developed by the Department of Fisheries and Oceans (DFO) to prevent or minimize impacts to wild fish and fish habitats and to avoid conflicts between aquaculture and fishery activities by outlining requirements for siting, development, operation, and abandonment of freshwater and marine salmon culture and processing operations.

While these guidelines pertain specifically to hatcheries, seaweeds, and processing facilities, other culture activities (Table 1) also may have significant impacts, and individuals are therefore advised to contact the local DFO offices for information regarding requirements which pertain to their proposed operation.

TABLE 1 - Culture Techniques and Facilities for Shellfish, Finfish and Marine Plants

<u>Molluscs/Crustaceans/Marine Plants</u>	<u>Finfish</u>
- bottom culture	- freshwater hatcheries
- off-bottom line or raft culture	- freshwater impoundments
- impoundments (pens or cages)	- instream incubation
- marine hatcheries	- land based seawater rearing facilities
	- marine impoundments

1.2 ENVIRONMENTAL IMPACTS

The Department of Fisheries and Oceans is concerned that salmon culture and processing operations proceed in such a manner that they do not negatively impact on other fisheries resources or fish habitats.

Hatcheries and other land-based operations have the potential to transport and pollute seaweeds and elevate waste concentrations and amount of disease organisms in the marine environment adjacent to effluent discharges.

Salmon net pens, unless located properly, may cause smothering of valuable fish habitats such as herring spawning substrates, geoduck beds or intertidal clam or oyster beds. Net pens may attract juvenile wild salmon and herring in the vicinity of migration routes resulting in predation on the small fish by penned stocks or disease transfer between wild and cultured fish. Salmon in pens may also attract predators such as otters, seals or sealions and birds; these animals are often harassed, injured and sometimes illegally destroyed by salmon farmers anxious to protect their fish.

Less obvious, but also potentially harmful are the effects of antifoulants used on nets on adjacent shellfish and fish resources. Although research on this topic is still preliminary, initial indications are that oysters accumulate chemicals used to treat the nets with the result that their rate of growth is reduced and their flesh is rendered poisonous or unpalatable. No research on antifoulant accumulation in farm fish flesh is available yet, but this may also be of concern to potential farmers.

Finally, when antibiotics are administered to cultured fish, what effects do the often major additions of disease treatment chemicals have on the surrounding environment? Could the antibiotics eventually result in treatment-resistant strains of certain pathogens previously not encountered by wild fish stocks in the vicinity? This may be a very real and dangerous possibility.

It is for these reasons that the following guidelines have been developed. Many of these concerns and impacts can be minimized or avoided by: carefully selecting sites, mitigating or preventing impacts associated with site development and adopting appropriate operational or abandonment procedures.

1.3 LEGISLATIVE MANDATES AND RESPONSIBILITIES

The Department of Fisheries and Oceans (DFO) has jurisdictional responsibility for management of coastal and inland fisheries, fish health protection, product quality for exported fish and fish products, and protection of fish and marine mammals and their associated habitats.

The Department of the Environment, Conservation and Protection, Environmental Protection (EP) shares responsibility with DFO for Section 33 of the Fisheries Act which deals with water quality. In addition, EP is also responsible for classifying shellfish growing waters on the basis of sanitary quality.

The legislative mandates of DFO and EP which pertain to aquaculture are based on a number of federal statutes, regulations and international agreements which have been listed in Appendix I.

The guidelines presented herein have been developed pursuant to these legislative mandates and reflect B.D. and C.P. requirements for protection of existing fish and shellfish resources, their habitats and the fisheries they support.

These guidelines are not, however, intended to address requirements of other federal, provincial and municipal agencies who also have jurisdiction for aspects of aquaculture development.

II AQUACULTURE LICENCE

An Aquaculture Licence will be issued to an applicant when, in the opinion of the Director General, Fisheries and Oceans, the facility does not violate or constitute a potential violation of federal regulations respecting (i) conservation and protection of fish, (ii) construction and pollution of waters frequented by fish, (iii) conservation and protection of spawning grounds and fish habitat and (iv) fish health protection.

The conditions of the Aquaculture Licence try to anticipate environmental and disease problems which might negatively affect both the wild fishery resource and habitat and the aquaculture venture, and they are structured to prevent or minimize such negative effects. The Aquaculture Licence signifies that a preliminary review of the site suggests that culture of fish, as proposed at the site, should result in minimal problems unless specified. The Aquaculture Licence is not a site certification; the Department of Fisheries and Oceans accepts no liability. An Aquaculture Licence may be modified, suspended or cancelled at any time when (a) the licence holder fails to comply with the terms and conditions of that licence, (b) aquaculture facilities under licence are found to have significant adverse effect on fish stock or fish habitat, or (c) any disease or disease organism that poses a hazard to fish stocks or adjacent aquaculture facilities is not reported to the Director General of Fisheries and Oceans. The licence is issued by the Department of Fisheries and Oceans for a one year term and it is renewable upon application. Currently there is no fee attached to the licence.

2.1 LICENCING PROCEDURES

- : the applicant must submit an application for an Aquaculture Licence and a document establishing that all requisite approvals for a licence have been obtained or that the terms and conditions of the aquaculture licence held by the applicant in the preceding licence year have been complied with.

2.2 LICENCE ELIGIBILITY

: persons who

- a) obtain approval from the Department of Fisheries and Oceans for the net pen site or the hatchery site. - Note: approval would depend on meeting current Department of Fisheries and Oceans guidelines - See Section III part B, Siting Criteria.

- (b) obtain, where applicable, the following from the Province - For net pens:
- approval of a fish production plan for an aquaculture enterprise (Ministry of Environment and Parks);
- Crown Land tenure (Ministry of Forests and Lands);
For hatcheries:
- a water licence (Ministry of Environment and Parks);
- a waste management permit (Ministry of Environment and Parks);
- a provincial Commercial Fish Culture Permit (Ministry of Environment and Parks).
- (c) receive Navigation Compliance from Department of Transport under Navigable Waters Protection Act

2.3 TERMS AND CONDITIONS

The following terms and conditions are presently included in the Aquaculture Licence issued by the Department of Fisheries and Oceans:

- (a) the area and location of the aquaculture facility;
- (b) the species of fish or eggs cultured;
- (c) the manner of disposing of any ailing or dead fish from the aquaculture enterprise;
- (d) the reporting of fish diseases, drugs used and mortalities incurred;
- (e) the transporting of live eggs or fish;
- (f) the submission of commercial fish farm annual reports;
- (g) compliance with Fish Health Protection Regulations;
- (h) other terms or considerations that may be deemed necessary for the facility being licenced.

The following terms and conditions may be included in Aquaculture Licences:

- (a) capture of brood stock;
- (b) reporting of chemicals utilized;
- (c) the size of and/or number of net pens, rafts or hatcheries being licenced.

2.4 LICENCE FEATURES

- : the licence may be issued to an individual, company or corporation (referred to as the licensee) - in the case of a company or corporation, documents establishing company or corporate status must be provided together with a list of signing officers and specimen signatures (annually).
- : the licensee is responsible for ensuring compliance with all terms and conditions of the licence.
- : an aquaculture enterprise licence shall be valid from date of issue to December 31 of the licence year.
- : a person may be issued a renewal licence annually, upon application.

- : eligibility for a licence may be revoked or the licence cancelled for failure to comply with the terms and conditions of the licence or for failure to comply with the Fisheries Act and regulations made thereunder.
- : a licence may not be transferred to another person without prior approval of the Department of Fisheries and Oceans

III MARINE FISH REARING FACILITIES

3.1 ENVIRONMENTAL ASSESSMENT

An environmental assessment must be completed for every potential net pen site as outlined in the Department of Fisheries and Oceans Aquaculture Licence Application to assess sensitivity and suitability of sites. Additional information may be required including descriptions of current patterns, sub-tidal vegetation mapping, invertebrate surveys and pre-installation water quality. Where sites are deeper than 20 metres, a SOLBA assessment would not normally be required. A complete description of information required for the purpose of evaluating marine aquaculture facility proposals appears in Appendix II.

3.2 SITING CRITERIA

- (i) A finfish pen farm will be located no closer than a 1 km radius from the mouth of a stream populated by anadromous fish, to minimize disease transmission concerns and to protect highly sensitive estuarine fish habitat. Coastal areas adjacent to stream mouths and their estuaries are considered to be sensitive because of the concentrations of juvenile and adult salmon in their vicinity at various times of the year, the possible susceptibility to disease during saltwater/freshwater acclimation periods, and potential for disruption of residency, roiding or migration behaviour patterns. The chemical storage characteristics of estuary deltas are documented and mechanisms may also exist for pathogen cycling. Isolation of pen sites from stream mouths may also protect farmed stock from river water transported disease arising out of the decay of wild stock carcasses. Distances may be increased depending on wild fish populations.

Facilities within a 5 km radius of such streams must have prior approval of the Federal/Provincial Transplant Committee and may require additional specific studies as per Appendix II.

The zero tideline will be the start of the stream mouth for measurement purposes. A net pen farm is an operation under a single licence of occupation or a foreshore lease issued under the Provincial Lands Act.

- (ii) A finfish net pen must be located so as to provide a minimum of 10 metres clearance from the edge of the approach channel to a Small Craft Harbour, Department of Fisheries and Oceans wharf or dock.

- (iii) Net pens will not be located within 125 metres of molluscan shell harvesting areas or recreational, native location or commercial areas within 125 metres of existing molluscan shell harvesting areas. This restriction is to prevent

contamination of molluscs and is to safeguard health to humans. Salmon farms have the potential to transfer pathogenic organisms and chemicals to shellfish.

- (iv) Net pen facilities must have a minimum of 5 km distance between the lease boundaries, to minimize risk of disease transfer. Maximizing distances between facilities is also advisable to minimize potential cumulative water quality impacts.
- (v) Net pens shall not be located over or near areas of sensitive fish habitat as defined by Section 3(15) of the Fisheries Act. This includes spawning, rearing, food supply and migration areas upon which fish and shellfish depend directly or indirectly to carry out their life processes.

The rapid expansion of salmon farms and other mariculture operations on the Pacific coast has raised concerns about possible environmental impacts on herring spawning areas. There are also concerns about impacts on herring ice-fishery sites which occur mainly in the vicinity of spawning areas. Salmon farms and herring could interact in several ways. Organic waste from netpens could contaminate nearby spawning locations and force herring to spawn in other secondary locations or it could jeopardize egg survival after spawning. Alternately, herring will spawn on fishing nets and netpens, and heavy egg deposition on salmon netpens could be deleterious to fish farm operators. Some diseases may be transmitted between wild herring stocks and salmon in farms. Further, if netpens were located in the vicinity of near-shore herring gillnet fisheries, there could be mutual gear interference during the fishing season.

- (vi) Net pens shall not be located or anchored in an area with a depth less than 10 metres at zero tide to minimize impacts on sensitive, productive littoral fish habitats. In addition, there must be a minimum of two metres between bottom of net pen and sea bottom.
- (vii) Net pens or fish rearing facilities will not be located in areas where they would directly interfere with important commercial, recreational or native food-fish fisheries. These fisheries include seine tie-up spots, gillnet drift areas, trap fishing areas, traditional trawl sites, bivalve shellfish beaches and areas of sport fish activity.

3.3 OPERATIONAL REQUIREMENTS

3.3.1 Maintenance of General Net Pen Operations

Pursuant to Section 11.1.1 of the Fisheries Act authorized net pen operators are required to provide the Department with

information on substrate quality, water quality, amount of feed used or other information on a site specific basis. Appendix II Section 2 identifies operational information requirements for all net pen operations, whereas Section 3 outlines information which may be required in a monitoring program.

(ii) Clean-up of Substrate and Disposal of Dead Fish

- a. Waste deposits under net pens cannot be discharged from the site without review and approval from the Department of Fisheries and Oceans and the Environmental Protection Service, Department of Environment.
- b. No dead cultured fish or offal may be disposed of at sea. All dead cultured fish or offal must be disposed in a manner acceptable to the Waste Management Branch and the Department of Fisheries and Oceans e.g., landfill site and incineration. This regulation is for disease control purposes.

(iii) Predator Control

No person shall destroy seals or sea lions without a special permit issued by the Minister of Fisheries and Oceans. In addition, other predators such as herons, kingfishers, gulls, terns, mink and otters which are attracted to fish farms may not be indiscriminately shot or trapped; they are protected species.

(iv) Feed

No person shall collect marine plants or animals (including euphausiids) for fish food by any means unless the appropriate permits or licences have been obtained.

(v) Herring Spawn on Net Pens

In accordance with Section 30 of the Fisheries Act, any net upon which herring have spawned may be removed from the pen but it must remain suspended in the water column until such time as hatching of eggs is completed.

(vi) Reporting on Fish Mortalities and Treatments Used

Refer to Pacific Region Fish Health Policy, Section 6.3.

(vii) Fish Health Report

Annual health report shall be submitted by January 31st to the Transplant Committee - refer to Pacific Region Fish Health Policy, Section 6.4.

(viii) Fish Encroachments

No fish shall be released deliberately from the licensed facility into Canadian waters. Any inadvertent release of fish shall be immediately reported by the licensee to the appropriate Area Manager, Fisheries Operations Branch, Department of Fisheries and Oceans, followed by the full written account of the inadvertent release. Any fish that escape the net pens or are released become part of the common property resources. Fish releases will be considered cause for non-renewal of the Aquaculture licence.

(ix) Movement of Fish

The transport of live seawater-reared salmonids, their eggs or milt must be approved by the Transplant Committee. A copy of the committee's Transplant permit must accompany each shipment. No fish shall be allowed to escape during transport and no dumping of dead fish en route is permitted. All dead fish must be disposed of in an approved manner.

5.4 ABANDONMENT REQUIREMENTS

All nets, in-water structures, fuel tanks or chemical storage containers must be removed from the site immediately upon cessation of the operation. Any live fish must be moved to a location or facility that has received prior approval from the Transplant Committee.

IV LAND BASED FACILITIES

4.1 ENVIRONMENTAL ASSESSMENT

- 1) Applicants for hatcheries must provide information pursuant to Section 33.1(1) of the Fisheries Act. This will require that the applicant provide information on water supply requirements, anticipated effluent quality and quantity, location of intakes, outlets and sanitary facilities and any filling, dyking or stream bank protection work required as outlined in the Department of Fisheries and Oceans Licence Application. A complete description of information required for the purposes of evaluating proposed hatchery facilities appears in Appendix II.

4.2 SITING CRITERIA

- (i) No privately operated freshwater fishculture facility may discharge effluent within a 5 km radius of the mouth of a stream supporting anadromous species unless prior approval of the Transient Committee has been received.
- (ii) Water intakes should not be located within wild stock salmon and trout spawning beds, and must meet all current requirements for screening as described in the most recent revision of the Departmental Screening Guidelines. Special siting and screening provision may be specified for marine intakes.
- (iii) No new facility for culture of chinook, steelhead or rainbow trout may be established where sockeye or kokanee are present in the hatchery water supply for disease prevention reasons.
- (iv) No outfall from a private hatchery will be allowed within an upstream distance of 5 km of a publicly funded fish culture operation unless effluent is treated in a manner acceptable to the Department of Fisheries and Oceans.
- (v) No private hatchery will be allowed upstream of a publicly funded hatchery designated as a major facility.
- (vi) It is recommended that a 10 m natural vegetation leave strip be maintained adjacent to all streams and flood channels as it is recognized as important fish habitat and may also serve to protect the site from erosion.

4.3 OPERATIONAL GUIDELINES

- 1) Monitoring of approved hatchery operations
Pursuant to Section 33.1 of the Fisheries Act, hatchery operations may be required to conduct routine effluent and receiving water monitoring programs. Appendix III Section 2 identifies operational requirements for all hatchery facilities.

whereas Section 7 outlines information which may be required in a monitoring program for information which may be required.

- (ii) No effluent may be discharged directly onto salmonid spawning grounds. Effluent discharged to salmonid streams must be treated in a manner acceptable to the Department of Fisheries and Oceans. Settling ponds with sludge removal provision or isolation of tank cleaning wastes will normally be required for direct discharges.
- (iii) No facility shall culture sockeye with any other salmonid species.
- (iv) No modifications may be made to intake or discharge facilities or volumes without prior review and approval by the Department of Fisheries and Oceans.
- (v) All discharges must be screened to prevent escapes or entries of fish.
- (vi) No dead fish may be disposed of in the aquatic environment. All dead fish must be disposed of in a manner acceptable to the Waste Management Branch and Department of Fisheries and Oceans. e.g. landfill site, incineration.
- (vii) All fish mortalities, drugs, chemicals and vaccines used must be reported.

Refer to Pacific Region Fish Health Policy, Section 6.3 and operational reporting requirement sections of Appendix II and III.

- (viii) An annual fish health report shall be submitted by January 31st to the Transplant Committee. Refer to Pacific Region Fish Health Policy, Section 6.3.

(ix) Reporting of Fish Escapements

No fish shall be released deliberately from the licensed facility into Canadian waters and any release of salmon shall be immediately reported by the licensee to the Appropriate Area Manager, Fisheries Cooperation Branch, Department of Fisheries and Oceans, followed by a full written account of the inadvertent release. Fish releases will be considered cause for non-renewal of the Aquaculture Licence.

x Movement of Fish

The transport of live freshwater reared salmonids or eggs must be approved by the Transplant Committee. A copy of the Committee's transplant permit must accompany each shipment. No

replenishing or discharge of water is permitted. All dead fish must be disposed of in an approved manner. No dumping of dead fish en route is permitted.

(xi) Fish Eggs Used

Fish eggs utilized in this licenced facility or location shall be obtained from broodstock determined to be free of the following diseases by techniques acceptable to the Department of Fisheries and Oceans:

a) Chinook salmon and rainbow trout

- any filterable replicating agent capable of causing cytopathological effects in tissue culture cells
- bacterial kidney disease (BKD)
- any infectious agent which may be deemed to be a threat to wild stocks or other cultured stocks.

b) Coho salmon

- bacterial kidney disease (BKD)
- any infectious agent which may be deemed to be a threat to wild stocks or other cultured stocks.

c) Atlantic salmon

- refer to Federal-Provincial Policy for Importation of Live Salmonids into British Columbia, Section VII.

(xii) Surplus eggs from federal hatcheries may only be distributed to approved hatcheries with current licences. Approvals and licenses must be in place by September 30 of any given year.

(xiii) Private hatcheries which do not meet current guideline requirements may be requested to achieve compliance in those areas that are deficient within a one year period from date of notification. If compliance is not achieved, licenses may be suspended which would affect future access to surplus eggs from federal hatcheries.

(xiv) No person may sell surplus eggs originally received from federal hatcheries to a private hatchery that is not currently licensed, at risk of suspension of their own license.

4.4 ABANDONMENT REQUIREMENTS

All intakes and outlets must be sealed and all fuel tanks, resin supplies, pharmaceuticals and toxic chemicals must be removed from the site upon cessation of the operation.

V FISH INSPECTION AND PROCESSING

5.1 ENVIRONMENTAL ASSESSMENT

An environmental assessment may be required for proposed facilities. A complete description of information required for the purpose of evaluating marine fish processing proposals appears in Appendix II.

5.2 SITING CRITERIA

Processing facilities will not be located over or near areas of sensitive fish habitat as defined by Section 31(5) of the Fisheries Act. This includes spawning, rearing, food supply and migration areas upon which fish and shellfish depend directl. or indirectly to carry out their life processes.

5.3 FISH HANDLING AND PROCESSING REQUIREMENTS

Farm fish and wild fish are treated equally under the processing requirements of both the Federal and Provincial Fish Inspection Regulations. Due to a higher incidence of diseases in farmed fish it is proposed that this be changed and farmed fish be processed separately with effluent treatment to reduce disease risks to wild fish. Processing includes cleaning, filleting, icing, packing, canning, freezing, smoking, salting, cooking, pickling, drying or preparing fish for market in any other manner.

When handling or processing farmed fish, the requirements of the Fish Health Protection Regulations must also be met. Section 4 of these regulations state that live and fresh cultured salmonids crossing a provincial boundary must be from a facility inspected and found to be free of certain named diseases.

- (i) Bleeding of live fish on site: The fish farmer may stun and bleed his own fish by cutting the gills prior to delivery for processing. The fish must, however, not be dressed or otherwise cut. There must be no direct discharge of liquid effluent (e.g. blood and slime) or disposal of solid waste (e.g. gills, dead fish) into the marine or freshwater environment. Direct discharges may become a fish disease vector.
- (ii) Processing of fish for interprovincial sales: If the fish are marketed within the province only, the fish must be processed in a provincially registered plant pursuant to Section 14 of the Fish Inspection Regulations of B.C.. Under the fresh and frozen category, processing would include holding, washing, dressing, grading, freezing and packing.
- (iii) Processing of fish for interprovincial or export sales: All fish must be processed in an establishment registered pursuant to Section 15 of the Federal Inspection Regulations. Federal

inspection officers will carry out inspection duties at federally registered facilities only.

Schedules I and II of the Fish Inspection Regulations contain requirements dealing with construction, equipment and operation of registered processing and packing plants. For further information concerning the requirements, you wish to contact the nearest Field Inspection Office.

5.4 OPERATIONAL REQUIREMENTS

(1) Processing Plant Effluents

A permit from the Waste Management Branch, Ministry of Environment and Parks, is required for any discharge of liquid effluents from processing plants. The quality of processing plant effluents will be determined pursuant to Waste Management Branch pollution control objectives and Environment Canada Fish Processing Guidelines. In addition, the Department of Fisheries and Oceans may require that no effluent water from plant handling cultured fish may be discharged unless effluent is treated in an approved manner to kill infectious agents.

5.5 LIVE TRANSPORT OF FISH

At the present time the Department of Fisheries and Oceans is prepared to authorize live transport of fish from marine net pen facilities to land based processing plants in open or RSW systems. Written approval from the Department must be received.

VI PACIFIC REGION FISH HEALTH POLICY

The Pacific Region Fish Health Policy is an extension of the Fish Health Protection Regulations which are established under the Fisheries Act.

5.1 REASONS FOR FISH HEALTH POLICY

- (1) For the protection of the fisheries resource and the aquatic environment.
- (2) Possibility of quick spread of infectious agents in aquatic environment.
- (3) Development of aquaculture industry.
- (4) Primitive state of knowledge of infectious diseases.

This policy will be in addition to the Fisheries Act and other fisheries laws.

The Transplant Committee which is a combined Federal/Provincial fisheries body, is responsible for coordinating fish disease control in the Pacific Region.

This section of the Pacific Region Fish Health Policy applies to finfish only and their transplants as well as the control of fish diseases in all holding, culture and processing facilities in the Pacific Region of Canada (British Columbia and Yukon).

6.2 OBJECTIVES OF FISH HEALTH POLICY

- (1) To provide guidelines to managers of fisheries resource and to the aquaculture industry for the control of infectious diseases of fish.
- (2) To prevent the introduction of new diseases into the Region.
- (3) To protect wild stocks of fish from serious infectious disease and to prevent the spread of infectious diseases among both cultured and wild stocks.
- (4) To prevent the escape or release of seriously infected fish and to discourage and finally eliminate the culture of seriously diseased fish.
- (5) To improve the health of fish cultured in this Region.

6.3 DISEASES

There are two categories of diseases depending on their seriousness and potential threat.

A. Emergency diseases

These diseases are not treatable and/or are not known to occur in this area.

- a. Infectious hematopoietic necrosis (IHN)
- b. Infectious pancreatic necrosis (IPN)
- c. Viral hemorrhagic septicemia (VHS)

- d) Herpes virus salmonis
- e) Spring viremia of carp (SVC)
- f) Oncorhynchus masou virus (OMV)
- g) Any filtrable agent causing cytopathic effects in tissue culture (other than above)
- h) Whirling disease
- i) Hira disease
- j) Any infectious agent causing losses in excess of 1%/day for 4 consecutive days

Action:

When any emergency disease or its causative agent is encountered, the Transplant Committee must be informed immediately by telephone.

It is the Transplant Committee's responsibility to spell out actions to be taken which may include destruction of the stock (at the expense of the owner). The Transplant Committee will undertake confirmation of the disease/agent encountered.

For the following diseases, depopulation and sanitation of the facility are mandatory: VHS, IPN, CMV, Herpes virus, Whirling disease and any disease of sufficient seriousness as designated by the Director General (DFO) or Director, Fisheries Branch (S.C. Ministry of the Environment and Parks).

(11) Serious diseases

- a) Bacterial Kidney Disease (BKD)
- b) Furunculosis
- c) Vibriosis
- d) Enteric Redmouth Disease
- e) Sea Lice
- f) Diseases caused by the Flexibacter Mycobacterial group
- g) Other infectious agents designated by IWC/MCE staff

Action:

When a serious disease is identified in fish, movement and distribution of these fish shall be restricted to the geographic zone in which the disease occurred. Fish can be moved between zones only when found free of causative agent after appropriate sampling by a person approved by the Transplant Committee. Zones in which fish can move freely will be designated and mapped. In addition, all operators of fish culture facilities must report the occurrences of these disease agents to the Transplant Committee annually on a fish health report.

6.4 INTRODUCTION OF SALMONIDS INTO THE PACIFIC REGION

Refer to Section VII Federal Provincial Policy for Introduction of Live Salmonids into British Columbia - Section VII.

6.5 TRANSPLANTS OF FINFISH WITHIN B.C.

- (i) There may be no movement or release of fish from a facility or site with a past record of VHS, IPN, whirling disease or any disease with no previous occurrence in the Pacific Region.
- (ii) No movement of live fish between zones (see above) is permitted without a permit issued by the Transplant Committee.
- (iii) No live fish may be transferred from a population suffering an estimated loss of more than 2%/week.
- (iv) Screening of eggs (salmonids only): All eggs for the private industry must be derived from fish that have been screened for diseases in a manner approved by DFO and Ministry of Environment.
- (v) Treatment of eggs (salmonids only): All eggs must be surface disinfected before they are moved from the site at which they were collected.

6.6 SITING OF FISH CULTURE FACILITIES

Definition of facility: All fish culture units/containers on a single land use permit, or site as defined in a private or commercial fish culture permit or foreshore lease. (refer Sections 3.2 and 4.2)

(i) General:

No privately operated fish culture facility may be established within a 1 km radius of the mouth of a stream containing anadromous species to minimize disease transmission concerns and to protect highly sensitive estuarine fish habitat.

Coastal areas adjacent to stream mouths and their estuaries are considered to be sensitive because of the concentrations of juvenile and adult salmon in their vicinity at various times of the year, the possible susceptibility to disease during saltwater/freshwater acclimation periods, and potential for disruption of residency, holding or migration behaviour patterns. The chemical storage characteristics of estuary deltas are documented and mechanisms may also exist for pathogen cycling.

(ii) Freshwater:

1. No privately operated facility may discharge effluent into the water supply of a publicly owned facility.
2. Any facility discharging effluent into a stream must be located a minimum of 5 km upstream of a privately owned facility using river water and must demonstrate that such

effluent will not pose a risk to fish of downstream operations.

- 3) For lake based netpens: there must be a minimum distance of 2 km between facilities or between a facility and any wild salmonid spawning and migrating areas. (Note: this may be revised depending on MUE policy.)

(iii) Seawater:

- 1) No fish culture facility will be permitted within a 5 km distance (by water) of another operation.

6.7 PROCESSING PLANTS

No effluent from a plant handling cultured fish may be discharged unless effluent is treated in an approved manner to kill infectious agents.

6.8 DISPOSAL OF DEAD FISH AND OFFAL

No dead cultured fish or offal may be discharged into the aquatic environment. All dead fish and offal must be treated in a manner acceptable to the Department of Fisheries and Oceans e.g., land fill site, incineration, etc.

6.9 DIET OF FISH

No unprocessed fish products of the same family should be used in the diet of cultured fish e.g., dead salmon should not be fed to cultured salmon.

6.10 CO-CULTURE OF SPECIES

- (i) No facility shall culture sockeye and kokanee with any other salmonid species. This prohibition is necessary to prevent spread of IHN to other species in a culture situation.
- (ii) No new facility for culture of chinook, steelhead or rainbow trout may be established where sockeye or kokanee are present in the hatchery water supply.

6.11 REPORTING OF FISH DISEASES

An annual fish health report must be completed listing all diseases encountered and treatments utilized.

VII FEDERAL-PROVINCIAL POLICY FOR THE IMPORTATION OF LIVE SALMONIDS INTO BRITISH COLUMBIA

In recognition of the commercial and recreational value of wild and cultured native salmonid stocks in British Columbia and the Yukon Territory, it is essential to protect their genetic integrity and freedom from exotic diseases.

Therefore, no importations of fish belonging to the family Salmonidae will be authorized by Federal or Provincial fisheries management agents which are not in compliance with this policy, effective on date of signing.

7.1 GENERAL

- (i) Approved importation of live salmonids must comply with the Canadian Fish Health Protection Regulations (CFHPR).
- (ii) Only surface-disinfected, fertilized eggs will be imported. No live fish or unfertilized eggs or milt will be allowed.
- (iii) Only Atlantic salmon (Salmo salar) and non-anadromous rainbow trout (Salmo gairdneri) will be considered for importation.
- (iv) Importation of rainbow trout will be considered only from Canada and continental U.S.A.
- (v) As of April 1, 1987, egg imports will be limited to 100,000 eggs per year per licence and allowed only from brood stock that has been held at the source facility (hatchery and sea pen), separate from other stocks for one full generation.

7.2 ATLANTIC SALMON

- (i) No direct importation of Atlantic salmon eggs will be permitted from continental Europe, from the southern hemisphere, or from countries where viral hemorrhagic septicemia (VHS) is known or suspected to occur. Importation will be considered only from sites that (i) a Canadian Local Fish Health Officer has approved after a site inspection; (ii) can demonstrate a thorough record of disease history to the satisfaction of Canadian Local Fish Health Officer; (iii) can document and demonstrate a fish-free water supply system; and (iv) can document and demonstrate the capability of the physical plant to isolate stocks and prevent disease transfer between stocks.
- (ii) Importation of Atlantic salmon eggs will be for the purpose of developing aquaculture brood stocks in British Columbia. Importers must propose a number or percent of fish to be held to maturity for reproduction and collection of sex products and demonstrate progress and intent to establish brood stocks.
- (iii) Consideration for import will be given particularly to stocks that are genetically adapted for commercial aquaculture production, assured that all other conditions are met.

- (iv) After March 31, 1989, no further imports of Atlantic salmon eggs will be permitted.
- (v) All Atlantic salmon must be held under strict quarantine (see 7.4).

7.3 LIVE SALMONIDS RESEARCH

- (i) Notwithstanding sections 7.1 and 7.2, exceptions may be permitted for such activities as research or brood stock development and improvement when work is to be conducted under strict supervision of government fisheries agencies. Approval for exceptions must be obtained from the Director General, Pacific Region, Department of Fisheries and Oceans and the Director, Fisheries Branch, British Columbia Ministry of Environment and Parks.

7.4 ATLANTIC SALMON QUARANTINE CONDITIONS

- (i) Prior to the arrival of any eggs, a quarantine facility must be inspected and approved by designated government personnel according to the following conditions as judged by the designated Fish Health Officer.

The quarantine facility must:
 - a) be an adequately enclosed area, physically separated from any other hatchery operation;
 - b) have restricted access;
 - c) have approved facilities for disinfection of effluent
- (ii) All eggs and resultant fish must be held in quarantine for a minimum of 12 months after arrival.
- (iii) All stocks in the initial year and thereafter all stock kept for brood stock must be inspected and sampled according to the CFHPR Manual of Compliance. Fish must be sampled 3 times in their quarantine and once just after transfer to salt water. Brood stock must be sampled at maturity.
- (iv) Destruction of the stock by prescribed means will be required if any disease listed in Schedule II of the CFHPR is detected. Also detection of any other disease designated by Federal and Provincial fisheries management agencies may lead to the same requirement for stock destruction or to further quarantine of stock.
- (v) Failure to comply with importation or quarantine conditions will result in suspension of the Commercial Fish Farm Licence of the facility.

7.5 MARINE REARING OF FIRST GENERATION ATLANTIC SALMON

- (i) First generation Atlantic salmon hatched from imported eggs shall be confined to marine net pens:
 - a) at the Pacific Biological Station
 - b) in Jarvis Inlet and associated bays and inlets east of its mouth; and,
 - c) coastal waters between latitudes 50° and 51° EXCEPT Broughton and Johnstone Straits and Discovery Passage and waters within 5 km of them.

Such movements from hatchery to salt water will be by Federal-Provincial Transplant Committee approval only.

- (ii) Second generation Atlantic salmon, whose parents are disease free, may be transplanted to marine net pens anywhere along the British Columbia coast with standard Federal-Provincial Transplant Committee approval.

The precautions taken above are designed to maximize the chances for detection of any exotic fish diseases that may be carried by the stock. It therefore follows that the first generation transplants to saltwater should be localized to ensure that all salmon stocks in British Columbia are not exposed and also to simplify the logistics of the rigorous sampling program that is scheduled under Section 7.4(iii).

7.6 PROCEDURES

- (i) All requests for permission to import live salmonids are to be addressed to the Canada-British Columbia Transplant Committee, c/o Fish Health Officer, Pacific Biological Station, Hammond Bay Road, Nanaimo, British Columbia V9R 5K6.
- (ii) In recognition of the importance of managing fish disease upon the orderly development of aquaculture in British Columbia; and recognizing the lead role of the Ministry of Agriculture and Fisheries and Oceans in aquaculture, the Department of Fisheries and Oceans and the Ministry of Environment and Parks will confer with the Ministry of Agriculture and Fisheries:
 - a) prior to any decision being made by the parties regarding item II requests;
 - b) prior to any amendments to the policy under item 20;
- (iii) at least semi-annually regarding the nature and status of requests to the Canada-British Columbia Transplant Committee to import live salmonids to British Columbia.

APPENDIX I
FEDERAL LEGISLATIVE MANDATES PERTAINING TO AQUACULTURE

FISHERIES ACT

FISHERIES DEVELOPMENT ACT

FISH INSPECTION ACT

FISH HEALTH PROTECTION REGULATIONS

SEAL PROTECTION REGULATIONS

SANITARY CONTROL OF SHELLFISH FISHERIES REGULATIONS

FISH PROCESSING OPERATIONS - LIQUID EFFLUENT GUIDELINES
1975 DEPARTMENT OF ENVIRONMENT

APPENDIX II

DFO INFORMATION REQUIREMENTS FOR EVALUATING PROPOSED
MARINE AQUACULTURE FACILITIES

1.0 PRE-DEVELOPMENT INFORMATION REQUIREMENTS

This information is required for the purposes of evaluating marine aquaculture or processing proposals. On the basis of its evaluation of this information, the Department will decide whether to approve a proposal and issue an Aquaculture Licence. The following information must be provided for all proposed marine aquaculture and proposed fish processing facilities and must accompany all Aquaculture Licence applications for marine aquaculture facilities.

- 1.1 A nautical chart copy and a site plan showing the general location and boundaries of the proposed fish farm including depth contours within the lease area and the numbers, size and configuration of rearing pens expected at full production.
- 1.2 A scuba survey of all portions of the lease area shallower than a depth of 20 meters, describing substrate, vegetation and faunal presence as required on the scuba survey form that will accompany the license application (example following).
- 1.3 A description of all foreshore construction or beach alteration works that are being considered. Note that such works must be in compliance with Section 31 of the Fisheries Act that prohibits harmful alteration of fish habitat. Review and approval is required before such works are initiated.
- 1.4 A production plan of numbers, species and size of fish to be reared estimated on a monthly basis through one complete representative production cycle, at maximum production. Include estimates of monthly food use.
- 1.5 A description of associated activities being considered for this site including bleeding, processing, hatcheries or acclimation tanks.
- 1.6 A description of the freshwater supply system, if one will be developed. A description of sites or methods that will be used to dispose of dead fish, efflu, refuse and sewage.
- 1.7 In areas deemed sensitive, additional information requirements of the appropriate fish farmer may include seasonal assessment of environmental parameters, identification of other effluent discharges in the same area, measurement of environmental water quality and sediment quality, production data, vegetation mapping, and description of fisheries resource information for the site. Requests

Such information may be made under authority of Section 33.1(1) of the Fisheries Act.

2.0 OPERATIONAL INFORMATION REQUIREMENTS

Annual reporting of operational information may also be required as a condition of the Aquaculture License. This may be expected for sites exceeding 200 tonnes average annual production, and also for smaller operations located in areas deemed environmentally sensitive by this Department. Operational information reporting requirements may include but are not limited to the following:

- 2.1 An operational log including monthly or quarterly production figures and feed supply use figures, identifying the use of antifouling preparations on nets, and describing local environmental events such as plankton blooms, incidence of herring spawn on nets, predator control problems, and accidental fish releases.
- 2.2 A water quality monitoring program with sampling measures, replicates and frequency to be specified on a site specific basis by this Department, sufficient to demonstrate distribution of dissolved and suspended solids, nutrients, pathogens, bacteria, antibiotics and chemicals including antifouling treatment contaminants, as may be considered warranted and to the satisfaction of this Department. In most cases this will require sample analysis by an independent laboratory. Such programs would continue until completion of one full maximum production cycle, or longer as required to characterize operational impacts and absence of negative effects.
- 2.3 Monitoring programs describing accumulation patterns of organic deposits under pens sites, alterations in vegetation distribution patterns in the vicinity of pen sites, or changes in benthic invertebrate community structure.
- 2.4 Once a site has been operational for some time, information reporting requirements may be required if the site has increased production, appears to be negatively affecting the environment, or if it is selected to be part of a more general coastwide aquaculture impact assessment program.

APPENDIX III

REG INFORMATION REQUIREMENTS FOR EVALUATING PROPOSED
LAND BASED FACILITIES

1.0 PRE-DEVELOPMENT INFORMATION REQUIREMENTS

This information is required for the purpose of evaluating hatchery proposals. On the basis of its evaluation of this information, the Department will decide whether to approve the proposal and issue an Aquaculture Enterprise Licence.

APPLICATION INFORMATION

The following information must accompany all applications for an Aquaculture Enterprise Licence.

- 1.1 A topographical map or equivalent, with scale, showing the general site location. If the facility will discharge to the marine environment, including a nautical chart, photocopy or equivalent with scale.
- 1.2 A scale drawing or engineering plan of the site showing the location of adjacent streams, floodchannels, location of water supply structures, and location of water discharges. If the facility is at a river mouth, show the high water and low water lines, and the 20m below low water depth contour. (This will bear on marine outfall placement requirements.)
- 1.3 For sites on floodplains, prepare a site elevation survey to show ground elevations relative to historic flood levels. Identify areas that will be filled and the source of fill materials. Gravel removal from streams is generally not acceptable.
- 1.4 A production plan estimating the maximum stock density at full production in terms of the numbers of fish, species and expected average weight that will be achieved before off site transfer. This will permit assessment of wastewater characteristics.
- 1.5 For all proposed stream intakes or infiltration galleries including emergency water supplies and saltwater intakes, provide drawings including full engineering specifications and descriptions of intake structures and screens. Estimate maximum withdrawals for each month. Provide information on the streamflow volume available both during low flow periods and during periods of maximum water withdrawal for emergency use. If this information is not available or cannot be reasonably estimated from existing records, then hatchery development to be delayed until low flow studies can be completed.

- 1.6 Provide a description of the intended treatment system and point of discharge of the hatchery and rearing effluent. Include retention time and cleaning procedures for settling basins, or alternately describe control and disposal measures that will be taken to isolate tank cleaning wastes from the general effluent. Identify the location and describe the screens that will be used to prevent accidental escapements.
- 1.7 Provide a description of the other waste facilities, structures and disposal procedures for sewage, lab wastewater, refuse, dead fish and offal.
- 1.8 For marine effluent discharges, estimate the distance if net pens will be located nearby. State if fish processing is also being considered for this site.
- 1.9 Provide a proposed construction schedule. This Department may require modification of scheduling in respect to critical periods for wild fish stocks that may be affected by instream works. In stream construction is generally limited to summer low flow periods.

2.0 OPERATIONAL INFORMATION REQUIREMENTS

Annual reporting of operational information may also be required as a condition of the Aquaculture License. This may be expected for hatcheries exceeding 1,000,000 pounds average annual production, and also for smaller operations located in areas deemed environmentally sensitive by this Department. Operational information reporting requirements may include but are not limited to the following:

- 2.1 An operational log including monthly or quarterly production figures, feeding rates, weights, survival rates, water flow volumes extracted from supply streams, quantities and types of chemicals or disinfectants used by date, and occurrence of accidental fish releases.
- 2.2 A water quality monitoring program with sampling measures, replicates and frequency to be specified on a site specific basis by this Department, sufficient to demonstrate distribution of dissolved and suspended solids, nutrients, pathogens, bacteria, antibiotics and chemicals, as may be considered warranted and to the satisfaction of this Department. In most cases this will require sample analysis by an independent laboratory. Such programs would continue until completion of one full maximum production cycle, or longer as required to characterize operational impacts and absence of negative effects.
- 2.3 Monitoring programs describing accumulation patterns of organic deposits, bacterial growths, zooplankton or algal mat growths, changes in the benthic invertebrate community and changes in interstitial water characteristics downstream of freshwater discharges, as compared to upstream control sites; or for hatchery discharges to marine

environments, monitoring programs describing accumulation patterns of organic deposits and changes in vegetation and benthic invertebrate communities in the vicinity of the marine outfall.

- 2.4 Operational information and monitoring programs may be required of hatcheries that have been licensed and operating for some time, if they have expanded smolt production capabilities, are perceived to be negatively affecting fish habitat, have demonstrated poor husbandry or site operational practices, are out of compliance with current guidelines or if they are requested to take part in a more general survey of aquaculture industry impacts.

3.0 COMPLIANCE

A compliance schedule may be established for existing licensed freshwater facilities that are presently licensed but whose current operation fails to meet current Departmental standards as published in these guidelines.

Appendix IV

RECOMMENDATIONS RESPECTING SITING AND OPERATION OF AQUACULTURE FACILITIES

- (i) Net pens should be located in areas of good circulation and tidal flushing.
- (ii) Net pens should not be located in traditional anchorage areas or safe harbours or within one kilometer of major shipping lanes i.e., B.C. Ferry routes or oceanliner routes,
- (iii) There should be no direct sewage discharge from living quarters on the lease site.
- (iv) Net pens should not be located in an area adjacent to a facility which is routinely dredged in order to protect cultured fish from dredgate.
- (v) No unprocessed fish products of the same family should be used in the diet of cultured fish to minimize disease transfer.

Appendix 7

DEPARTMENT OF FISHERIES AND OCEANS KEY CONTACTS

- A. Regional Aquaculture Coordinator (research, training, egg supply)
Fisheries Research Branch
Pacific Biological Station
Nanaimo, B.C. V9R 5K5 756-7046
- B. Chief, Aquaculture Division (licencing, general information)
Fisheries Operations
1090 West Pender Street
Vancouver, B.C. V6E 2P1 Ron Ginetz
- C. Area Managers
- South Coast
Department of Fisheries and Oceans, Field Services Branch
(Port Alberni, Campbell River, Victoria & Nanaimo Districts)
3225 Stephenson Point Road
Nanaimo, B.C. V9T 1K5 Larry Duke 756-7290
- North Coast
(Kitimat, Prince Rupert, Queen Charlotte City Districts)
114-417 2nd Avenue West
Prince Rupert, B.C. V0J 1G8 Paul Sorout 624-0416
- Fraser River, Northern B.C. and Yukon Division
(Kamloops, New Westminster, Whitehorse Districts)
Room 32380 6th Street
New Westminster, B.C. V1L 1B5 Fred Fraser 666-6478
- D. Transplant Committee
Fisheries Research Branch
Pacific Biological Station
Nanaimo, B.C. V9R 5K5 Dorothee Kieser 756-7069
- E. Diagnostics Service, Fish Health Section
Fisheries Research Branch
Pacific Biological Station
Nanaimo, B.C. V9R 5K6 756-7069
756-7062

College of Ocean and
Fishery Sciences
University of Washington
Seattle, Washington 98195

School of
Oceanography

THE ENVIRONMENTAL EFFECTS OF
FLOATING MARICULTURE
IN PUGET SOUND

Donald P. Weston

August 1986

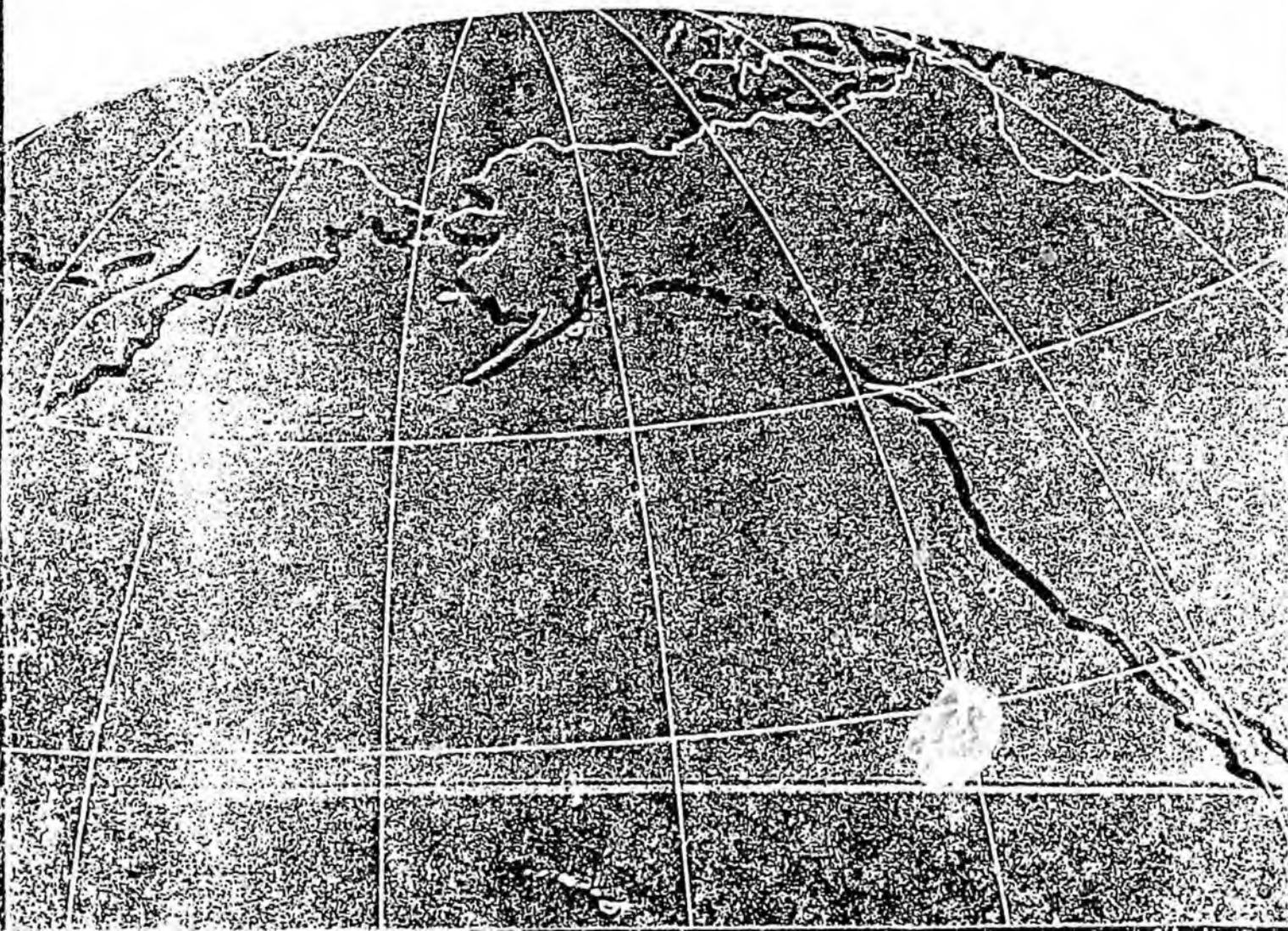


Table of Contents

Acknowledgments v
Abstract vii
1.0 INTRODUCTION 3
2.0 FLOATING MARICULTURE IN PUGET SOUND
 2.1 Salmon net-pen culture. 7
 2.2 Shellfish culture 12
3.0 POTENTIAL ENVIRONMENTAL EFFECTS
 3.1 Water circulation 17
 3.2 Water quality 22
 3.3 Phytoplankton 39
 3.4 Sedimentation 48
 3.5 Benthic macrofauna. 64
 3.6 Fish and megafauna. 74
 3.7 Introduction of exotic species. 78
 3.8 Diseases. 85
 3.9 Genetic effects 91
 3.10 Toxicants 96
4.0 MODELING OF ENVIRONMENTAL EFFECTS
 4.1 Introduction. 101
 4.2 Water quality modeling. 101
 4.3 Sedimentation modeling. 106
5.0 ENVIRONMENTAL REGULATION OF MARICULTURE
 5.1 Introduction. 115
 5.2 State regulations 117
 5.3 Regulations of other countries. 118
6.0 RECOMMENDATIONS. 127
LITERATURE CITED. 131

Acknowledgments

The following persons provided information included in this report or reviewed earlier drafts. I thank them for their assistance and cooperation.

Hans Ackefors - University of Stockholm, Stockholm, Sweden
John Baross - University of Washington, Seattle, Washington
Ed Black - Ministry of the Environment, Victoria, British Columbia
Paul Blake - Center for Disease Control, Atlanta, Georgia
Bruce Burrow - Municipality of Metropolitan Seattle, Seattle, Washington
Ken Chew - University of Washington, Seattle, Washington
David Damkaer - National Marine Fisheries Service, Seattle, Washington
Frances Dickson - Fisheries and Oceans, Vancouver, British Columbia
Marvyn Eddie - Marine Harvest Limited, Edinburgh, Scotland
Magnus Enell - Swedish Environmental Research Institute, Stockholm, Sweden
Richard Finger - Municipality of Metropolitan Seattle, Seattle, Washington
John Forster - Sea Farm of Norway, Port Angeles, Washington
Kunihiko Fukusho - National Research Inst. of Aquaculture, Nansei, Mie, Japan
John Galat - New Haven Salmon Ranch, New Haven, New Zealand
Nicolas Gonzalez - Spanish Institute of Oceanography, La Coruna, Spain
Lee Harrell - National Marine Fisheries Service, Manchester, Washington
Ken Honey - Maine Department of Marine Resources, Augusta, Maine
Eric Hurlburt - Washington Department of Fisheries, Olympia, Washington
Akihiko Hara - National Research Institute of Aquaculture, Nansei, Mie, Japan
Bill Hershberger - University of Washington, Seattle, Washington
Bill James - Washington Department of Fisheries, Olympia, Washington
Bob James - Washington Department of Ecology, Olympia, Washington
Peter Jeffards - Penn Cove Mussels, Penn Cove, Washington
Bruce Kay - Environmental Protection Service, Vancouver, British Columbia
Michael Kyte - Ardea Enterprises, Lynnwood, Washington
Jon Lindbergh - North Bend, Washington
John Liston - University of Washington, Seattle, Washington
Lars-Ove Loo - Institute of Marine Research, Lysekil, Sweden
Conrad Mahnken - National Marine Fisheries Service, Manchester, Washington
Bob Matsuda - Municipality of Metropolitan Seattle, Seattle, Washington
Asha Mahtre - Department of Public Utilities, Olympia, Washington
Louis Mottet - Friday Harbor, Washington
Madelon Mottet - Friday Harbor, Washington
Charles Nolan - Seattle-King County Health Department, Seattle, Washington
Arthur Nowell - University of Washington, Seattle, Washington
Bruce Pease - Washington Department of Fisheries, Point Whitney, Washington
Deborah Penry - University of Washington, Seattle, Washington
Mary Jane Perry - University of Washington, Seattle, Washington
Tommy Petersen - Faroese Sea Breeding Commission, Faroe Islands
Gil Potter - Washington Dept. of Social and Health Serv., Olympia, Washington
Bob Saunders - Washington Department of Ecology, Olympia, Washington
Knut Senstad - Sea Farm of Norway, Bergen, Norway
Lynn Singleton - Washington Department of Ecology, Olympia, Washington
Emil Smith - California Department of Fish and Game, Sacramento, California
James Staley - University of Washington, Seattle, Washington
Richard Strickland - Thalassaco Science Communications, Seattle, Washington
Jack Rensel - Milner-Rensel Associates, Seattle, Washington
Rutger Rosenberg - Institute of Marine Research, Lysekil, Sweden
Barry Uchida - Municipality of Metropolitan Seattle, Seattle, Washington
Dennis Willows - University of Washington, Friday Harbor, Washington
Ron Zebal - Washington Department of Fisheries, Point Whitney, Washington

ABSTRACT

Mariculture, particularly net-pen culture of salmon and suspended culture of shellfish, has grown rapidly in Puget Sound and the potential exists for this growth to continue. This review attempts to assess the probable magnitude of environmental changes that may result from mariculture operations in Puget Sound. The environmental changes which have been addressed can be summarized in four categories. First, there are some adverse changes which are highly probable for most salmon or suspended shellfish culture operations. These would include the accumulation of organic-rich sediments beneath the culture structure, and the consequent effects on the benthic macrofauna community. Secondly, the potential exists for mariculture effects on water circulation, water quality, phytoplankton productivity and the introduction of exotic species. However, the likelihood of these effects and their potential magnitude is highly dependent upon site-specific conditions or the species cultured. Thirdly, there are several issues for which available data are inadequate for a conclusive determination of significance. These include: 1) the environmental effects of antibiotic usage; 2) alteration of the wild gene pool; 3) the capacity for a mariculture operation to serve as a disease reservoir for the infection of wild organisms; and 4) the proliferation of human pathogens in the vicinity of mariculture sites. These potential effects of mariculture have not yet been demonstrated, and the existence of such effects remains largely speculative. Finally, there is little likelihood that mariculture would adversely affect local abundance of fish and megafauna.

Water circulation - A culture structure placed in the marine environment will reduce current velocity in the surrounding area, particularly in the down-current direction. This reduction in current velocity will impair dilution and dispersal of wastes downstream of the culture operation. However, this effect is not likely to be significant except in cases of intensive culturing in an area with very restricted natural circulation.

Water quality - Cultured organisms and culture practices alter the chemistry of the water passing through the culture structure, most notably increasing ammonia concentrations and decreasing dissolved oxygen concentrations. Greater

changes will occur with salmon net-pen culture than with mussel culture, given the relative production capacities of typical Puget Sound facilities.

The concentrations of nutrients and BOD in the water passing through a mariculture structure are generally very dilute compared to most other discharges to the marine environment. Field studies have typically observed little or no changes in water quality outside the culture structure in well-flushed areas. Adverse effects would be anticipated only in areas of extremely limited flushing or very intensive culturing activity.

Phytoplankton - Floating mariculture is unlikely to have a measurable effect on phytoplankton standing stock or productivity in most of Puget Sound. In the Main Basin of Puget Sound nutrients are not limiting to phytoplankton growth. Thus, additional nutrient input attributable to mariculture should have no effect on productivity. Nutrients may be periodically limiting in some vertically stratified area (e.g., Saratoga Passage), however, in many of these areas the dilution of nutrients which would occur prior to their utilization by phytoplankton would probably make any effect on productivity unmeasurable. A localized and measurable effect on productivity would be expected only in highly stratified and poorly flushed areas (e.g., some embayments of the southern Sound) in which the water passing through a culture structure could maintain its integrity with minimal dilution.

Sedimentation - Floating mariculture generates large amounts of solid wastes in the form of feces and unutilized feed (salmon culture) or feces, pseudofeces and shell debris (shellfish culture). These materials are generally deposited in the immediate vicinity of the culture structure. This deposition results in physical and chemical changes to the natural sediments including decreased redox potential, increased sediment oxygen consumption and increased concentrations of total volatile solids, total organic carbon, sulfides, nitrogenous compounds, and phosphates. While there are profound effects on sediment chemistry, and consequently the sediment biota, these effects are very localized. Visible accumulation of solids and the alteration of sediment chemistry typically extends no more than 30 m from the culture structure.

Accumulation of organic-rich sediments occurred around most culture facilities reviewed. The depth of this accumulation depends for the most part upon water depth and current velocity. In general, accumulation of sediments can be

expected beneath any culture facility when less than 15 m exists between the bottom of the structure and the sea floor. Sediment accumulation is possible at even greater depths, but little data are available since few culture operations have been sited in deeper waters.

Benthic macroinvertebrates - The accumulation of organic-rich sediments beneath culture facilities and the consequent depletion of oxygen in the pore waters results in changes in the infaunal invertebrate community. Loss of species intolerant of organic enrichment (typically echinoderms, crustaceans and molluscs) often occurs. A few opportunistic species, most frequently polychaetes, attain numerical dominance in the community. In cases of extreme organic enrichment, there may be a total absence of benthic macroinvertebrates. Benthic community changes have been typically observed to be limited to an area within about 30 m of the culture structure. These changes can be expected to persist for the duration of culture activities and for at least several years following their cessation.

Fish and megafauna - Accumulation of organic material in the vicinity of a mariculture operation may result in the loss of nonmotile megafauna (e.g., geoducks) living in intimate contact with the sediments. However, fish and motile megafauna (e.g., crabs) living on or above the sediment surface are typically found in higher densities around floating mariculture structures than in the surrounding area. The attraction of fish and megafauna to the culture area is probably due to increased availability of food in the form of feed unutilized by the cultured fish, the high abundances of opportunistic macroinvertebrates, and epifaunal organisms living on the culture structure or which fall to the bottom.

Introduction of exotic species - If culture operations require the importation of live material into the state, the potential introduction of exotic species probably represents the greatest environmental threat posed by mariculture. Introduced species may establish self-sustaining wild populations, potentially becoming pests or eliminating native species. While there appears to be little risk of this occurring for those species currently being deliberately introduced for culture in Puget Sound, requests for future introductions should be carefully evaluated in this regard.

Accidental introduction of pests, parasites and diseases associated with imported organisms may also occur. Because of this risk the state has placed many restrictions on the type of organisms which may be imported and the steps which must be taken before live material destined for aquaculture may be placed in state waters. The adequacy of these regulations is currently being evaluated.

Diseases - Some concern has been expressed that the culture environment may serve as a reservoir for those diseases which are present in an environment but demonstrating no clinical symptoms in wild fish. There is a fear that the disease organism may proliferate among the cultured fish, become more virulent, and reinfect the wild stocks. However, there is no evidence to indicate that this scenario has ever occurred. The outbreak of a disease is often associated with some form of stress. In the culture environment, fish may be stressed by overcrowding, undernourishment, poor water quality and physical damage associated with handling and confinement. Thus, while fish held in culture are likely to show more frequent appearance of disease than wild fish, disease does not appear to be transmitted to the wild populations.

The bacterial diseases of salmonids in mariculture are not transmissible to humans. However, some investigators have questioned whether the organic enrichment of bottom sediments caused by mariculture could promote the growth of those species pathogenic to humans. Consumption of shellfish collected in the vicinity could then serve as a route for human infection. This is an issue where available scientific evidence is very meager, but experience to date has failed to show cause for concern. Increased bacterial abundance in sediments beneath a mariculture facility is quite probable, but it has not been demonstrated that this increased abundance is of any significance in terms of human health.

Genetic effects - The issue of the genetic effects of mariculture is largely speculative. Cultured organisms may be at a competitive disadvantage with respect to wild individuals. Thus, if escapes and interbreeding with the wild population occur, there may be some temporary loss of reproductive capacity in the wild population resulting from the production of less fit genotypes. The potential magnitude of this effect is dependent upon the proportion of the breeding population comprised of escaped animals.

.th
ed
ps
ed
l-

nt
nt
he
t,
at
ed
by
c-
re
es

The potential consequences of the interbreeding of escaped and wild organisms, if any at all, are unclear. However, for salmonids at least, the potential magnitude of the problem would seem minimal. For decades fisheries management agencies have routinely been transferring hatchery-reared salmonids between river systems to improve commercial and recreational fisheries. The number of fish which might escape from mariculture is negligible in comparison.

Toxicants - Salmon net-pen culture in Puget Sound requires the occasional usage of antibiotics, most frequently oxytetracycline. The potential environmental effects of this usage are minimized by the high water solubility of the compound, rapid dilution with the surrounding water and the infrequency of its use. Although, there is very little information available, the use of oxytetracycline does not appear to be a major problem at the present level of mariculture development in Puget Sound.

Modeling of Environmental Effects

le
lc
th
ln
le
as
ts
r-
an

Mathematical models are not yet available which provide reliable a priori estimates of the effect of mariculture on the receiving water body. As a short-term solution, a model is proposed to predict the changes in dissolved oxygen or metabolite concentration only in that parcel of water which passes directly through a culture structure. Since the model neglects the role of dilution by the surrounding water mass, it does not provide a definitive solution to modeling water quality. However, the model may have applications to site evaluation or the determination of maximum allowable culture intensity in a given area.

ls
ge
re
-
i.
re

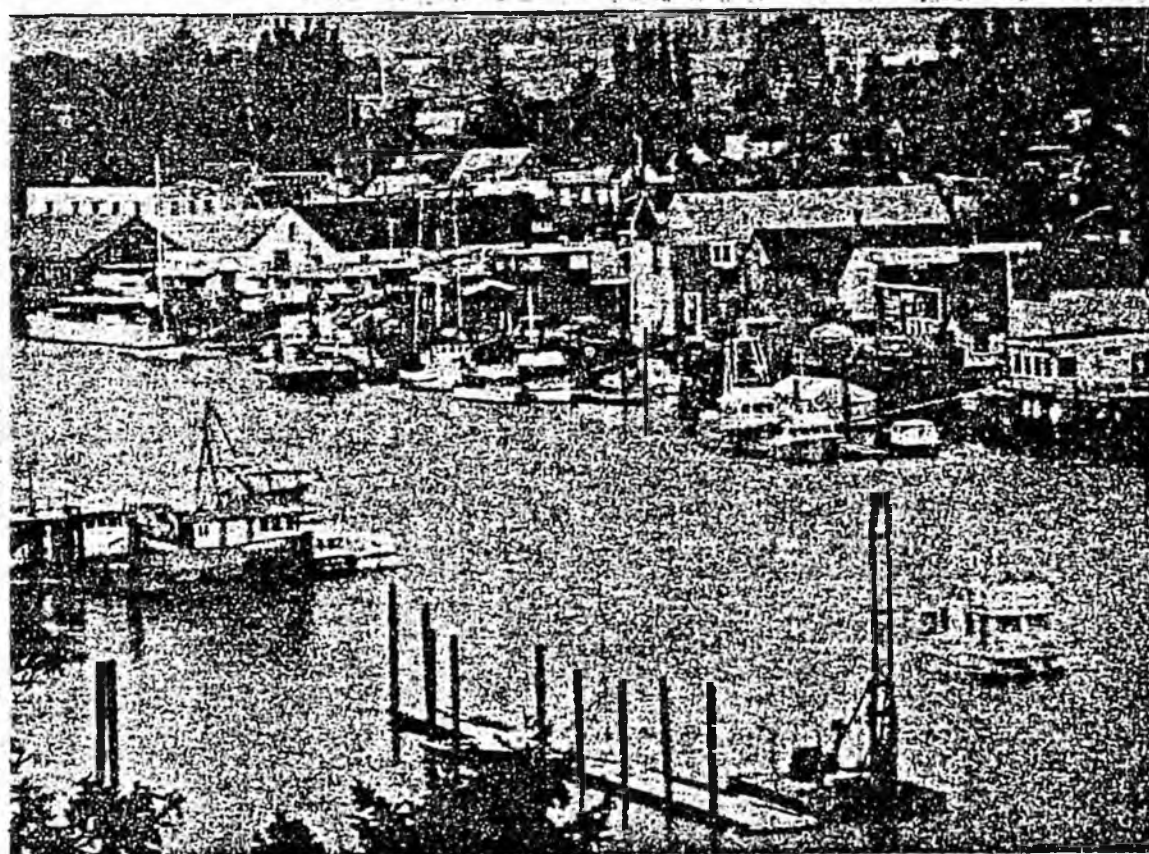
Sedimentation models would be valuable in predicting the depth and spatial extent of the accumulation of organic-rich sediments around a culture structure. Analytical models which predict this accumulation based entirely on properties of the settling particles and the moving fluid are beyond the current state-of-the-art. Empirical models are limited by site-specificity, but they represent the only modeling approach of immediate utility. A simple empirical model originally developed for net-pen culture of yellowtail in Japan is described. Given field measurements of particle settling velocity and current regime, the model is able to predict the depth of sediment accumulation as a function of distance from the culture structure.

Environmental Regulation of Mariculture

A review of environmental regulations pertaining to mariculture indicates that the policies of Washington State are generally comparable to those of many of the other states and countries surveyed. In general, the potential environmental consequences of mariculture are assessed on a site-specific and case-by-case basis. Applications for mariculture permits are usually subject to a review process which includes an opportunity for the responsible government agencies to evaluate potential environmental effects. There are typically few, if any, formalized criteria with regards to siting and operation.

Importation of eggs or live animals typically requires a permit from the responsible government agency. The permit will carry with it certain conditions which, depending on the particular state or country, may include restrictions on the country of origin, visual and/or pathological inspections, periods of quarantine, or disinfection requirements. Policies governing importation are tending to become more restrictive, and in several countries there is a total ban on the importation of eggs and/or live animals.

SHORELINE MASTER PROGRAM STUDY: ANALYSIS REPORT



Prepared for the Washington State
Department of Ecology

By Nancy Fox and Susan Heikkala
With Keith Dearborn, Marc Hershman and
Jens Sorensen

September, 1983

SHORELINE MASTER PROGRAM STUDY: ANALYSIS REPORT

Prepared for the Washington State
Department of Ecology

By Nancy Fox and Susan Heikkala

With Keith Dearborn, Marc Hershman and
Jens Sorensen

September, 1983

This report was prepared under contract to the Washington State Department of Ecology with funds obtained from the National Oceanic and Atmospheric Administration and appropriated under Section 306 of the Coastal Zone Management Act of 1972.

Cover photograph by Marc Hershman

Table of Contents

I. Study Background	1
II. Summary of Survey Findings	2
III. Analysis	9
IV. Recommendations	18

Appendix: Shoreline Master
Program Survey Results

I. STUDY BACKGROUND

This study was initiated by the Washington State Department of Ecology as part of a broad evaluation of the State's shoreline management program. It is one of four concurrent studies sponsored by the Department, including also a public access study, an analysis of wetlands management and a public perception survey.

The primary purpose of this study was to prepare a Shoreline Master Program Handbook which compiles the "best practices" from existing master programs to aid local jurisdictions in developing future amendments to their master programs. Most programs were developed and adopted close to ten years ago without the benefit of model programs or good examples to draw upon. As a result, the quality of these programs varies and many local jurisdictions are now working on amendments to improve and update their plans. The handbook will serve as a reference containing exemplary master program approaches and standards developed by local governments over the past ten years.

The project began with a survey of 30 local jurisdictions, designed to collect information on the strengths and weaknesses of existing master programs. The jurisdictions surveyed were selected to represent a complete range of shoreline types, jurisdiction sizes and locations in the state. A questionnaire was mailed to each jurisdiction, and responses were recorded during a subsequent interview, either in-person or by phone.

The results of the survey are contained in the Appendix to this report and are summarized in Section II. Many of the ideas expressed in the survey helped to shape our approach to developing the handbook. But the survey also raised a number of issues which went beyond the scope of the handbook. To gain a broader perspective on these issues, informal discussions were held with representatives of various groups concerned about shoreline management, including the State Associations of Cities and Counties, environmental groups, and development interests. These issues are discussed and general recommendations to address them are presented in Sections III and IV of this report.

Although this study focused on the content and use of existing shoreline master programs, one of its principal

findings was that shoreline master programs are only one element of an effective shoreline management approach. Dedicated and experienced staff, in-depth planning to address specific local management issues and a commitment to implementation were identified as equally important elements of a successful management strategy. Effective shoreline management also depends on a workable partnership between the state and local governments, a relationship designed to balance state and local shoreline interests. The ideas presented in this report are intended to stimulate discussion and consideration of some of these broader management issues.

II. SUMMARY OF SURVEY FINDINGS

The purpose of the survey was to find out from local governments how they had applied the required master program components, how well their programs are working, and whether any of their program standards might serve as examples for other jurisdictions. This summary highlights key survey findings, roughly in the order of questions presented in the questionnaire. The findings do not necessarily reflect the views of the project team, but rather represent a synopsis of the information and opinions offered by local planners in the jurisdictions surveyed. A complete listing of survey questions and the compilation of survey results is contained in the Appendix.

1. Regulatory Emphasis. The survey indicates that the primary and often sole purpose of shoreline master programs (SMPs) is to regulate shoreline development through the issuance of shoreline substantial development permits. Thus, environment designations and use regulations are the portions of the programs most frequently used. Policies in the master programs are generally used only if and when support is required on controversial permit applications or to aid in interpreting specific regulations.
2. SMP Organization. Organization of master programs varies. In most programs the regulations are organized around use activities, rather than the environments, to facilitate administration and minimize redundancies. However, there was no single dominant approach concerning the organization of the policies. This aspect of master program structure seemed to be determined in part by considering how to best relate the SMP to a jurisdiction's comprehensive plan and other local regulatory programs.

Jurisdictions with complex and extensive land development regulations often separate policies and regulations into separate chapters of the master program. The shoreline policies can then be inserted as a chapter of the comprehensive plan and the regulations become a chapter of the zoning ordinance. Where there is less planning complexity, jurisdictions often place policies and regulations in the same chapter of the SMP. The first approach facilitates overall planning integration;

the second makes it easier to understand the internal relationship of policies and regulations in the SMP.

- C. Shoreline Environments. Considerable variation exists in the application of environment designations. The designations established in the Shoreline Management Act and the WACs seem to be limited in their usefulness in marine aquatic and urban areas. To bridge these gaps, many jurisdictions have established environments for aquatic areas or urban subcategories to better reflect local conditions. The design, application and use of the environment designations is one of the principal ways in which local jurisdictions have tailored the state program guidelines to serve the distinctly different needs and characteristics of local shorelines. Permissible uses by environment also vary widely between jurisdictions.
- D. General vs. Detailed Regulations. Another SMP characteristic which varies considerably is the level of specificity in SMP regulations. The range is from very general regulations, which are similar to policy statements, to very detailed standards which may include specific numerical limits on size, bulk, etc.

Many planners feel that increased specificity makes program administration easier, more consistent and more understandable to the public. They frequently indicated that they would like to see more detailed standards in their shoreline master programs. In jurisdictions where public interest is high and shoreline development is often contested, local planners and elected officials seem to be more likely to invest the time and energy needed to develop detailed regulations.

However, other planners favored more general regulations offering maximum flexibility. This viewpoint was expressed by planners in jurisdictions with detailed regulatory programs and heavy shoreline development demands as well as those with less stringent shoreline programs and little public interest. Some planners pointed out that DOE's oversight role in the permitting process made them reluctant to lock themselves into very detailed, inflexible standards. Others noted that rigid standards tend to increase the need for variances to accommodate individual property conditions, thus

lengthening the review process for actions which are relatively minor in scale. Finally, some planners acknowledged that it would be politically difficult or impossible to obtain legislative approval of strict development standards in their jurisdiction; consequently, they feel they can achieve the best results through negotiation with each permit applicant based on general policies and regulations.

- E. Factors Affecting Program Effectiveness. The effectiveness of shoreline management at the local level seems to depend as much on how well a SMP is used as on its actual contents. Shoreline planners indicate some of the most important factors influencing program effectiveness are data availability; staff expertise, experience working with the program and commitment to shoreline management goals; good working relationships between staff and the community; and the local political climate. Strong SMP standards cannot compensate for the lack of these other program assets.
- F. Planning and Zoning Coordination. Almost all local planners stress the need for coordinating SMP regulations with zoning and other local development regulations to the extent possible. Except in a few cases where shoreline management preceded local zoning and comprehensive planning, local SMPs were established as an overlay to a jurisdiction's existing regulatory programs. While recognizing the role of the State in overseeing local SMPs, planners generally feel that their ability to effectively implement the shoreline program depends in large measure on how well shoreline regulations can be meshed with their other regulatory programs.

The best way to accomplish this integration seems to vary by jurisdiction. Tacoma, for example, has developed shoreline subarea plans which consolidate general land use policies and regulations with goals and plans for specific shoreline segments. Bellevue, on the other hand, has incorporated shoreline policies in its comprehensive plan and shoreline regulations in its zoning code, while Edmonds inserts its entire SMP in its comprehensive plan. In some cases, planners felt that their attempts to incorporate strong shoreline protection measures in city or county regulatory codes had

been hampered by DOE's insistence on keeping the SMP independent from other plans and regulations.

- G. Inadequate Standards. Although use regulations are the backbone of master programs, the survey showed that most jurisdictions feel their use regulations lack adequate standards for many of the most common uses. Few jurisdictions felt their program should be used as a source of exemplary standards. They further indicated the lack of useful sources of technical information to help develop new or amended use regulations. Frequently cited areas of deficiency were bulkheads, landfills, setbacks for bluff development, dredge spoil disposal, water quality standards and visual design standards. Standards are essentially non-existent for certain uses such as small hydro facilities, dredge-mining and float plane moorage.
- H. Exemptions. Some of the most significant management problems are caused by activities that are beyond the scope of a shoreline use regulatory program. Planners frequently cited problems stemming from the cumulative impacts of exempted single family residences and residential bulkheading, poor forest management practices, upland drainage problems and unregulated clearing and grading.
- I. Small Towns. Small town waterfronts encompassed within county programs have a special set of planning needs which tend to fall through cracks in county SMPs. Most small towns are treated as blanket "urban" shorelines without special local guidelines and regulations. If the town is incorporated, it may administer the county program to suit its special needs. Unincorporated urban areas must compete for the county's attention with all the rest of the county shoreline. The scale of needs are entirely different, and county planning offices are seldom equipped (with staff or resources) to undertake small town waterfront studies. However, some towns have been successful in obtaining funding through DOE for waterfront studies to address special local problems; e.g., Langley, Coupeville, Friday Harbor and LaConnor.
- J. Urban Waterfronts. Shoreline planners in large urban areas point out that urban waterfront issues are some of the most complex and tax the flexibility of the SMP. A single urban environment can not begin to address the

distinctly different characteristics of various urban waterfronts and, consequently, large cities have generally created several urban subcategories. Tacoma has developed "mini-plans" for specific segments of its shoreline. Seattle has established a series of urban classifications which are applied to specific segments of its urban waterfront, such as Lake Union and the central waterfront.

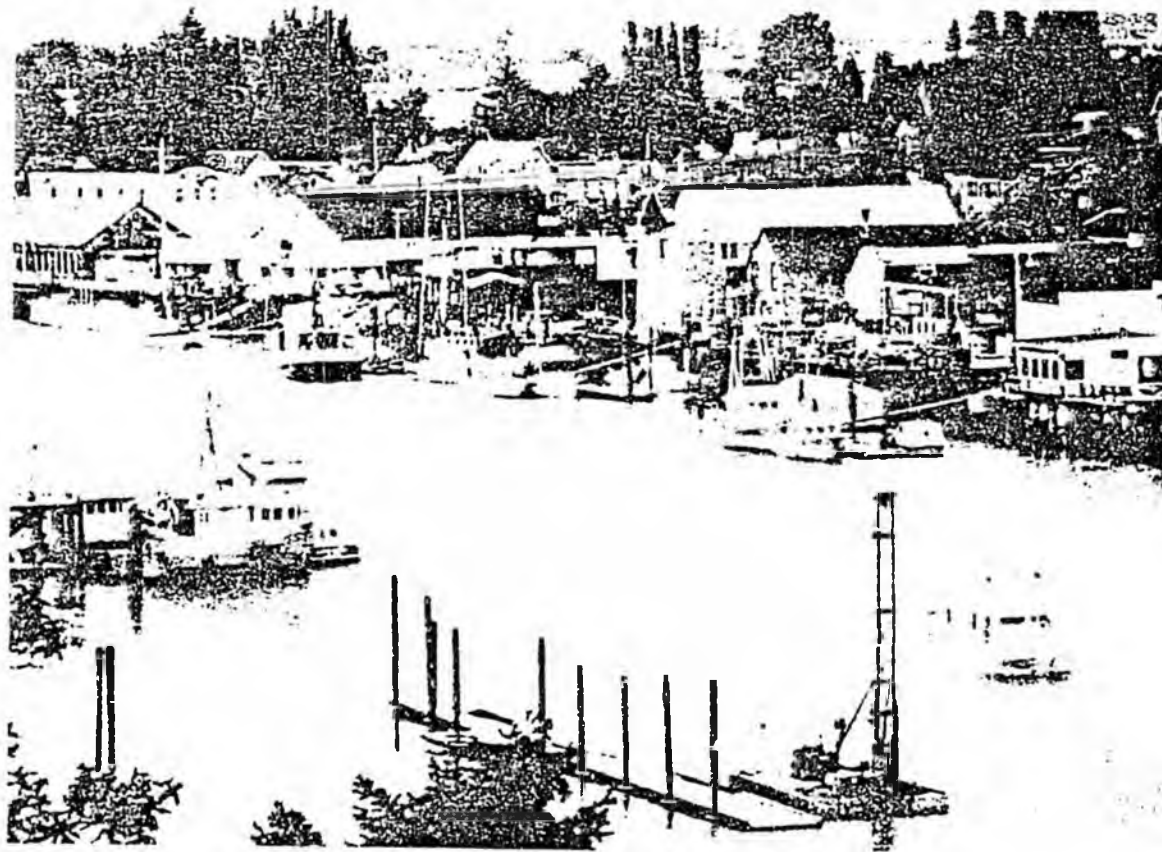
The intense competition between water-dependent, water-related and other uses which benefit from a water location complicate use allocation decisions. These decisions involve difficult tradeoffs between competing uses and between various segments of the urban waterfront, and often occur through a process of negotiation rather than through application of specific standards. Establishing a blanket requirement for water-dependent uses may be unwise, especially in central city waterfronts like Seattle's where there is a consensus in the business, industrial and economic community that this type of activity may no longer be viable. The problem facing these jurisdictions is when and where to set aside areas specifically for water-dependent uses, or whether to give preference to water-dependent uses but allow a mix of uses. Public access is often considered a trade-off with water-dependency, so that one or the other is required.

- K. Shorelines of Statewide Significance. As a practical matter, there does not seem to be a significant difference between the management of Shorelines of Statewide Significance (SSS) and management of all other shorelines. Although the SSS are geographically identified, the identification of special resource values in particular areas is lacking. Furthermore, the definition of SSS blankets extensive areas and often seems unrelated to actual features. As a result, planners say they try to be "a bit more restrictive" when making management decisions for SSS but would like more guidance from DOE. Many planners note that the general priorities established for the use of SSS are essentially applicable to all shorelines.
- L. Permit Process. Many shoreline planners indicate the need for a streamlined permit process to reduce the length of the process and eliminate unnecessary paperwork. They feel that in some cases the cumbersomeness

of the administrative process outweighs the potential benefits of more careful review. The added time required for DOE review and approval of variances and conditional uses was a particular concern. Many jurisdictions want to minimize these DOE approvals and have found ways to "condition" use permits through their own review and approval process, and thus avoid the conditional use or variance process.

- M. Other Local Shoreline-Related Regulatory Programs. Most local jurisdictions have enacted a number of regulatory programs which are closely related to shoreline management but are not included in their SMPs, such as flood protection, zoning and sensitive areas controls. For administrative efficiency, these programs are sometimes included in the SMP if they apply only to the shoreline area. For regulatory programs which apply throughout a jurisdiction, such as a sensitive areas ordinance, most planners suggest referencing them in the SMP and/or discussing them in a user's guide, rather than incorporating them in the master program. Concern was expressed both by local planners and DOE staff about expanding the scope of DOE's shoreline management review to include other local regulatory programs as a result of incorporating them in the SMP.
- N. State and Federal Regulatory Programs. Shoreline development actions often require other state and federal regulatory approvals, in addition to local permits. Where development proposals require permits from more than one agency, some planners noted that decisions are sometimes inconsistent with the SMP in spite of previous concurrence with program policies. In addition, they said there is often confusion over the appropriate scope of each agency's review.

SHORELINE MASTER PROGRAM HANDBOOK



Prepared for the Washington State
Department of Ecology

By Nancy Fox and Susan Heikkala
With Keith Dearborn, Marc Hershman and
Jens Sorensen

September, 1983

SHORELINE MASTER PROGRAM HANDBOOK

Prepared for the Washington State
Department of Ecology

By Nancy Fox and Susan Heikkala

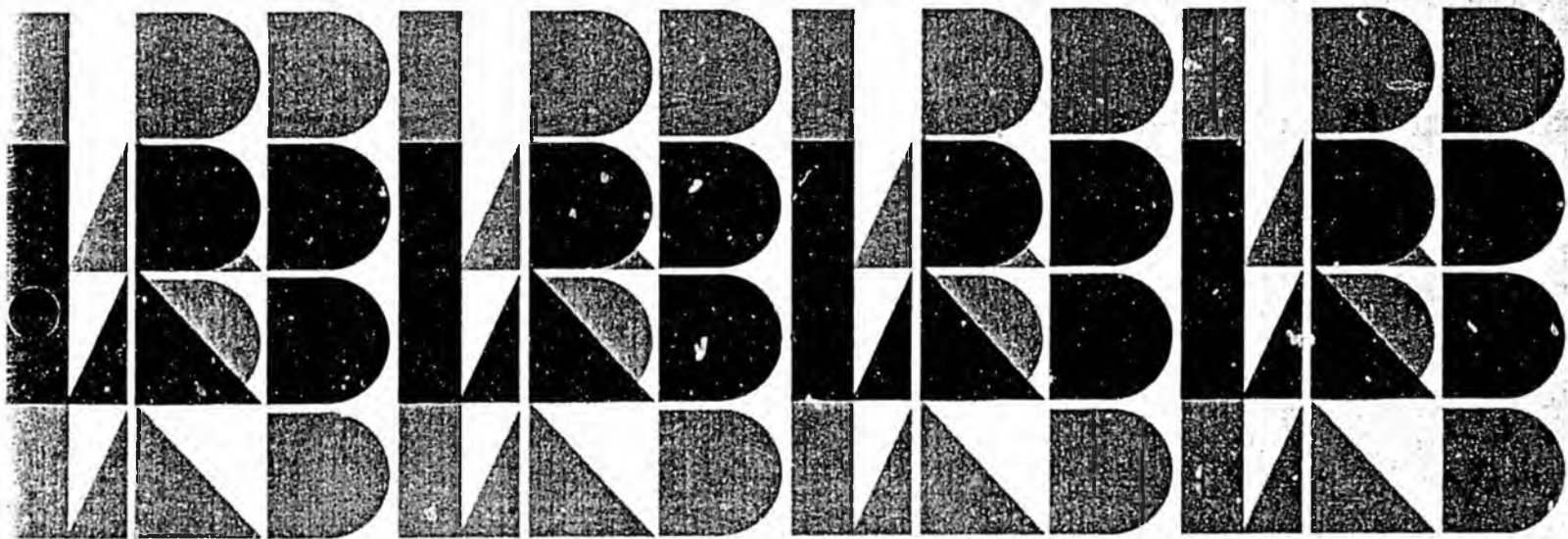
With Keith Dearborn, Marc Hershman and
Jens Sorensen

September, 1983

I.	Introduction	1
II.	Shoreline Master Program Organization and Structure	2
	A. Relationship Between Policies and Regulations	
	B. Organization of Use Regulations	
	C. Tools to Aid Public Understanding of Shoreline Master Programs	
III.	Master Program Elements	21
IV.	Environment Designations	34
	A. Urban	
	B. Suburban/Rural Residential	
	C. Rural	
	D. Conservancy	
	E. Natural	
	F. Aquatic	
V.	Use Policies and Regulations	54
	A. Permitted Uses by Environment	
	B. General Regulations	
	C. Policies and Regulations for Each Use Activity	
	1. Resource-Based Activities	
	2. Development Activities	
	3. Shoreline Modification Activities	
VI.	Special Issues	213
	A. Shorelines of Statewide Significance	
	B. Public Access	
	C. Urban Waterfronts	
	D. Water-Dependent Uses	
	E. Wetlands Management	
	F. Bluff Setbacks	
VII.	Program Administration	236
	A. Applicability of the Program to Exempt Actions	
	B. Coordinating Multiple Development Permit Approvals	
	C. Streamlining the Permit Process	

MAR 4 1985

MARINE RESOURCES AND AQUACULTURE PROGRAMS IN THE STATE OF HAWAII



LEGISLATIVE REFERENCE BUREAU/STATE OF HAWAII

**MARINE RESOURCES AND
AQUACULTURE PROGRAMS
IN THE STATE OF HAWAII**

ANN MASAKO OGATA
Researcher

Report No. 3, 1982

Legislative Reference Bureau
State Capitol
Honolulu, Hawaii