KACHEMAK BAY. TESTIMONY (notebook)

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STATEMENT OF

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on

ENVIRONMENTAL ASPECTS OF PETROLEUM DEVELOPMENT IN KACHEMAK BAY

presented at

HEARING

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HOUSE RESOURCES COMMITTEE
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Statement of Clayton D. McAuliffe,
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April 9, 1976
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I am Clayton McAuliffe, Senior Research Associate, with Chevron Oil Field Research Company, La Habra, California. I received my doctorate in Soil Science with minors in Physical Chemistry and Plant Physiology from Cornell University, and was a professor at Cornell University and North Carolina State University for 8 years before joining Chevron Oil Field Research Company 20 years ago.

I am a member of the American Chemical Society, The Soil Science Society of America, the American Society of Agronomy, a member and Fellow of the American Association for the Advancement of Science, the Society of Petroleum Engineers of AIME, and several honorary societies. I have published over 40 papers covering a variety of subjects in scientific journals and I have a number of U. S. and foreign patents.

For over 6 years I have devoted my time almost exclusively to a study of petroleum in the marine environment. I assisted in the planning and coordinated the extensive chemical and biological studies conducted during and following the 1970 Chevron oil spill in the Gulf of Mexico. I performed a similar function following the collision of the tankers in San Francisco Bay in 1971. I served on the Steering Committee of the

National Academy of Sciences Panel on Inputs, Fates, and Effects of Petroleum in the Marine Environment that resulted in the recent NAS publication "Petroleum in the Marine Environment". For the past four years I have been associated with the American Petroleum Institute's Committee on Fate and Effects of Oil in the Environment. I have also served on other environmental and science advisory committees, including the Kachemak Bay marine studies program conducted at the Auke Bay Laboratory of the National Marine Fisheries Service.

INTRODUCTION

Testimony presented before this committee, and statements made in the media have alleged:

1. That it requires 0.3 parts per million of oil to kill larvae of some marine organisms in Kachemak Bay and that 3 ppm will kill all larvae.

2. That an oil spill of several thousand barrels will kill all larvae in Kachemak Bay.

3. That larval stages are more sensitive to oil than juvenile or adult forms.

4. That cold water species in Kachemak Bay may be more sensitive than warm water species. The "may" is often deleted.

5. That we don't know what will happen to oil in the water column of Kachemak Bay if an oil spill occurs, because we don't know the mixing energy.

Today I would like to review information from the scientific literature to correct these misconceptions, and to place in perspective what happens to spilled oil and the concentrations of crude oil that have adverse effects on marine organisms.

OIL CONCENTRATIONS AND BIOASSAY RESULTS

In the first slide are shown results obtained from the studies conducted at the National Marine Fisheries Service Auke Bay Laboratories.

The data shown are the results of a number of bioassay tests of the toxicity of Cook Inlet and Prudhoe Bay crude oils to larval, juvenile, and adult stages of several commercially important marine species.

A bioassay test is conducted by placing organisms in a series of aquaria or tanks. One tank is the control. To the other aquaria are added increasing amounts of a substance under test. In this case, increasing amounts of crude oil or the water soluble fraction of crude oil. The aquaria are examined each day for 4 days and the number of dead and live organisms counted. From these results, the concentration required to kill one-half of the organisms after 4 days of exposure can be calculated. This is expressed as TL_{50} - 4 days and most often expressed as ppm (parts per million).

Shown in Table 1 are the average concentrations and the range of concentrations to cause one-half kill for all bioassays conducted with the 2 crude oils to all test organisms at Auke Bay. First, note two values. The upper value represents the amount of whole oil required to give the water soluble concentration shown immediately below in parenthesis. As Dr. Stanley D. Rice, Auke Bay Laboratory, testified, it requires approximately 1000 ppm (0.1%) whole crude oil to give 1 ppm water soluble fraction in water using their chemical method of measuring the concentration in water. It is these lower values in parenthesis that have been incorrectly interpreted and quoted as whole oil.

The average concentration to cause one-half kill of adult and juvenile forms of several species is 2400 ppm (2.4 WSF) with a range for the most sensitive organism of 1100 ppm up to 4200 for the most resistant.

Tests of larval forms show an average toxic level of 6300 ppm whole oil (6.3 WSF) with a range from 1700 to more than 10,800 ppm. This high value (over 1% oil) gives the maximum concentration of water soluble constituents. Tanner and Dungeness crab larvae were not killed at this concentration. These data show, contrary to reports, that larval forms for these cold water species are not more sensitive than juvenile or adult stages. In fact, if the differences are significant, larvae are more tolerant of crude oil. Further, the larval bioassays were carried

out in sealed glass jars, whereas the juvenile and adult tests were in open aquaria with air bubbled through the aquaria. This could not be done with larvae because of their sensitivity to mechanical agitation; even gentle stirring with air bubbles cause larval kill. Mr. Daniel Hennick has testified as to this point with reference to location of larvae in Kachemak Bay. They avoid near-surface waters or are destroyed. Instead, they are found throughout the water column feeding on phytoplankton. Because the containers were sealed for 4 days, volatile oil constituents (including aromatic hydrocarbons such as benzene and toluene that are toxic) did not decrease by evaporation accelerated by the bubbling air stream as occurred in open aquaria. Larvae, therefore, were subjected to higher concentrations of water soluble compounds during the 4 day tests. If the test conditions had been the same, the amount of oil to cause toxicity would have been still higher for larval forms.

CAN A MAJOR OIL SPILL KILL ALL MARINE LIFE IN KACHEMAK BAY?

Fears have been advanced that even a relatively small oil spill or concentrations of oil in water that are not visible will kill all larvae in Kachemak Bay. Let's consider if this is possible. The next slide shows Kachemak Bay. Let us hypothesis the following:

1. Build a dam across the bay from Anchor Point out 3 miles in State waters and then south across the bay to prevent water exchange with Cook Inlet.

2. Place a cover over the water surface to prevent the evaporation of volatile hydrocarbons.

3. Stop all bacterial activity. (Hydrocarbon oxidizing bacteria are present that use oil for food.)

4. Stir the water to give a water soluble fraction of 1 ppm throughout Katchemak Bay waters. As shown on Table 1, 1 ppm is on the lower toxicity side for larvae and adults. Larvae are throughout the water column - juvenile and adult shrimp and shell fish are on the bottom; fin fish are in water at various depths.

To produce 1 ppm water-soluble fraction throughout Kachemak Bay water would require the discharge of over 200 million barrels of crude oil. (Assumed surface area of 288 square miles and an average depth of 150 feet). It would require 539 simultaneous Metula spills or the complete loss of all oil from 95, 300,000 ton super tankers to produce 1 ppm water-soluble constituents (as measured by the Auke Bay Laboratories chemical method) throughout the waters of Kachemak Bay.

Thus, even daming off Kachemak Bay, putting a lid over it, stopping bacterial activity and adding this amount of oil would only kill a portion of some species of marine life. Obviously, this amount of oil could never be spilled, water exchanges in the bay, many of the toxic constituents of crude oils evaporate, and much of the oil that does go into water is destroyed by bacteria and by photooxidation.

OBSERVED CONCENTRATIONS DURING ACTUAL CRUDE OIL SPILLS

The above example shows that it would not be possible to spill enough oil in Kachemak Bay to significantly adversely affect fin fish and shell fish. Only a few studies have been made of hydrocarbons in water from spills. When oil is discharged to the sea surface, it undergoes a number of rapid physical changes including spreading, dispersion, evaporation, solution, sedimentation. Beginning immediately, but proceeding at slower rates, are other crude oil alterations including biodegradation and photo-oxidation.

Controlled Oil Spills

The American Petroleum Institute, Fate and Effect of Oil Committee conducted 4 controlled oil spills 70 miles east of Boston in October and November, 1975. Two crude oils (24 and 39 API gravity) were discharged under 2 sea states. Each spill was 10 barrels. Water samples were collected with time at 5 and 10 feet under each slick. Samples of the oil were skimmed from the water surface to follow the loss of water soluble toxic hydrocarbons with time. Each slick had a surface area of over 100,000 square feet 20 minutes after discharge (about 3 acres - 200 feet wide X 500 feet long) and all samples were collected from the middle of each slick in order to obtain the highest concentration.

Of about 80 samples collected under the four slicks, dissolved hydrocarbons were found in only 5 samples. The concentrations ranged from 0.002 to 0.060 ppm for samples collected from 15 to 20 minutes after the spills. The highest concentration was found at 5 feet under the 39° API gravity crude spill when waves were 5 - 6 feet with white caps. Dissolved hydrocarbons were found at 10 feet in only one sample at a concentration of 0.002 ppm.

If an excess of oil is mixed with water, a maximum concentration of dissolved hydrocarbons results. The 5 samples had percentages of maximum saturation that ranged from 0.01 to 0.3% and were restricted to the upper 10 feet of water for only 30 minutes. In contrast, Auke Bay toxicity studies to kill one-half of test organisms required an average of 40% of maximum water soluble concentrations with the range from 8 to 100%. Thus, organisms under the controlled oil spills were not exposed to toxic concentrations and the exposure time was less than one hour whereas the Auke Bay bioassays were for 4 days.

The water soluble hydrocarbons were completely lost, principally by evaporation, from all four oil slicks (oil collected from the water surface) in from 4 to 6 hours.

Chevron Gulf of Mexico Spill

Similar observations were made for dispersed (emulsified) oil during the 1970 Gulf of Mexico spill. Dispersant solutions were sprayed on the platform and surrounding water surface. About 30% of the oil was emulsified and mixed in near-surface waters and looked like coffee with cream. Visually it extended as a plume about 1 to 1.5 miles from the platform when oil was discharged at a rate of 1500 barrels per day. Water samples were collected near the platform in the oil emulsion plume and extending outward from the platform.

The highest concentrations of dissolved hydrocarbons ranged from 0.02 to 0.2 ppm at the platform, decreasing to 0.002 ppm at 1 mile. The current was about 0.5 knot and organisms moving with the water were exposed to these decreasing concentrations for about 2 hours. Again, extremely low concentrations with short exposure times compared with concentrations found toxic to marine organisms in 4 day exposures at Auke Bay.

The volume of water (1/4 mile wide, 1.5 miles long and 10 feet deep) affected by even these low concentrations of dissolved hydrocarbons was small, even though the Chevron spill is classified as one of 3 major spills that have occurred during U. S. offshore exploration and production. Such a spill in Kachemak Bay would have no measureable effect on marine life if discharged at the site of the leases at the mouth of the Bay.

RELATIVE SENSITIVITIES OF COLD AND WARM WATER SPECIES

Bioassays conducted under supposedly similar conditions often give differing results. Some of the test variables may not be the same. Some of these variables include temperature, salinity, rate of aeration, weight of organisms per volume of water, and history of the test organisms. In an attempt to compensate for experimental variations and to compare the relative sensitivities of organisms, a standard toxicant (dodecylsodium sulfate) has been used. This material is a dispersant much like a household detergent used to wash clothes.

The Auke Bay marine study used this material for some bioassay tests to determine relative sensitivities of organism. Table 2 (slide) shows the test results compared with warm water species bioassays by other investigators. Following each mean value is a measure of variation of the number comprising the mean (standard deviation). Note that it is large showing appreciable variation. Within this variation, it is not possible to say that cold water species differ from warm water. They are the same.

SUMMARY

1. Larval stages of cold water commercially important marine species are not more sensitive to crude oil than juvenile or adult forms.

2. Cold water and warm water species have similar sensitivities to a common toxicant.

3. No conceivable amount of oil spilled in Kachemak Bay can kill all commercially important marine species.

4. Even a major spill will have a limited, if measureable, effect on these marine species.

5. Based upon known spills, we know that toxic concentrations in water from a possible spill at the lease locations will be below those known to affect Kachemak Bay species, and that the time of exposure would be short - a few hours.

Those in opposition of petroleum exploration and subsequent production of oil or gas, if found, paint a black or white picture - i. e. that if petroleum development occurs, the fisheries will end. Scientific studies show that such speculation is unfounded.

There can be some mechanical interferenceeeen petroleum and fishing operations, but with cooperation this can be minimal. The result will be planned development of both renewable and non-renewable resources for the common good of all.

TABLE 1

AMOUNT OF TWO CRUDE OILS AND WATER SOLUBLE FRACTIONS
TO KILL ONE-HALF OF SEVERAL TEST ORGANISMS

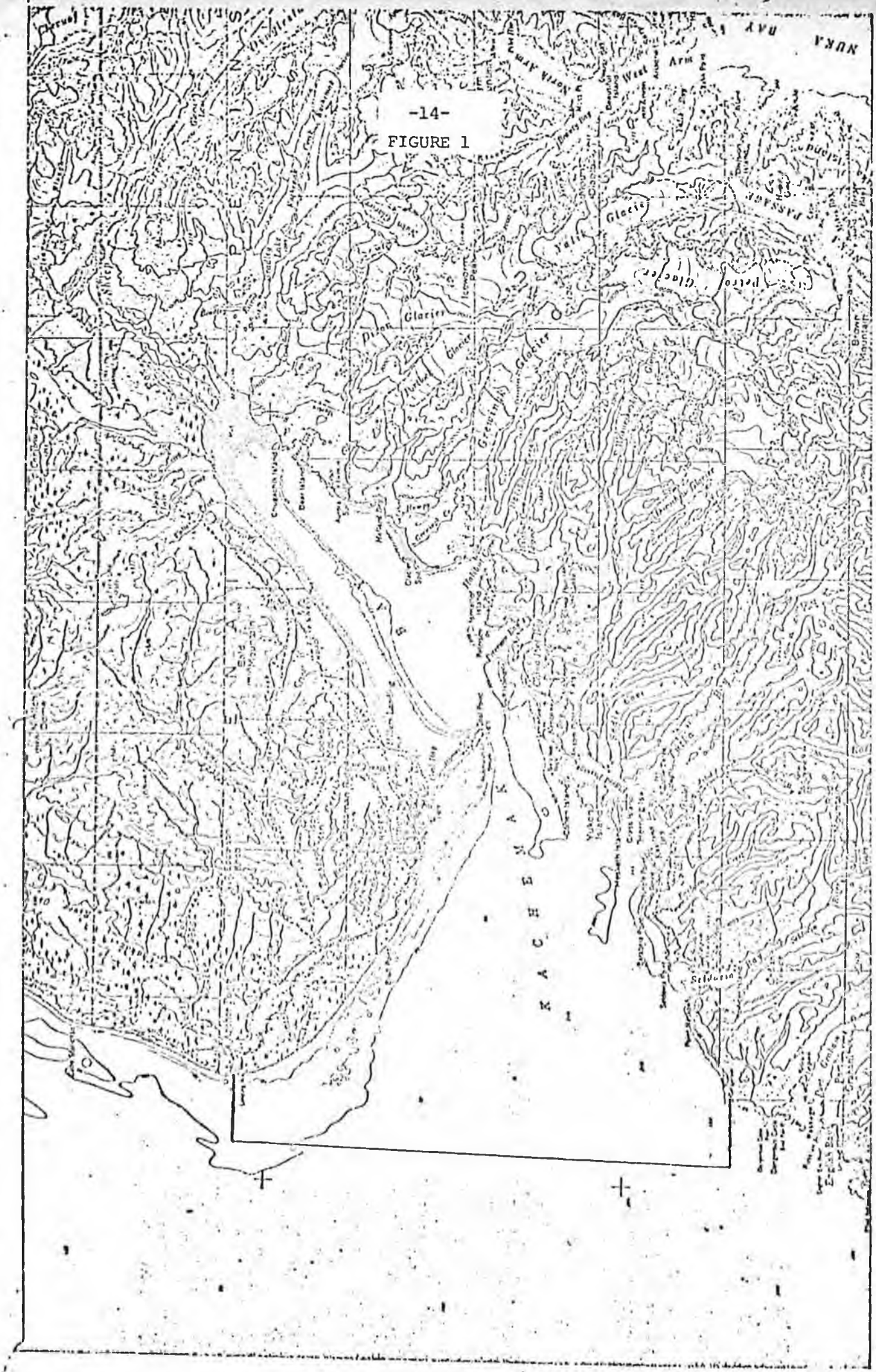
	TL_{50} - 4 DAYS, ppm	
	AVERAGE	RANGE
ADULTS - JUVENILES KING CRAB, SCALLOP HUMPBACK SHRIMP, SCOOTER SHRIMP, PINK SALMON FRY, DOLLY VARDEN SMOLT	2400 (2.4)	1100 - 4200 (1.1 - 4.2)
LARVAE, HERRING, TANNER CRAB, COONSTRIPE SHRIMP, HUMPY SHRIMP, SCOOTER SHRIMP	6300 (6.3)	1700 - > 10800 (1.7 - > 10.8)

TABLE 2

COMPARISON OF COLD AND WARM WATER SPECIES
TO STANDARD TOXICANT DODECYLSODIUM SULFATE

	NO. OF TESTS	MEAN ± VARIATION ppm	RANGE ppm
WARM WATER			
FISH, SHRIMP	14	11 ± 28	0.5 - 108
(DELETION 1 HIGH VALUE)	13	3.8 ± 3.9	0.5 - 14
COLD WATER			
3 SPECIES OF SHRIMP 1 SPECIES OF SCALLOP	4	> 21 ± 13	3.1 -> 32

FIGURE 1



WRITTEN TESTIMONY
PRESENTED TO THE HOUSE
COMMITTEE ON NATURAL RESOURCES

KACHEMAK BAY

I am Frank J. Hester. My home and office are in Santa Barbara, California. I am a marine biologist by profession with a B.A. from the University of California, Santa Barbara, a M.S. from the University of Hawaii; and a Ph.D. from the Scripps Institution of Oceanography. I was employed by the U.S. Bureau of Commercial Fisheries, now the National Marine Fisheries Service, for thirteen years, most recently as the director of the laboratory in Hawaii. For the past three years I have been a consultant on marine biology and fisheries. It is in that capacity that I am here today, having been retained by the Shell Oil Company in connection with the scientific studies relating to Kachemak Bay.

A little more than two years ago, public hearings began on the question of oil and gas development activities on the submerged state lands in the lower Cook Inlet in the vicinity of Kachemak Bay. At these hearings some of the residents of the area expressed concern over exploration and possible development of the leases off the Bay. Much of the testimony at the hearings reflected concern over potential effects on the aesthetics of the area and changes in the life styles of the residents. Such concerns are understandable, but are not open to scientific evaluation - although I am sure that economists and sociologists would disagree with me on this. Some of the fishermen in the area, however, did make some statements that are open to scientific investigation, and it is toward those statements that I wish to direct your attention.

The fisheries of Kachemak Bay amount to between two and three percent of the ex-vessel value for Alaskan fisheries, however, to the people of the area who make their livings from these fisheries, they are of major importance. At the hearings spokesmen for these fishermen stated:

.That there was a possibility that Alaskan marine animals, particularly those of commercial importance, were considerably more sensitive to the effects of oil than were marine animals from warmer water areas where oil and gas production has been conducted for many years with no apparent, detrimental effect on fisheries.

.That the configuration and circulation of Kachemak Bay was such that the populations of marine animals were self sustaining. That is, that there was a persistent gyre in the area of proposed drilling that caught and held the eggs and larvae of the marine animals in the bay from the time they were released until the time that they settled out of the water column and become residents of the bottom.

At the time these statements were made they were unsupported by scientific data. However, both statements are open to scientific study. Therefore, Shell Oil Company funded a study to determine the sensitivity to oil of selected, commercially important marine animals from the area. This study subsequently was co-sponsored by some of the other companies interested in the problem. These companies were: Marathon Oil Corporation, Phillips Petroleum Corporation, Standard Oil Company of California, Texaco Incorporated, and Union Oil Company of California. The work was contracted to be done by scientists of the National Marine Fisheries Service at the Auke Bay laboratory and its field station at Kasitana Bay. I was retained by the Shell Oil Company to administer the contract, which has just been completed.

Several months after work on sensitivity to oil had begun, the state provided funds to the Alaska Department of Fish and Game to investigate the second question - that is, to determine whether or not Kachemak Bay is a closed system. This work has not been completed, but the preliminary results of this study are available.

Let me now discuss the results of the oil study done by Dr. Rice and his group at the National Oceanic and Atmospheric Administration, National Marine Fisheries Service laboratory at Auke Bay. The final report on this project has been submitted to the sponsors. This report will be available from NOAA in a few weeks as a publication. In the meantime, preprints of the report can be obtained from the Auke Bay Fisheries Laboratory.

When this study was conceived, the first question was to decide what to measure and how to use these measurements for comparison with measurements from other areas. Studies of the effects of oil on marine organisms have been ongoing for a number of years. The best studied aspects of the problem have involved acute toxicity, that is the amount of oil that it takes to kill an animal after a short exposure, and studies of the accumulation in and release of hydrocarbons from the bodies of the organisms. Neither approach has been developed and studied exhaustively, despite the amount of effort that has gone into the subject. This is because petroleum is a very complex mixture of compounds; oils from different areas are quite different, and determining the concentrations of these various compounds administered to the test organisms is difficult. The various workers in this field appreciate the problems and are beginning to be able to get reproducible results, but there still are difficulties.

Despite the difficulties, these two aspects of oil pollution, namely, acute toxicity and uptake and depuration, are the best understood. The NMFS study, therefore, had as its principal objectives the following:

.To determine the acute toxicity of Cook Inlet crude oil to various life stages of fish and shellfish found in Kachemak Bay.

.To determine the rate and degree of uptake and depuration of hydrocarbons by these animals when they were exposed to sublethal concentrations of the water-soluble fractions of crude oil.

.To compare these results to published literature to determine to what degree, if any, Alaskan marine animals differ from animals in other areas in their response to oil contamination.

Invariably, when there is a major oil spill, there are predictions that there will be major kills of marine animals. Studies of such spills do not bear out these fears. This has been the case with all the crude oil spills that occurred in the open ocean including the well-studied Torrey Canyon, Santa Barbara and Bloc[illegible] 4[illegible] spills. In none of these spills was damage to the fisheries observed. How then does one reconcile this lack of damage with statements such as appeared recently in the newspapers here to the effect that oil poses a severe threat to fisheries in Kachemak Bay. The answer lies in a misunderstanding about the acute toxicity of crude oil to these organisms.

The procedure for determining the acute toxicity of a substance to an organism was developed long ago in connection with drug testing and agricultural pesticide applications. One might expect that it would be a simple matter to use those same methods to determine crude oil toxicity. Unfortunately, this is not the case although the design of the experiment is essentially the same; that is a number of animals are exposed to various doses of the toxicant for a set period of time and the dose at which 50% of the animals survived that time is calculated. In environmental studies the time usually specified is 96 hrs. The dose at which 50% of the organisms survived is called the median tolerance limit (TLm_{96}).

Where oil testing differs markedly from the testing of other toxicants is in the administration of the dose, and it is here that major misunderstandings arise.

Crude oil is not very toxic. Crude oil, however does consist of a mixture of compounds, some of which are quite toxic in the accepted sense of the word, and it is in these compounds that interest lies for acute toxicity bioassay work. Different oils contain different amounts of these compounds, and these various compounds differ among themselves in their solubility in water.

In order to run a bioassay, a known dose of these dissolved compounds must be administered to the test organisms. This fact was not recognized by the early pioneers in the field of oil pollution studies and they used the volume of whole oil added to the solution as a measure of dose. When this is done,

typical median tolerance limits were found to range from hundreds to hundred thousand parts per million expressed as the volume of oil added to the volume of water. Moreover, these investigators found that they were unable to get the same results twice in a row. After considerable thought, they decided that the problem lay in using the volume of oil added as a measure of the dose. What they really wanted was a measure of the amount of the soluble fractions of the oil in the water column.

Since those first experiments pointed out the problem, various procedures for controlling the dose more accurately have been developed. These are discussed in some detail in the report and I will not go into them here. What I do want to emphasize is that the doses given in the report are measures of some of the soluble fractions of the oil as determined by analysis of the water used in the tests. They are not indications of the amount of crude oil used to make the solutions. These solutions are prepared by mixing a large amount of oil in the water for a considerable length of time. The amount of oil added is not related in a simple way to the concentrations of the dissolved and suspended compounds used in the bioassay tests.

For example, the stock solutions for the bioassays using the water-soluble fractions of the oils were prepared by using a 1% mixture of oil and water; 10,000 parts per million. This mixture was stirred for 20 hrs., allowed to settle and the water and dissolved oil fractions then diluted by a factor of three or more to make up the test solutions. The assay results are reported as parts or as fractions of parts per million, but these are from analyses of the water. They do not in any way suggest that a few parts per million of whole oil can produce these effects. Nor do they mean that 10,000 parts per million of whole oil will produce this effect. All they say is that a mixture of the same oil and sea water prepared as described, and diluted to give a concentration determined by analytical methods to be the same as in these experiments, should give comparable results.

Now I realize that some people will want to attempt to calculate how much oil it will take to poison the lower Cook Inlet. All that the report says is that it will be a lot. Water column soluble fraction concentrations at least as great as those used in the laboratory studies will have to be achieved and this takes time, a lot of mixing energy, and a great deal of crude oil. The difficulty obtaining these concentrations in nature no doubt explains the apparent lack damage following most oil spills.

The report gives acute bioassay results for eight adult or juvenile Alaskan marine species. These are:

1)	Pink scallop	Chlamys rubida
2)	Humpback shrimp	Pandalus goniurus
3)	Scooter shrimp	Eualus fabricii
4)	Coonstripe shrimp	Pandalus hypsinotus
5)	Pink shrimp	Pandalus borealis
6)	King crab	Paralithodes camtschatica
7)	Pink salmon fry	Oncorhynchus gorbuscha
8)	Dolly Varden smolt	Salvelinus malma

It also provides bioassay results for the larvae of six species, some of which duplicate the ones just mentioned. These are:

1)	Humpback shrimp	
2)	Scooter shrimp	
3)	Coonstripe shrimp	
4)	Tanner crab	Chionoecetes bairdi
5)	Dungences crab	Cancer magister
6)	Herring	Clupea harengus pallasi

The results of these bioassays are summarized for you on Table 1 and Figure 1. Before discussing these data in detail, let me make two comments. First, I want to re-emphasize that those values are the concentrations of the water-soluble fractions of the oils and are not equivalent to the amount of oil used to prepare the solutions and the mixtures. Second, I want to call your attention to footnote two on Table 1, which explains the use of ECm the effective concentration for some of the larvae data. These larvae were counted out even though they were not legally dead. The investigators felt that these larvae had reached a stage past the point of recovery and could be considered dead for the purposes of the bioassays.

Now let's look at the numbers. The results from the NMFS study are given in the bottom half of the table. These ranges include the results for one or more species or organism for bioassays run with Prudhoe Bay and Cook Inlet oils, and with a fuel oil. Some assays were run using a dispersion of oil in water prepared by violently mixing oil and sea water for one minute with a paint stirrer. This procedure resulted in suspending some of the oil in the water in the form of tiny droplets, rather than in a true solution as in the case of the water-soluble fractions.

Referring now to the values, the values in the column labeled WSF range from about one to four parts per million for the adults and juvenile animals, and from about 0.2 to two parts per million for the larvae. Compare these with the values given in the upper part of the table and you will see that with the exception of the Battelle study with the coonstripe shrimp, that these values are lower, indicating that these animals are apparently more sensitive to oil than are these other animals from elsewhere. Unfortunately, because of some differences in procedure in some of these studies and in the ages or life stages of the organisms tested, the fact that different oils were used, and the fact that some of the test animals used by the other investigators were notoriously hardy, we cannot state that these differences are significant in the

statistical sense. We can say, however, that if these differences are real, and not a result of experimental error, that they are not very big. The conclusion drawn from these data is that no major difference in sensitivity exists between the Alaskan animals tested and the animals from the other areas.

To get a better feel for how Alaska animals compare with their southern relatives let us look at Figure 1. On this figure these same data are graphed. In addition, I have added some summary data compiled by Moore's group at the Massachusetts Institute of Technology as part of a study on the impact of a deep water tanker port for Maine. He has taken the results of about 40 studies on the effects of oil and summarized them into a table which is available in his report or from the Alaska Department of Fish and Game.

Some data from the MIT study, which was summarized in the ADF&G draft Status Report on Kachemak Bay, have been quoted recently as showing that less than 1 ppm of oil is toxic to marine organisms. This is, of course, incorrect. Moore's data refer to dissolved concentrations, not total oil. He does give estimates of the amount of oil needed to produce these dissolved concentrations, but these values are 1000 to 10,000 times greater.

The studies that Moore used are less precise than the present study or the other studies reported in Table 1, and these results were not used in the NMFS report. As you can see, Moore's values for the several categories of organisms have ranges much wider than the other studies, a reflection of both the imprecision of these earlier studies and the diversity of the organisms used. However, these data are useful in confirming the previous conclusion that there are no major differences between Alaskan species and those from elsewhere. This figure covers a range of water-soluble fractions from 0.1 to 100 ppm. The more sensitive stages, the larvae, appear at the lower end of the range and the less sensitive adults at the upper end of the range. The juveniles lie in between. The Alaskan species fit this conceptual picture quite well, confirming the conclusion that the Alaskan species do not show major differences in their sensitivity to oil toxicity than do their southern relatives.

Now let us consider the uptake-depuration question. This portion of the study was undertaken to see if differences in temperature, or in the metabolism of the animals in Alaska, might cause the rates of uptake and depuration in those animals to be different from the rates in southern species. If you will look at Figure 2 you will see a composite diagram illustrating the uptake and depuration of one chemical, methylnaphthalene, from solution by four of the test animals. The amount of uptake and the pattern of uptake and depuration shown here for these four animals is virtually identical with the patterns obtained in similar studies with southern species. The conclusion is that there are no major differences in this respect between the Alaskan animals tested and those from more temperate regions.

What I have presented here are the highlights of this study. The report contains a great deal more information, including some studies on behavior. These are not comparative studies with other areas so I will not go into them.

The other scientific aspect of the Kachemak Bay question is that of the circulation of the waters in the outer bay. The Alaska Department of Fish and Game has prepared a draft report on some of the work they have done to resolve the question of the persistence of the gyre. The report is still in draft form, and I believe that there will be some editorial changes made. None-the-less, the portion of the draft that presents the results of the drogue and drift card studies of the circulation in the vicinity of the bay is quite thorough.

The author states that more work will be done. The results to date are preliminary, and the methods and conclusions have not been reviewed, however, the evidence does suggest that the movement of water in the area is such that it is unlikely that larvae hatched in the bay remain to settle down in the same area. Instead it appears that many of the animals in the bay are carried in from the outside by the currents, and larvae produced in the bay are carried out to settle elsewhere. It also indicates that flushing of the area is more rapid and complete than previously believed.

Not only does this conclusion suggest that the importance of this area as a rearing area for the bay may have been misinterpreted, but it suggests that the rationale for the establishment of crab sanctuary and the critical habitat needs to be re-examined.

In conclusion, I believe that these two studies, one completed and one preliminary, answer the questions raised two years ago. Neither Kachemak Bay nor the animals in it appear to be unique with respect to their response to petroleum. These studies suggest that the situation here is not much different from that in other areas of offshore oil and gas production. There is, at this time, no scientific grounds for suggesting that fisheries and oil exploration and production off Kachemak Bay are incompatible.

Table 1.--Summary of acute toxicity of several crude oils and No. 2 fuel oil to several marine species. Data are from four studies, each using at least two different crude oils. Ranges of 96-hr median tolerance limits (TLm's) are reported in ppm of oil as measured by IR (2930 cm^{-1}).

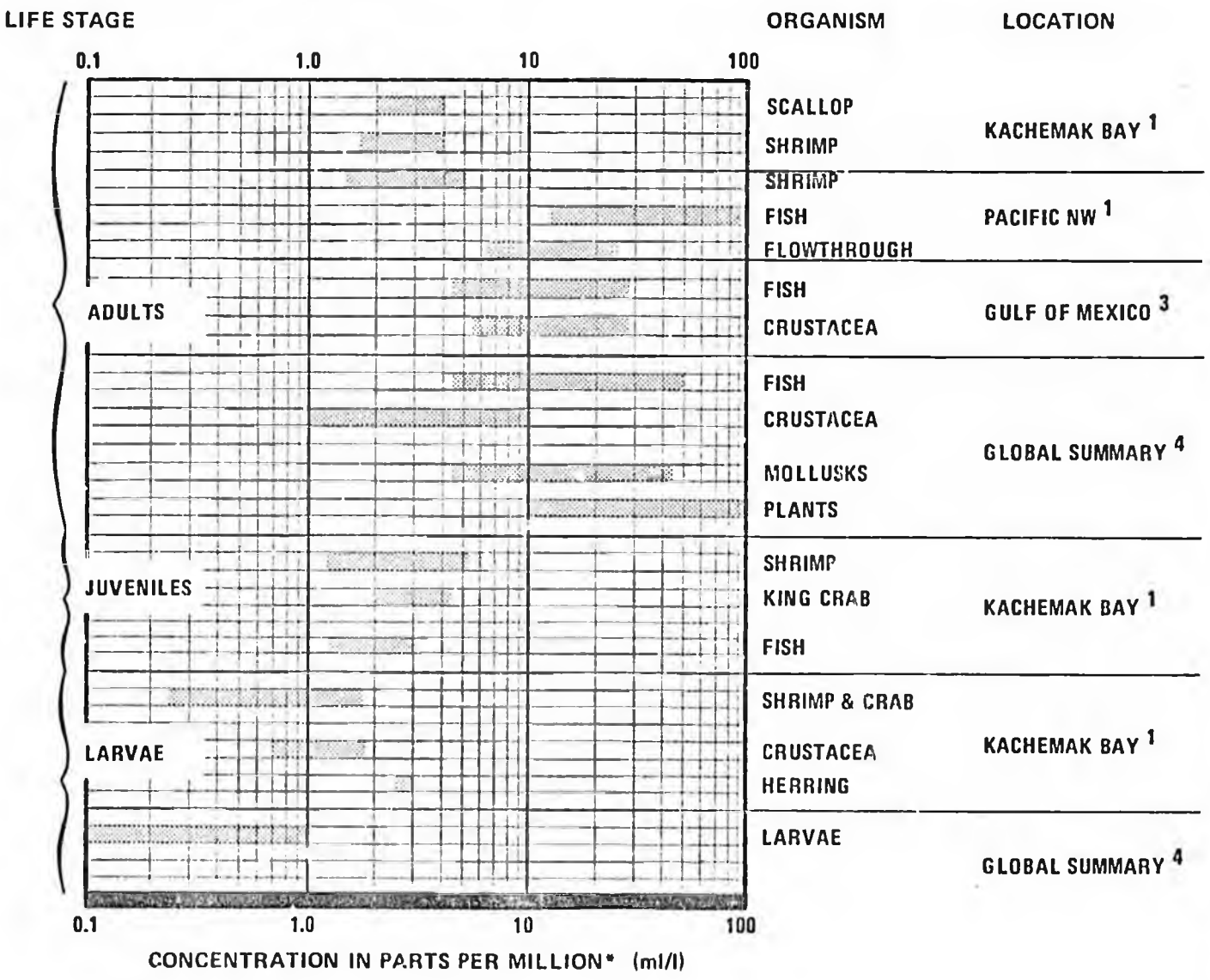
Study and species tested	Temperature range	(WSF) Crude oil	(WSF) No. 2 fuel oil	(OWD) Crude oil
Battelle 1973b [1/]				
Two species of fish	8°C	15-65	---	---
Battelle 1974a [1/]				
Coonstripe shrimp, juvenile salmon (flowthrough)	10-11°C	6.6-24.9	---	---
Coonstripe shrimp (static)	8°C	1.3-4.9	---	---
Anderson et al. 1974b				
Three crustacean species	18-22°C	6.6->19.8	1.3-4.9	18-62
Three fish species	18-22°C	5.5-19.8	3.9-6.3	38-78
This study				
Four shrimp species	3.5-5.4°C	1.26-4.34	0.53-1.69	2.31-13.9
One crab species	3.8-7.8°C	2.35-4.21	5.10	5.3-7.80
One scallop species	3.9-7.4°C	1.57-3.15	0.8	8.04-9.34
Two fish species	3.6-10.2°C	1.10-2.94	0.81-2.29	3.41-16.4
Coonstripe shrimp	3.6-4°C	1.96-2.72	---	---
Six species of crustacean larvae (Stage I-VI)	3.5-13°C	TLm = 0.54->8 ECm = 0.24-1.9 [2/]	--- ---	--- ---

[1/] Battelle studies do not report TLm's directly in the form of IR ppm. The values presented for Battelle are measured from their raw data. Some of their tests are flowthrough and others are static. They used different mixing procedures and their data may not be directly comparable.

[2/] For larvae we also report this ECm, or mean effective concentration for moribundity. Moribund larvae showed some motion, but were unable to swim, and destined for death.

FIG. 1

ACUTE TOXICITY OF THE SOLUBLE FRACTIONS OF CRUDE OILS ON VARIOUS MARINE ORGANISMS



*NOTE: THIS IS THE CONCENTRATION OF THE WATER SOLUBLE FRACTIONS OF THE OIL AS DETERMINED BY INFRARED SPECTROSCOPY. THE TOTAL AMOUNT OF OIL NECESSARY TO PRODUCE THESE DISSOLVED CONCENTRATIONS WILL BE MUCH GREATER DEPENDING ON THE MIXING METHOD USED. ACCORDING TO MOORE ET AL[4], THE VOLUME OF OIL WILL BE 1,000 TO 10,000 TIMES GREATER THAN THE DISSOLVED FRACTIONS IT CAN PRODUCE.

1/NMFS - RICE ET AL, 1975."ACUTE TOXICITY AND UPTAKE-DEPURATION STUDIES WITH COOK INLET CRUDE OIL, PRUDHOE BAY CRUDE OIL, NO. 2 FUEL OIL AND SEVERAL SUBARCTIC MARINE ORGANISMS."2/BATTELLE PACIFIC NORTHWEST LABORATORIES. 3/TEXAS A & M - ANDERSON ET AL 1974. MARINE BIOLOGY 27, 75-88. 4/MOORE ET AL, 1973."A PRELIMINARY ASSESSMENT OF THE ENVIRONMENTAL VULNERABILITY OF MACHIAS BAY, MAINE TO OIL SUPERTANKERS." RALPH PARSONS LABORATORY REPORT #162.

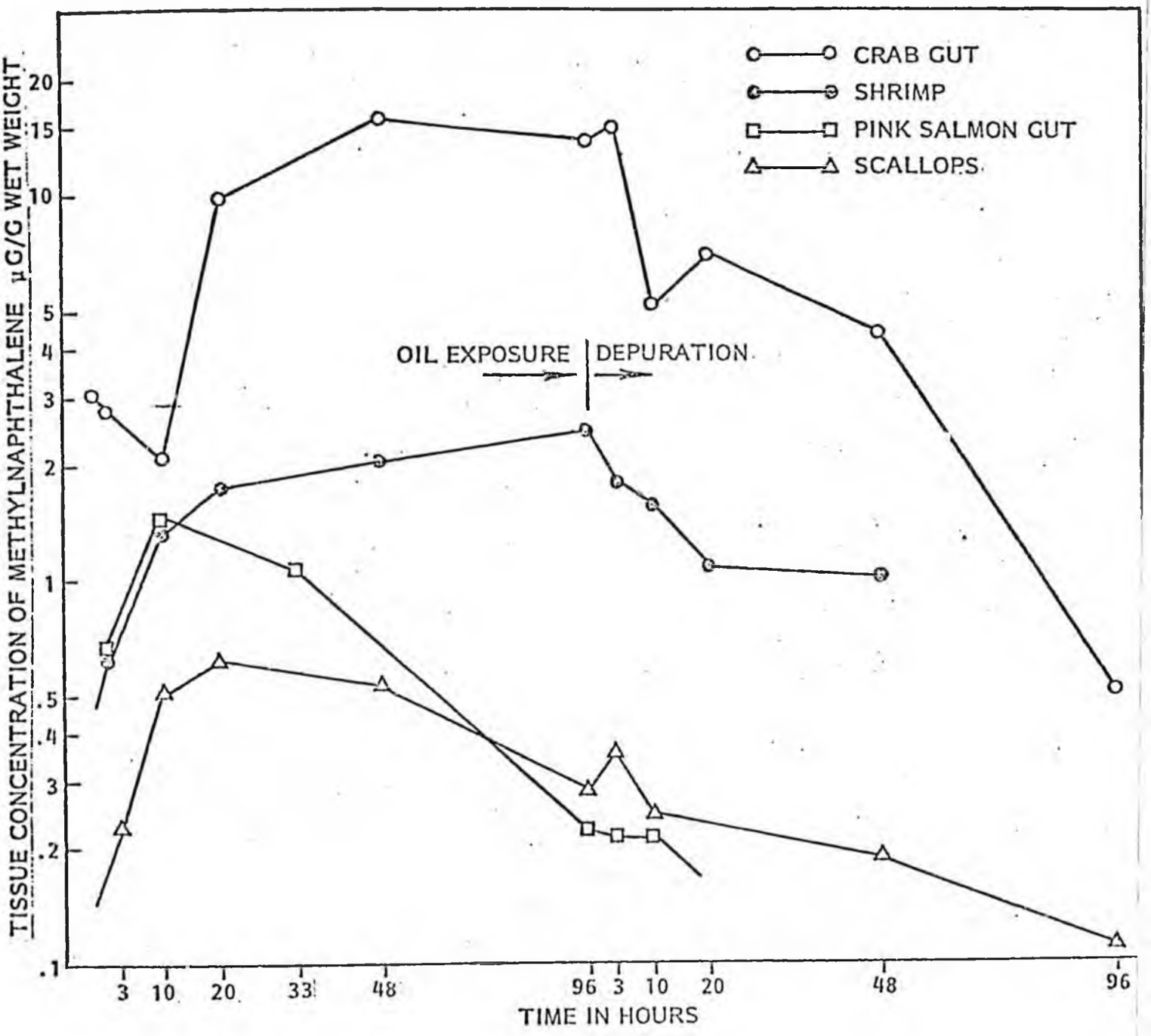


Fig. 2 .. Comparison of methylnaphthalene accumulation in juvenile king crab gut, whole shrimp, pink salmon gut, and whole scallops exposed to the water-soluble fraction of Cook Inlet crude oil. Methylnaphthalene accumulated to a greater extent than any other aromatic compound in these tissues. Concentrations during exposure were approximately equal.

2

TO
HOUSE RESOURSE COMMITTEE
STATE OF ALASKA
CHAIRMAN: NELS A. ANDERSON

STATEMENT CONCERNING DRILL RIG
"GEORGE F. FERRIS" AND ITS
ACTIVITIES AS IT MAY RELATE TO
OIL DRILLING IN KACHEMAK BAY
AND COOK INLET

PREPARED BY: RALPH OXENRIDER
OFFSHORE CONSTRUCTORS INC.
4250 WILSHIRE BLVD.
LOS ANGELES, CALIFORNIA 90010
REPRESENTATIVE OF OWNERS

April 8, 1976

The "George F. Ferris" is a four legged jack-up type oil drilling barge with no propulsion of its own. It is towed from location to location by ocean going tow boats, usually two, with a combined horsepower of 6000 H.P. or more.

During tow the legs of the Ferris are raised to a predesignated position giving the unit a minimum draft of 19 feet. When the rig arrives at its location it is held in position by means of large anchors controled by winchs on board. The legs are lowered to the bottom at a rate of 40 feet per hour by means of a hydraulic jacking system which also elevates the rig out of water when the bottom bearing becomes sufficient to carry the load.

After the elevating procedure is completed the drilling mast is raised and drilling commences immediately. The anchors are usually recovered immediately by means of hoisting them with winchs on the supply boat and hauling in the wire to hang the anchors on the rig clear of the water.

The Ferris first arrived in Kachemak Bay on August 26, 1974 and proceeded to anchorage in Jakolof Bay for inspection at the conclusion of the tow from Long Beach, California before proceeding to its first drilling assignment at Kasilof in Cook Inlet. The Ferris proceeded to Kasilof on September 2 and 3, 1974 and commenced drilling on September 4, 1974.

This assignment continued until January 7, 1975 at which time the job of lowering the Ferris began. During this process on January 9, 1975 the jacks on one of the legs broke. Lowering operations could not be continued until repairs were made or an alternate method of removal was devised.

Engineers from our company and technical consultants from many fields immediately convened in Kenai to work out the fastest and safest way to get the Ferris off this location. Several alternatives were being worked on simultaneously. It as decided that demolition of the jacks, allowing the

Ferris to drop into the water, was the most expeditious when the entire spectrum of our position was considered.

The demolition was successfully executed January 29, 1975 with flawless precision. The United States Coast Guard had been advised of all operations and were in attendance. Local agencies kept advised were the fire and police departments. Anchorage arrangements in the Port of Homer were arranged in advance.

The Ferris arrived in Homer on January 31, 1975 and anchored up as planned with no complications. The job of evaluating damage and activating repairs began immediately.

The Ferris entered Kachemak Bay on a planned course that was proposed at that time as a corridor for commercial vessels entering Kachemak Bay. Any minor alterations to this course were made to avoid crab pots in this corridor. It was strikingly evident that no attempt had been made by crab fishermen to leave this corridor clear of crab pots. In that respect no corridor exists.

This writer was on board the lead boat, the Norma Ann II, which traveled the full length of the entrance course and back to the Ferris four times between 6 A.M. and 9 A.M. spotting concentration of crab pots and relaying this information back to the tugs. It is my opinion that the tow boat skippers did an outstanding job of avoiding as many crab pots as they did. I boarded the Ferris approximately 9 A.M. about seven miles from the end of the Homer spit. My first act upon boarding the Ferris was to make a full circle search for crab pot markers and I found and recorded them all, a total of eight. These same markers were still attached when we arrived at the final anchorage site at noon. There were no more.

Immediately after recording the attached pot markers I went to the

Heliport deck and remained there for the completion of the tow. From this vantage point crab pot buoys were readily visable for a considerable distance. From the time I arrived on the Heliport until the tow was completed the Ferris definitely did not run over any crab pots.

The entry of the Ferris into Kachemak Bay in darkness has been criticized by Mr. Ken Moore. I wish to answer that criticism to this committee because I feel his criticism, with all due respect to Mr. Moore, is based only on his concern for the protection of the fishermens crab pots rather than the real issue involved which are the preservation of life and property, the preservation of the environment, and the discharge of these duties with competence.

The Ferris was a crippled barge to the extent that the legs were being held up with temporary locking pins, well sufficient for this tow in good weather. It would have been foolhardy to hold this tow in the outer bay for any reason and allow it to be caught in a storm which would cause undue stresses on the holding pins with the possibility of the loss of a leg. This is why the Norma Ann II preceeded this tow by 2 to 3 hours to confirm sea conditions and order a turn around if conditions were doubtful. The entire operation was planned to take advantage of the usual early morning calmness as well as favorable tides. An operation of this magnitude being completed in two and a half days with the only adverse effect being the collection of a few crab pots in my opinion deserves credit rather than criticism.

The question of the legs of the Ferris striking the ocean floor during jack up operation thus crushing crabs and damaging the natural environment has been publicly voiced by the Kachemak Bay Defense Fund group and by Mr. Lorian Flagg and Dr. Weennekens of the State's Fish and Game Department

with the implication that this will do considerable damage to the marine habitat of the ocean floor.

This is a serious allegation and I prsent the following facts so this committee will evaluate the protection of the marine habitat from a total use viewpoint rather than an individual use viewpoint.

The Ferris has four legs each covering 256 square feet of bottom area for a total of 1,024 square feet each time the Ferris is set up. I cannot imagine a crab or fish remaining under these legs as the legs descend to the bottom at the rate of 8 inches per minute but if they did reamin there, they would surely be crushed. This operation could conceivably take place four times per year but very unlikely that often in Kachemak Bay.

In contrast the crab fishing industry reportedly has 2,500 or more King crab pots fishing Kachemak Bay. The average of these pots cover 36 square feet each and weigh an average of 600 pounds. They descend to the bottom with sufficient speed and force to kill King crabs if struck by one. This fleet of pots striking the bottom with a killing force each time they are set out cover an area of 90,000 square feet. Assuming these pots are set out once a week for 20 weeks per year the total impact area, to say nothing of dragging during storms, is 1,800,000 square feet. This is more than 1,700 times the damage area created by an oil rig for each set up.

I respectfully request this committee give credit where credit is due and give the oil rigs credit for doing minimal damage to the bottom environment rather than serious damage as the allegations would like you to believe.

We are by no means suggesting criticism of practices in the crab fishing industry that are a necessary function of their industry. They produce a valuable and necessary product for the benefit of our entire sociaty. It is their individual inherent right to engage in this industry in the sovereign

waters of the United States. The same standards of evaluating the degree of controls on any one industry should apply to all industries.

Another erroneous allegation, made by Mr. Ken Moore, contained in a movie entitled "Kachemak Bay, Problems of Progress" produced by the State of Alaska with Federal funds and State Tax funds, and circulated primarily by the State of Alaska, implies that Offshore Constructors, Inc. dealt unfairly with the fishermen as to the settlement of their crab pot claims.

We wish at this time to refute these allegations and state to you that most of the evidence supplied by the claimants did not substantiate their claims. The fact is that most of the claims were rendered invalid by virture of their own evidence porvided.

We know the course of the Ferris through Kachemak Bay and we plotted this accurately on a chart. Each individual claimant plotted the position of his crab pots on an identical chart. We overlayed the two charts and if the Ferris passed through the claimants pots we made a settlement with him. If the Ferris did not cross through the claimants pots we did not pay any part of his claim. It was just as simple as that.

There are other significant facts that bear on the question of fair settlement. One pertains to the fact that from 3 to 5 days immediately preceeding the arrival of the Ferris there was a storm of considerable intensity in Kachemak Bay with the result that several crab pots were either dragged away from their original placement or their buoys torn loose and lost. This is substantiated by a second fact that some of the fishermen did hire a local helicopter and did go in search of their pots because they could not find them. This opens a new demension of settlement. We have offered to pay for pots found on the Ferris belonging to one particular party even though his pots were not in the path of the Ferris. This party rejected

the offer to settle for payment of the pots found on the Ferris so to this date there is no settlement completed. The door is still open on this claim.

It is common knowledge that crab pots are shifted during the course of a storm. This is an "Act of God" and who knows where they are shifted to. It appears that critics of our settlement feel that the Ferris should indemnify their losses for "Acts of God". I wish we could find a sponsor that would do that for us. We pay insurance premiums for this sort of coverage.

There have been various allegations made as to possible damage caused when the "David Foss" struck a submerged object and sank while we were trying to re-float the "Ferris" and since the "David Foss" was servicing the "Ferris" it is our fault that it sank.

We are curious as to how a law should be written to prohibit tugs from assisting a drilling barge in distress without also preventing these same tugs from assisting ships or fishing boats in distress. Who would decide who was to be saved and who was to be abandoned when a vessel is in distress. Obviously these allegations are biased and completely invalid.

In the film "Kachemak Bay, Problems of Progress" Mr. Ken Moore alledges that he was hired, or had an agreement, with Shell Oil to the effect that we were to pick him up in a helicopter prior to entering the bay and he could guide us through the crab pots. He said we did not bother to come get him and we had the helicopter tied down on the helicopter deck, further infering we had no intention of using his services.

Shell Oil did inform us they intended to make such an arrangement with one of the local fishermen, however for one reason or another we were never informed who the gentleman was that we were supposed to pick up. In lieu of this we hired, and had on board, a pilot from the Homer Pilots Association.

What Mr. Moore did not tell you is that he agreed to assist us providing

he was paid one hundred dollars in advance and that if he was not paid in advance he would not go. The fact is he was not paid so would not have come to assist us had we gone after him.

Mr. Moore's reference of the helicopter being tied down can only be viewed as an attempt on his part to discredit Offshore Constructors Inc. in the eyes of the public. The facts are that every piece of equipment on our barge, including the helicopter, is tied down during a tow just the same as Mr. Moore's crab pots are tied down when he goes to sea. I believe the intent of his implications speak for themselves.

The Ferris was towed by the "Phillip Foss", owned by Foss Launch & Tug and the "Sea Racer", owned by Crowley Maritime Corporation. These boats each carry a Captain, First Mate and Second Mate all licensed people and all with considerable experience in these waters. Captain Allen H. Anderson, the skipper of the lead tug, the "Phillip Foss", was sent up here expecially for this tow because he is particularly familiar with bringing heavy tows into Kachemak Bay. The fact that the most experienced people were intentionally gathered, using the latest equipment in the state of the art, planned in detail well in advance, and executed with flawless precision, certainly should disqualify any allegation of misconduct. It would be interesting to know by what credentials our accusers derive their authenticity to be a creditable critic.

Respectfully submitted without prejudice,

Ralph R. Oxenrider

Ralph R. Oxenrider
Vice President
OFFSHORE CONSTRUCTORS, INC.

City of Seldovia
P. O. DRAWER B TELEPHONE 234-7643
SELDOVIA, ALASKA 99663

HONORABLE NELS ANDERSON, CHAIRMAN

NATURAL RESOURCE COMMITTEE

HOUSE OF REPRESENTATIVES

POUCH V

JUNEAU, ALASKA 99811

DEAR SIR,

MY NAME IS ED GLOTFELTY, CITY MANAGER OF THE CITY OF SELDOVIA. I WOULD LIKE TO TESTIFY AGAINST CSHB-626. AND EXPLAIN HOW I VIEW THE IMPACT THAT OIL AND GAS DEVELOPMENT WOULD HAVE ON THE CITY OF SELDOVIA.

A PUBLIC MEETING CONCERNING CSHB-626 WAS HELD IN SELDOVIA LAST MONTH. MR. BOB PALMER WAS THERE REPRESENTING THE GOVERNOR. ALTHOUGH THE MEETING WAS MORE OF A PRESENTATION OF THE VIEWS OF THE GOVERNOR AND THE DEPARTMENT OF FISH AND GAME. THERE WAS A VOTE ON THE TWO PARTS OF THE BILL. THE VOTE WAS 22-23 AGAINST OIL DEVELOPMENT IN KACHEMAK BAY. AND THE VOTE ON THE MARINE SANCTUARY WAS OVERWHELMLY AGAINST THE MARINE SANCTUARY IN KACHEMAK BAY.

THE ECONOMY OF THE CITY OF SELDOVIA IS PRESENTLY IN A DEPRESSED POSITION. SELDOVIA IS A ONE INDUSTRY COMMUNITY, AND THAT INDUSTRY IS DEPRESSED BECAUSE OF THE RELATIVELY POOR CRAB SEASON THIS PAST FALL AND WINTER A FISHERMAN STRIKE IN AUGUST AND EXTREMELY HIGH WINDS, HEAVY SEAS, AND

MASSIVE AMOUNTS OF ICE IN THE INLET AND BAY PREVENTED THE BOATS FROM FISHING REGULARLY THIS PAST KING CRAB SEASON. AND THEN THIS PAST WEEK THE STATE OF ALASKA IN THEIR INFINITE WISDOM DECIDED TO CLOSE THE KING CRAB SEASON WITH ONE MILLION THREE HUNDRED THOUSAND POUNDS OF KING CRAB QUOTA UNCAUGHT.

WITH ONLY ONE INDUSTRY IN A COMMUNITY AND WITH THAT INDUSTRY DEPRESSED THE ENTIRE ECONOMY IS DRASTICALLY AFFECTED.

SELDOVIA, NEEDS A SECOND INDUSTRY AND WE FEEL THAT THE PETRO-CHEMICAL INDUSTRY WOULD BE A GREAT ASSIST TO OUR CITY.

IF THE STATE OF ALASKA CONDEMNS THE LANDS THAT THEY HAVE LEASED TO THE OIL COMPANYS, AS PROPOSED IN CSHB-626, WE FEEL THAT THE STATE WILL HAVE RENEGED ON A COMMITTMENT. THAT WILL HAVE GREAT EFFECT ON FUTURE CREDITABILITY OF THE ENTIRE STATE. AND TO USE THE MARINE SANCTURAY CONCEPT AS A MEANS TO CONDEMN THE LEASES, FURTHER COMPOUNDS THE CREDITIABILITY OF THE ACTION.

WE WOULD, HOWEVER, SUPPORT SENATE BILL-720 WHICH SEEMS A REASONABLE APPROACH TO THE COMPLEX SUBJECT.

WE DON'T FEEL THAT THE WHOLE OF KACHEMAK BAY SHOULD BE A STATE PARK.

THE ECONOMIC BASE THAT THE PETRO-CHEMICAL INDUSTRY WOULD OR COULD PROVIDE FOR OUR COMMUNITY WOULD BE MAJOR. AND THERE HAS BEEN INTEREST SHOWN ON

THE PART OF THE PETRO-CHEMICAL INDUSTRY TO DEVELOP A STAGING AREA OF MAJOR PROPORTIONS IN THE SELDOVIA AREA TO SERVICE BOTH THE DEVELOPMENT IN KACHEMAK BAY AND THE LOWER COOK INLET.

THE SELDOVIA NATIVE CORPORATION HAS LAND ACROSS SELDOVIA BAY WHICH IS OF INTEREST TO THE PETRO-CHEMICAL INDUSTRY AS A STAGING AREA. FOUR MAJOR COMPANIES HAVE HELD MEETING WITH THE NATIVE CORPORA ,ON THEY ARE BRITISH PETROLIUM, EXON, SHELL AND CITY SERVICE.

THESE LANDS MEET THE OIL INDUSTRIES MAJOR REQUIREMENTS FOR A STAGING AREA,

1. IT IS ADJACENT TO DEEP WATER,
    a, A DOCK COULD BE BUILT TO HANDLE LARGE TANKERS
    b. DOCKS COULD BE BUILT FOR BARGE UNLOADING
    c. IT IS ICE FREE
2. SUFFICIENT LAND IS AVAILABLE FOR STORAGE.
3. FRESH WATER AVAILABLE.
4. POWER IS AVAILABLE ACROSS THE BAY IN SELDOVIA.
5. TELEPHONES ARE AVAILABLE IN SELDOVIA.

THE CITY OF SELDOVIA WOULD ALSO GAIN MANY BENEFITS FROM A SECOND ECONOMIC INDUSTRY IN OUR AREA. THE BOROUGH ASSESSOR STATED THAT WITH THE DEVELOPMENT OF NEW HOUSING UNITS ALONE THE COMMUNITY WOULD INCREASE ITS ASSETS EVALUATION BY ONE-HALF THE SECOND YEAR OF DEVELOPMENT.

AND IF A DEVELOPMENT OF LOADING AND DOCKING FACILITIES BECAME A REALITY THE EVALUATION WOULD TRIPLE. HIS INFORMATION IS BASED ON SIMILER DEVELOPMENTS IN THE NORTH KENAI AREA.

WITHIN THE CITY LIMITS WE HAVE AVAILABLE INDUSTRIAL LANDS THAT SERVICE INDUSTRIES WOULD REQUIRE TO SUPPORT THE OIL INDUSTRY WE HAVE APPROXIMATELY 16 ACRES OF LAND ZONED INDUSTRIAL. DOCKING AND WHARFAGE FACILITIES ARE ALREADY BUILT. SMALL BOAT HARBOR, POTABLE WATER WHEN OUR NEW SYSTEM IS COMPLETE. AND THROUGHOUT THE CITY AND OUTLYING AREAS THERE ARE ` AVAILABLE FOR THE CONSTRUCTION OF RESIDENTIAL HOMES FOR THE HOUSING THAT WOULD BE NEEDED.

WE HAVE RECEIVED INFORMATION BOTH FROM PRIVATE SOURCES AND FROM THE OIL COMPANYS THAT THE BIOLOGICAL INFORMATION THAT HAS BEEN DISPURSED BY THE STATE ADMINISTRATION CONCERNING THE EFFECTS OF OIL SPILLS IN THE WATER OF KACHEMAK BAY, IS GREATLY EXAGERATED. AND WE WOULD RECOMMEND A YEARS MORATORIUM TO PROVIDE RELIABLE BIOLOGICAL INFORMATION ON THE BAY BEFORE PRODUCTION DRILLING. WE UNDERSTAND THE MAJOR CONCERN IS NOT WITH AN OIL SPILL OR ACCIDENT FROM EXPLORATION OR PRODUCTION, BUT THAT THE MAJOR DANGERS ARE FROM SHIPPING ACCIDENTS. THESE DANGERS WE LIVE WITH NOW. THE MAJORITY OF ALL TANKERS GOING TO AND COMING FROM THE UPPER INLET, PASS SELDOVIA EVERYDAY TO UNLOAD AND LOAD A SHIP PILOT. A MAJOR ACCIDENT OF THE PROPORTION AND MAGNITUDE THAT WOULD BE SUFFICIENT TO BE HARMFUL TO THE RENEWABLE RESOURCE COULD VERY WELL HAPPEN AT THE PRESENT TIME AND IT IS OUR CONTENTION THAT EXPLORATION WOULD NOT SUFFICIENTLY INCREASE THIS PROBABILITY.

THE MAJOR CONCERN EXPRESSED IN THE COMMUNITY IS THAT IF OIL EXPLORATION AND DEVELOPMENT DOES TAKE PLACE IN KACHEMAK BAY, THE LOWER COOK INLET OR ELSE WHERE IN ALASKAN WATERS, ARE THAT STRICT AND ADEQUET SAFEGUARDS ARE EMPLOYED. CERTAINLY WE HAVE THE TECHNOLOGY TO PROVIDE THE SAFEGUARDS NECESSARY IN THIS INDUSTRY (WE CAN PUT MAN ON THE MOON).

THE FISHERMEN ARE CONCERNED WITH A WORKABLE ARRANGEMENT BETWEEN THE TWO INDUSTRIES SO THAT FISHING GEAR LOSS DUE TO THE PROPOSED INCREASE OF SURFACE TRANSPORTATION. AND MOST FEEL THAT AN ADEQUET SOLUTION TO THIS PROBLEM CAN BE WORKED OUT.

IN CONCLUSION: THE CITY OF SELDOVIA WOULD BENEFIT THROUGH, INCREASED EMPLOYMENT AND FINANCIAL STABILITY THROUGH A STABLE ECONOMIC BASE.

IF THE PETRO-CHEMICAL INDUSTRY BUILT A STAGING AREA IN THE SELDOVIA AREA, WE FEEL THAT WITH ADEQUET SAFEGUARDS AND CLOSE WORKING RELATIONSHIP BETWEEN THE PETRO-CHEMICAL INDUSTRY, THE COMMUNITY, THE FISHERMEN, THE NATIVE ASSOCIATION AND THE KENAI PENINSULA BOROUGH, THE CITY OF SELDOVIA WOULD GROW AND PROSPER WITH THE DEVELOPMENT OF NON-RENEWABLE RESOURCES AS WELL AS THE RENEWABLE RESOURCES OF THE WATER OF ALASKA.

ADOPTED: March 24, 1975
VOTE: UNANIMOUS

OBJECTIVES OF THE CITY COUNCIL
HOMER, ALASKA

It shall be the basic objective of the Common Council of the City of Homer, Alaska to continue to strive to establish a municipal government that most efficiently provides those services desired by the greatest number of its citizens within the economic boundaries prescribed by those citizens.

To accomplish this basic objective, the following objectives and goals are hereby adopted by the Common Council of the City of Homer, Alaska:

1. To provide an adequate and healthful water supply for all of its citizens.

2. To provide an adequate and properly maintained sewage collection system and treatment plant.

3. To provide the necessary law enforcement to protect the citizens safety and property.

4. To promote its Port facilities to full utilization and to plan for its further development as necessary.

5. To plan and promote improvement and enlargement of its boat harbor facilities.

6. To encourage the proper construction of streets and provide for adequate snow removal and maintenance of such streets.

7. To plan for and develop a drainage system for the area.

8. To actively pursue the acquisition of land within the boundaries of the city to be set aside for the purpose of parks and recreation areas, bike trails, and to preserve the environmental balance necessary in development of a drainage system for the area.

9. To create a climate that will assist and support the development of all the natural resources within the purview of its environs to broaden its economic base in order to increase the opportunities for the present and future citizens without the degradation of the prospective long term use of any natural resources.

10. To create a climate that will assist and support the establishment of that industrialization necessary to provide employment for its citizens.

11. To create a climate that will assist and support the maintenance of financial institutions to provide adequate and timely capitol for construction of homes and necessary businesses to properly services its citizens.

12. To create a climate that will assist and support the development of tourist facilities that will encourage the orderly enjoyment of the recreation potential of the area.

13. To promote the development of health care facilities adequate to care for its population, number and make up, at any stage of growth and economic capability.

14. To utilize all means and technology and regulations to protect the environment and economy.

15. To provide pay, benefits, training and working conditions for its employees that are within the capability of the economic base and standards for like employment.

16. To cooperate with all borough, state and federal agencies which can assist in obtaining the objectives of the Council and to provide for the general welfare of its citizens.

17. To assist any citizen with information on city government and other government functions that are reasonably available.

18. To encourage participation by its citizens in its own government.

19. To keep its citizens informed of its actions by furnishing of all information to the media available for dissemination of such in the area.

It will be the policy of the Council to review these objectives in January of each year.

TESTIMONY FOR NATURAL RESOURCES COMMITTEE

April 9, 1976

I am Hazel Heath, Mayor of the City of Homer for nearly eight years. I am President of the Over All Economic Development Program for the entire Kenai Peninsula Borough. I serve as a member of the Governor's Tourism Advisory Board; as a member of the Alaska State Chamber of Commerce Board of Directors and am also a member of the State Board of Directors for the Alaska Visitors Association. I am a member of the Kenai Peninsula Community College Advisory Committee. I own and operate Homer Artists--an Art Gallery with art supplies and a gift shop where I sell paintings and craft items made by local artists.

Now--the situation in Kachemak Bay.

As the Mayor of the City of Homer I would like to give you four of the nineteen objectives of our City Council:

No. 4. To promote its Port facilities to full utilization and to plan for its further development as necessary.

No. 5. To plan and promote improvement and enlargement of its boat harbor facilities.

No. 9. To create a climate that will assist and support the development of all the natural resources within the purview of its environs to broaden its economic base in order to increase the opportunities for the present and future citizens without the degradation of the prospective long term use of any natural resources.

No. 10. To create a climate that will assist and support the establishment of that industrialization necessary to provide employment for its citizens.

In view of the situation in Kachemak Bay, I believe the last one is most important. We need industry that will provide employment. Tourism and fishing are good but they don't give us a broad enough economic base. I believe development of the oil leases in Kachemak Bay would strengthen our potential for such an economic base.

And speaking of "oil leases in Kachemak Bay", I get the feeling that most people feel that the Homer Spit will be surrounded by platforms and drilling rigs. The leases in question are so far out into what most of us consider Cook Inlet, I doubt if the platforms could be seen from Homer.

As President of the OEDP, while the group has not formally passed a resolution on the Kachemak Bay situation, we do believe in multiple use of the resources within the Borough.

We believe in the development of the gas and oil resources with proper safe guards to protect the fisheries. Our purpose is to encourage economic development for all areas of the Borough.

As a member of the Governor's Tourism Advisory Board and also of the Alaska Visitors Association Board of Directors, I believe in the tourist industry. It is one of the most important industries in the State but we need more than that!

The Alaska State Chamber of Commerce is based on good business and development within the State.

As a member of the Kenai Peninsula Community College ~~xxxxxx~~ Advisory Committee I am proud that our facility is able to offer a very comprehensive course in Petro-Chemical studies. We are able to train students for jobs in the industry so naturally we are FOR the development of our gas and oil potential within the Borough.

I have been a resident of Homer since 1946. It has been good to me and I love the area. I expect to spend the rest of my life in Homer. I voted for Alaska Statehood because I felt we were being governed by people in Washington, D.C. who were not knowledgable concerning Alaska and its affairs. I am concerned that Alaskans are being hampered now by too many unnecessary laws.

I do not believe we need to make Kachemak Bay a complete marine sanctuary. A critical habitat as it now is created no hardship. Let's leave it that way!

Thank you for your time!

House Resources Committee

Mr. Chairman; Members of the Committee; Ladies & Gentlemen:

My name is Bob Barnett - I'm from Homer

I am a 54 year resident of Alaska. I have worked in the placer mines at Flat near Iditerod. I was employed by the Alaska Railroad in engine sdrvice for over 8 years. I have worked in construction as a plumber & steamfitter and operated my own plumbing, heating, and hardware business for many years in Anchorage. I am a 12 year resident of Homer and have owned & operated a shrimp boat with otter trawl most of the time for the last 8 years. I own my own home and have a substantial investment in real property in Homer.

The economy of Homer, as it appears to me, is supported primarily by fishing and food stamps. The fishing industry has its good years and bad, but the food stamp sector seems to grow steadily as the population increases.

Kachemak Bay has been declared a Critical Habitat area by the State. This action, in my opinion, provides all the authority necessary for the State Department of Fish & Game to properly supervise and protect the fishing resource. If the State uses this authority wisely, it will not only protect the "Fishing industry" but it will coordinate the fishing activity with the activity of other industries including the "Oil Industry". In fact, in my opinion, all State personnel involved in resource management are morally and legally obligated to this end. The State must be made to realize that the economy is an important factor to be considered in the overall administration of State affairs.

In my opinion a bill to create a Marine Sanctuary or a State Park is completely unnecessary, and a bill to void the Kachemak Bay Oil leases is ridiculous.

I believe the only problem of any consequence is a traffic problem. Traffic in the Bay is not all oil related and could be controlled to the extent that conflict between industries could be eliminated. The creation of a corridor is a big step in the right direction and with proper administration and cooperation should eliminate most of the problems.

I am opposed to any bill creating coastal zone control by the State. I believe in stronger local government as opposed to government by State Commissioners.

I believe the State should encourage the development of natural resources and promote the multiuse concept of public land. Refers to Article VIII of State Constitution

I believe that the publicity in the news media from Homer this past year or more has been biased in favor of the radical environmental groups. Public hearings have been loaded with newcomers, many who do not believe in the work ETHIC concept, many with little or no investment in the community. The Business people, the old timers, the home owners, and people with investments who have much at stake have expressed essentially the same philosophy that I have tried to express, but it gets little if any publicity. I would refer you to the poll

that was conducted by Mrs. Cason with the help of many local people. The Environmental groups appear to be well financed and smart enough to put people like the "Fishermen" in the front lines to give them credibility. They have apparently put a lot of money into the campaign against oil in Kachemak Bay and my guess in that much of their support comes from out-of-Homer and out-of-state.

In conclusion, I say as I have said many times in the past, I sincerely believe that we can have fish and oil, too. There are no problems between the two industries that cannot be resolved by men with common sense and a cooperative attitude.

Thank you.

Robert E. Barnett

To: House Resource Committee

Re: Kachemak Bay Legislation

WRITTEN TESTIMONY

Presented by Velton Cason

My name is Velton Cason. I am a science teacher in the Homer High School. I have a background in Agriculture, Physics, Chemistry and Biology. I have been a resident of Homer for 19 years.

The purpose of this statement is to discuss, in general terms, a report entitled "Kachemak Bay - A Status Report" which was expounded on at the "town meeting" in Homer on February 17, 1976.

This report was prepared by the staff of the Alaska Department of Fish and Game.

Further, the report appears to have been hastily prepared and not to have recieved any Departmental review or editing, as indicated by inconsistancies present. Also, the report is presented in an unscientific manner and is written in an emotional style.

We in Homer hoped the report would be a factual statement of the ongoing studies in the area. The report as presented does NOT meet this objective.

The report is divided into 5 sections, having the stated purpose to "discuss and summarize salient findings emerging

from ongoing field studies and analyses of current literature as they relate to man's disruption of the marine environment, especially by oil and gas related activities".

Section I and II addresses the ongoing studies. Section III addresses a literature review. Unfortunately, Sections IV and V are philosophical in nature and lack objectivity necessary for a technical report or to achieve the stated purpose.

Section I deals with the Fish and Game Department tracking studies of water circulation and transport in and around Kachemak Bay. At the Corps of Engineers Hearing (1974) in Homer, there was much discussion of the Kachemak Bay "gyre" which would act as a "nursery" for drifting marine species. The subject report states "residence time of the waters within the Bay appears to be 20 days at the most....". This is not sufficient time for planktonic existance of the larval animals. Thus the "gyre" theory is not applicable, as previously stated at the hearing.

The title of Section I is "The Marine Environment of Kachemak Bay". Surprisingly, there are no biological data presented in this section.

Section II is a recitation of fishery information divided into two parts: 1) historical review and 2) economics of Kachemak Bay fisheries. The economic discussion is highly subjective and thus lacks usefulness for decision-making.

I was surprized that the year 1973 was used as the base year for the economic review. I believe 1973 was a banner year and thus biases the results. Further, I am surprized that Kachemak Bay fish catches are not compared with the fish catches of the State as a whole. Such comparison would be instructive.

Haste appears to be the byword for the figures presented in Section II. Many of the figures do not state the units of measurements and thus are impossible to interpret.

Section III deals with "Sensitivities of Kachemak Bay to Man's Impact". Man's impact seems to be limited to oil and gas industry activities without regard to other stresses, such as logging, fishing, waste disposal or tourists. The singularity of purpose of this section is not indicated by the section title. I believe this oversight should be corrected, preferably by broadening the scope of this section.

Much of Section III deals with a recitation of the effects of oil on the environment. Basically, these spills are from tankers such as currently operate in Cook Inlet. Experience to date in Cook Inlet, from tanker spills, does support the authors' attempt to transfer the spill situations to Kachemak Bay. Of particular interest is the attemp to transpose a "Metula" size spill into Kachemak Bay. In the first place, no super tankers enter Cook Inlet. Secondly, the authors state, without support, an oil spill rate of 400 barrels per square mile. Lastly, no attempt has been made to relate this rate to the toxic effects cited in Table 24. The lack of such a

comparison is improper in a technical discussion. This oversight should be corrected.

Figure 54 appears to be a summary of the findings of the report. However, the figure is such a mass of typing it is virtually impossible to comprehend. Also, this figure appears to be a summary of the "worst of all worlds". I cannot believe oil can be produced and transported satisfactorily anywhere in the world if the statements shown in Figure 54 are true. I recommend this Figure be reviewed for accuracy. Further, my reading indicates that no permanent damage has been reported as the result of even the largest oil spill. The Santa Barbara, California spill area is reported to show no permanent adverse effects from that spill.

Section IV appears to be a discussion of the position taken by the Department of Fish and Game toward oil development in Kachemak Bay. The authors indicate their concern reflects the position taken by the citizens of the State of Alaska. I can assure you this is untrue for the Homer area. (Please refer to the testimony presented by Mrs. Cason, showing for Homer, that the stable citizens are <u>not</u> opposed to petroleum development in Kachemak Bay). I recommend that Section IV be removed from the report or supported with facts.

Section V addresses energy and non-renewable resources. Interestingly, the report states that the Department of Fish and Game have not been told the potential size of the Kachemak Bay field. No drilling has been permitted. Thus, it appears to me that it is impossible to define the field size when there is not

even information to indicate whether there is oil under Kachemak Bay.

In summary, I find the report difficult to interpret and lacking in objectivity. If the Department of Fish and Game has data to show the citizen of Alaska that petroleum development will be harmful to Kachemak Bay, I recommend they present it in a factual and objective manner. The present report does not meet the stated purpose to "discuss and summarize salient findings.." since findings are not presented - only opinions formed without support.

TESTIMONY ON KACHEMAK BAY LEGISLATION

BY JULIE CLUTTS

I am Julie Clutts from Anchor Point, Alaska, a small settlement on the Northeast boundary of Kachemak Bay. The business district is on the Sterling Highway, the residential areas follow the North Fork, the South Fork and the mouth of the Anchor River. The Anchor Point area is noted for seasonal King and silver salmon, steelhead and rainbow and dolly varden fishing in the Anchor River. Anchor Point is also the most westerly highway point on the North American Continent. My husband and I have owned and operated the Anchor River Inn for eleven years. We have 12 acres situated between the Sterling Highway and the Anchor River and adjacent to the Silver-King Wayside State Park. ~~We have built a [illegible] comfortable rooms all reasonably priced. We hope to complete [illegible] this year.~~

It should be apparent by our location and the nature of our business that we are interested in any action which would harm the propagation of marine life or people. However, our opinion on the proposed action by the State to renege on the Kachemak Bay lease sale or establish a marine sanctuary or tie up more land in a State park is not clear and I hereby hope to clarify it.

Ninty percent of our "tourist trade" are Alaskans moving around Alaska. In the summer most of our guests are federal or state employees, servicemen their families and visiting relatives. During the winter our guests are construction workers and fishermen. Oil oriented personnel stop in the year around. We are interested in all Alaskans but we are primarily interested the welfare of the local residents whom we serve 365 days of the year. They are our employees, our carpenters, our plumber, our banker, they are also our suppliers of seafood served in our dining room. They are our friends and neighbors too.

Most of the Kenai Peninsula homesteaders were able to prove up on their homesteads through the income they received working in oil development in the Swanson River oil field, for seismograph companies from the East Road in Homer to Clam Gulch on land and water. They worked as surveyors, cat skinners, drillers, juggies, deckhands, captains, cooks, mechanics, etc. Many fished during the summer and worked in oil research in the winter. Through this employment and the survival of many "little homesteaders" the peninsula grew. It grew through free enterprise not through dependancy on federal or state government agencies. The Anchorage, Fairbanks and Juneau areas were and still are dependent on those agencies.

The second generation finished school. (Teachers [illegible] students became the most rounded [illegible] because they [illegible] the highest [illegible] and the highest [illegible] in the state.) These youngsters [illegible] within the [illegible] the economy of the Peninsula was stretched a little thinner, [illegible] to "make ends meet". The hope that after all the searching for oil and likelihood of the assistance that "things will break [illegible]" [illegible]. By "things" we meant development of oil on or off shore. Now we have third generation peninsulians. Some already looking for work and many who will be looking within a very few years.

In 1972 my husband and I traveled 10,000 miles to Oklahoma, Texas, Los Angeles and back home. Our first vacation in thirteen years. We saw a lot of "grasshoppers" pumping away quietly, healthy crops of grain growing among the pumps and cattle drinking from their water troughs besides pumps. Our best day of sport fishing was the day we chartered a boat and fished in Long Beach Harbor near what appeared to be highrise apartments. In reality they were shells surrounding drilling rigs. They were attractive by day and beautifully lighted at night. (The most popular meal we serve in our dining room are jumbo prawns from the Gulf of Mexico. There are approximately 1,000 drilling rigs in that body of water.

I grew up with businessmen engaged in the commercial fishing industry. My father was a Puget Sound fisherman and a building contractor. He fished during the salmon runs and contracted to build houses during the slack periods. The summer fishing business was a family affair. We lived on the boat, a 52 footer, named "Arrow" My brother, sister and I loved every minute we spent on the boat. That phase of the fishing business ended for my family when my father met with an accident, was knocked overboard and drowned. We were all there but couldn't save him. My mother remarried a service man for Continental Can Company. We left Seattle and moved to Kake, Alaska. While he serviced the machines installed in Southeastern Alaska canneries our family lived in cannery quarters at Kake. Later we moved to Douglas. I remember the scowloads of fish dumped over the side because the run was greater than the cannery could process before they spoiled. The same situation experienced in Cook Inlet a short time ago. That time it was publicized because of the international interest, the Japanese processing barge was called too late to assist in saving the fish.

I have touched on the economic development of the Lower Kenai Peninsula through oil research, fishing, tourism and "ground support" for these industries. We could stop right here and say we've had all the economic development we need so let's just spend the rest of our days camping, picnicking, hiking in the woods, sitting on the beach gazing at the sunset, the little fishing boats upon the blue waters with the beautiful mountains in the background." This would be just great if it were not for several things. People get hungry while hiking, fishing boats need gas and oil to get from the shore to the sea or vice versa. People need shelter from the cold. They end up needing things which still cost money.

We could stop the growth in population if each resident would promise to stop adding little people. But you know they wouldn't buy that. Those little people grow up and leave the nest. They get hungry, they need shelter from the cold. They need a way to earn a living. They must have the opportunity to work at the jobs they are best suited for.

Based on what we have seen and personally experienced it is our opinion that:

1. No bill should be passed which would prohibit the development of oil or any other natural resource in our State. It is said that the State of Alaska receives more Federal dollars per capita than anyother state in the Union. When broken down from State to Borough to City the cost of administering government for the population of our State far surpasses the cost of administering a small city of 300,000. We must assume the responsibility of supporting ourselves.

2. The "know how" to insure compatability between all industries is available and can be applied when the environmental crusade simmers down and becomes more realistic. It is interesting to note that such nations as Britain and Norway, which do not have our tradition of evangelical reform, have no compunctions about offshore drilling. Precautions against environmental dangers are taken but the drilling gets done. Do we really think that Britain and Norway are more barbarous than we are? Or are they merely being more sensible?

3. The majority of the Kenai Peninsula residents were not only aware of the probability of the lease sales they were looking forward to the day.

4. The"polution" of the labor force on the Kenai Peninsula,in our State, and our Nation [illegible] must be reduced as much as possible. e.g. unemployment, welfare, apathy, etc. The elimination of this"polution" can be accomplished through industrial compatibility and technical assistance from enviornmental personnel hired by the State instead of "flat nos".

5. With regard to the marine sanctuary bill. We are against this action. We are not against marine sanctuaries as such, but we are against the motive for creating this action at this time. The same group of people who are pushing for this sanctuary today were fishing in Kachemak Bay for the past several years. Not until it became possible that the State Supreme Court could declare these leases legal did the move toward a sanctuary begin. This is an "Alaskan Watergate". The cry "environmentally unsound" is used in this case instead of the cry "mentally unsound" used after the procurement of an individual's medical records. Personal gain with no regard for others was the motive in both instances. However, this time public opinion is not so fast to get on the environmental band wagon. The evidence of this is contained in the recent poll of the local residents. This is also beginning to be public opinion supported by the Pacific Legal Foundation in California. Where the Sierra Club and similar organizations supports the way-out environmental charges this non-profit organization is lending a hand to those who are fighting back and saying "this has gone far enough" The people own State waters not just one group of people. Local residents who earn their living as marine pilots have just as much right to use the waters as fisherman or residents piloting supply boats. It was publically announced by Mr. Palmer over KBBI that drilling for oil did not hurt the propagation of fish. It is the shrimp that may be endangered. Since it has been stated in one report that it would be at least ten years before any damage to the shrimp could be ascertained now is the time to separate the shrimp cocktail from the meat and potatoes.

6. On the proposed State Park bill, we are against that. We believe that more emphasis should be put on giving our residents a place to work than setting aside more land for them to play on. What good is a play area to the man who can't afford to get there by boat or plane. We have enough land set aside for the financially sound sportsman.

7. On the proposal to renege on the oil leases. We are against this action too. It is our opinion that endangering the credibility of the State in future lease sales, selling bonds, etc borders on treason by our State administrators. No other business could do this and remain sound why should the State believe it can? We further believe that any consideration given to obligating Alaskans to repay twenty five million dollars plus interest and other costs without putting it before the people

Testimony on Kachemak Bay Legislation: Julie Curtis

is unavailable. It doesn't make any difference whether the funds come from a surplus fund, or should it become due or payables or taxes, it is still the people's money. And how that money is spent is the people's concern.

I believe you too now certain how the people from Anchor Point feel about the proposed Kachemak Bay legislation. We also believe that we have intelligent people managing the affairs of the State. When one remembers the day we all sat between our TV sets and watched three men ride around on the moon and heard them speak to each other while they were doing it we know that man's intelligence will solve this controversy too. It can do anything it makes it's mind up to and that is more than I can say for a camel....

Thank you.

Julie Curtis

THE SEA TRAFFIC PROBLEM OF KACHEMAK BAY

My name is Bill Miller. I have been in Homer since 1965 where I have lived with the problems of the fishermen. I am president and general manager of Alaskan Seafoods, Inc. which has brought over $20,000,000 of income to this area and furnished an average of 125 jobs to Homer residents. After living with the fishermen's problems almost every day I am now convinced that a great many of their problems are related to transportation management or perhaps because of the lack of management. I am convinced the transportation problems will continue to grow until all of the progress we have made in the field of economic development will be destroyed. For example, it is the suggestion made by a state representative that all of Kachemak Bay be turned into a park.

For the last ten years fishermen have been losing crab pots, lines and buoys to large vessels traveling through the area. Rafts of logs being towed by large tugs through rough seas often act as a huge sweep to wipe a bay clean from the buoys that are attached to fishing gear. Large tankers that come into the bay to change pilots have taken their toll of fishing equipment as they turn their vessels to reverse directions. I have experienced the situation personally when a large tanker turned among five of my own king crab pots while I accompained my son on a fishing trip. You cannot realize the frustration of watching counter revolving propellers gradually drawing the 50 inch buoys into the hugh blades and spitting out the pieces.

The kind of monitoring program I would like to see is very similar to the ones used in monitoring air traffic. The base of operations would be on state property located high on Bluff Point where it overlooks Kachamak Bay and lower Cook Inlet. Every ship of every kind coming or going through

this critical area must radio his identification number and get clearance to proceed further. Part of the procedure will be for the skipper to make his position known and obtain an assignment of a traffic pattern. Oil tankers will be assigned one corridor, fishermen another. Wherever practical, small boats and sports boats will be kept out of commercial lanes. Patrol boats on law enforcement activities of the State Fish & Game Department should have equipment aboard to identify and measure spills of petroleum products. The environmental control laws will be sufficient to adequately take care of this situation. The rules of the road will be enforced and violations will properly taken care of. The ever present problem of theivery of equipment and product can be effectively controlled by identifying fishing buoys from a tower located on Bluff Point. New radar equipment can locate boats and gear from distances approximating 50 miles. These signals relayed to the surface vessels will also relay information that can be most helpful to law enforcement officers.

But let us take a look at the fishermen's position today. We have a highly developed fishery that yields about 7 1/2 million dollars a year to the local community from Kachemak Bay alone. Homer also has a great potential from the tourist business. Agriculture with new techniques and new ideas in greenhouse production is offering exciting new investment opportunities.. Is it really any wonder that many people in Homer say, "Who needs the oil?" If the question is asked, "How come Alaskan Seafoods is advocating the development of oil, I will sum up our position by stating that we have to this date invested some $2,000,000 in buildings, boats and processing facilities. We have invested this money with the intent of operating a fish processing plant in Homer on a profit making basis. If for any reason the oil industry or any other industry should damage any part of the fishery resources that would result in a loss to our company or should the State of Alaska undertake any program that would result in a loss to this company it should be clearly understood the officer os this firm will take every measure possible under the law of this land to obtain full restitution

for the damages suffered. If, on the other hand we can be assured that neither the oil people nor the state will impose hardships upon us we shall expend every possible effort to protect their rights to grow and prosper as we expect for our own business.

HOUSE RESOURCE COMMITTEE

CONCERNING KACHEMAK BAY

TESTIMONY OF HUGH WATSON

My name is Hugh Watson. I have lived in Homer for 36 years. I am a fisherman and have fished this area more than 30 years and I intend to fish the Inlet this year.

I did not come down here to represent the fishermen and I certainly am NOT lobbying for the oil companies.

I came as a citizen of Homer.

The reason I am here is to make it known I am against making a marine santuary out of Kachemak Bay. The reason I am against the santuary is that I know beyond any reasonable doubt that it is just a beginning of what will take place.

The way the environmental groups have put pressure on everything that is proposed through politics and court action makes it clear to me. It is not improbable for them to say that this is a marine sanctuary where there isn't anything to be disturbed and they are fishing there. This must be stopped and they stop it.

This may seem far-fetched but it certainly isn't. It could go much further and I will not be surprised if it does. If this did happen you will have one more person on welfare and food stamps--ME!

I went to the meeting in Homer on the 17th of February to find out what a marine sanctuary really is and to hear about the proposed bill. Instead, all that was discussed was oil and oil leases. The sanctuary bill was not discussed at all.

As for the oil leases, I am sure that you have all made bad deals. I know I have. But when we made bad deals we did not renege on them. I believe we should do as a government what we would do as individuals. I do not mean to say that the leases were good or bad. I commend Leo on feeling that the state has leased the tracts in Kachemak Bay and that the state should honor them.

From what I have read the oil rigs in the Gulf of Mexico has had very little effect on fishing there. I believe with proper safe guards it is possible to have both fish and oil--I believe these safe guards are available.

Also, as a citizen of Homer, I believe we need both fishing and oil and all other industry that can safely be developed in the area. I would not want to see a petro-chemical plant on the Homer Spit. I have heard this was in the making but I doubt it.

Again, I will repeat myself--I am against making a marine sanctuary of Kachemak Bay.

Thank you for listening.

P. O. Box 115
Homer, Alaska 99603
April 9, 1976

Mr. Nels Anderson, Chairman
Natural Resources Committee
Alaska State Legislature
Juneau, Alaska 99801

Subject: Committee Substitute House Bill 626

Mr. Chairman, Committee Members, Ladies, and Gentlemen:

We, Virgo W. and Fred W. Anderson, brothers, have resided in the Kachemak Bay area for 53 years--one year at Seldovia and 52 years in Homer, Alaska. Our residences are on our original homestead in the heart of what is now the City of Homer, and we have a full view of the Kenai Mountains and Kachemak Bay. We believe that this fact of longevity and continuous residency in itself should establish our love of this country, our appreciation of the natural beauty, and our good faith in desiring to preserve the characteristics of the area which have had us magnetized for so long.

We have been fishermen or associated with the fishing industry all of our adult lives, as was our father before us. We built our own fishing boat in 1937 on the site which is now the Fred Anderson residence. We had an Alaska-Limit purse seiner built for us in Seattle in 1947 which we still own. These facts should establish our interest and concern for the fishing industry.

During our 52 years in Homer, we, as volunteers, helped to promote, establish, or build the first dock, the first telephone system, the first electrical system, schools, the first hospital, the first cemetery, the Volunteer Fire Department and Ambulance Service, the museum, and the Senior Citizens' Center. These facts should establish our civic concern for the area.

Hence, having the above concerns--environmental, economic, and civic--which are needed to make a good citizen of a community, we feel that it is our duty to make this presentation today regarding Committee Substitute House Bill 626.

We do not feel that <u>any</u> legislation of <u>any</u> kind is needed at the present time

in regard to Kachemak Bay. The oil leases are contractual obligations of the State of Alaska which should be honored unless the Supreme Court rules that they, for some technical reason, are invalid. The leasing program was public knowledge, & sanctioned and welcomed, for years before it became a reality. Those who say otherwise simply had no interest in the matter or did not reside in Alaska at all at the time of the leasing. Also, there already is a "Critical Habitat Area" designated in Kachemak Bay.

Much has been said in regards to the value of the fisheries resources of Kachemak Bay, and the implications are that these will be destroyed by the oil companies. A few facts warrant review:

From the earliest history of the community, few have derived their livelihood solely from fisheries--except those satisfied with a meager existence, or with no families to support, or without other obligations to meet. When the population grew to only a few hundred, it was recognized that port facilities were vital to the economic well-being of the community. The establishment of the first political subdivision--the Kenai Peninsula Public Utility District No. 1, under Territorial law--was primarily for the purpose of operating a dock. The freight operation, including a pipe line for unloading gasoline and oil, provided employment, as longshoremen, to many "fishermen". The profit from the dock operation, principally from Standard Oil Company, subsidized other public services and held the property tax rate down for many years. "Fishermen" also worked as carpenters, farmers, plumbers, electricians, school teachers, guides, etc., many leaving the community to find employment to supplement their income from fishing.

It was not until after the earthquake of 1964 that a significant seafood processing industry was established in Homer. Prior to that time, there had been only a few family-type operations. Why? If Kachemak Bay is the most productive of any Bay in the world, as some would have us believe, why hadn't there been an industry developed here before? The fact is, it was not economically feasible. It was not until after the earthquake when emergency funds were made available to build

a new dock, build a small boat harbor, and raise the road and land area on the Homer Spit that the idea of a major seafood processing plan was conceived. In spite of the public improvements, there still was not enough money forthcoming from the private financial sector to establish the processing plant. The citizens of the area, recognizing the need for some economic activity to create jobs, raised funds and established the Coal Point Development Corporation for the purpose of securing a low-interest loan from the Small Business Administration which, in turn, was loaned to Alaskan Seafoods, Inc. to build a plant. Many also purchased stock in Alaskan Seafoods. The City of Homer installed approximately four miles of water line, principally for the Alaskan Seafoods operation; and, of course, the costs are born by all of the taxpayers. Now, we are being told of the vast wealth of the fisheries, yet, in spite of the public aid (subsidy) to get Alaskan Seafoods into operation, and after ten years of operation, Alaskan Seafoods has never paid a cent of dividends to the stockholders! Because of the notoriously low wages paid to employees, the seafood processing industry has attracted mainly transients, and the goal of the community for stable employment of residents has never been achieved. If the fisheries resource in Kachemak Bay is so tremendous, why did Alaskan Seafoods actively work to prevent a second processor from ever getting started?

Shrimp has been singled out the value it represents to the economy. Have you been told that the dragging for shrimp in Kachemak Bay has been done by between two and four boats, each with two-to-three man crews, in a monopoly-type situation? With the advent of the Limited-Entry Program by the State, the entire Fisheries tends to become more monopolistic. Soon, in addition to the vast government loan programs for fishing vessels and gear, we will also have to loan the fishermen money to purchase permits. If the fishing industry is thriving, why can't money be borrowed from the private lending institutions? The fact is, the fishing industry is unstable, and the fishermen over-extend their credit from a sound financial viewpoint. This, in effect, means the industry is subsidized.

On the matter of pollution and destruction of the fisheries resources, the fishermen and the processors of seafood have been as guilty as anyone. Selfish interests have prevailed always over the public interest, often aided and abetted by the Fish and Game Department regulations and/or lack of enforcement. Some purpose may have been served in the hearings on H.B. 626 in that perhaps there is now a public awareness that regulations and enforcement are necessary in both the fisheries and oil industries; that all are guilty of past abuses; but that it is possible to work compatibly in the future in the public interest.

It is with nostalgia that most of us old-timers look back upon the "good old days", but growth of the Kachemak Bay Area is, and always has been, inevitable. Diversity of economic activity is necessary for stable, healthy growth, and for the people to maintain their pride and dignity of economic independence and self-reliance. This is a necessary ingredient in maintaining political freedom and our form of Democracy--a message which bears re-vitalising during this Bicentennial year.

To summarize our position, we do not support <u>any</u> Legislation on the matter of the Kachemak Bay oil leases. If the State Supreme Court rules that the leases are indeed valid, the oil companies should be permitted to get on with their task of oil production in the local, state, and national interest.

Respectfully submitted,

Virgo W. Anderson

Virgo W. Anderson

Fred W. Anderson

Fred W. Anderson

Homer, Alaska
March 27, 1976

The House Resources Committee

Dear Sir;

My name is Louis Gjosund. I came to Alaska the first time in 1926 on a cannery tender for Sunny Point Packing Co.. I fell in love with the countryand vowed to come back to live. This came true in1933. The depressionwas on in full force in the States; I left Seattle on a tradingboat in the spring, went to Bristol Bay. I fished there in a sail boat till 1953.

In 1944 we moved to Homer, but I continued going to the Bay to fish.I fished Cook Inlet for two years, drifting and seining, crab fishing, etc. Ran a cannery tender for two years, fished Cook Inlet for two more years and in 1960 I went back to Bristol Bay and fished there till 1975, when I retired , after 42 years of fishing.

In between fishing I have long shored here in Homer, from 1953 to the present time. On poor fishing years longshoring surely did help buy the groceries and pay the bills.We hadscows with oil drilling pipe and equipment, 2700 tons, put two shifts of Long shoreman working 12 hours each shift, and it helped the economyin Homer.We had 24 to 30 men working.

I would like to see the Port of Homer once again have some longshore work.We can't a l fish crab.

The drilling rigs up in the Inlet have been pumping oil for many years now, and no oil spills. What oil showed up was mostly from Anchorage sewers or ballast from tankers and crab fishing boats.

That has been corrected and all ballast is pumped ashore. Oil can be compatable with fishing, its done all over the world .The Gulf of Mexico proves that.The oil Companies have gone to great expense to see that no oil is spilled.

This is a poor time to have to pay back the 30 million dollars or more. Whenever we need new roads or school the Governing body of the State says there is no money, so where is it coming from?

It is about time the fisherman stop thinking of just themselves and acknowledge that there are other folks who want , and must make a living too. many men living in Homer might be able to stay home and make a living if there was more work here, where as they now have to leave home to do this.

Yours Truly

Louis a Gyosund

To: House Resource Committee

Re: Kachemak Bay Legislation

Testimony of Jane Cason

My name is Jane Cason. I have been a resident of Homer for 19 years. Most of this time has been spent as a teacher in the Homer schools. Last year I retired and currently own and operate a small store in Homer. As a business-woman I am deeply concerned about establishing a stable economy for Homer.

Homer is in need of industry to provide a basis for community development and economic security.

You are all aware there has been much resistance reported to expanding the Homer economy by permitting the petroleum industry to drill for oil in Kachemak Bay. I believe this is not the true position of the residents of Homer. Mr. Gene Browning, a retired fish processor and fisherman, a resident of over 30 years, and I recently developed and circulated an opinion poll. Over 700 voting residents responded by completing and returning the questionnaire. These citizens represent an average residency in Alaska of between 15 and 20 years. Thus, you can recognize that those who responded are long time residents of this state.

The overwhelming majority, 78%, stated they "believe industry will help the area". Further, 72% stated they "believe fishing and petroleum industries, with proper controls, are compatible in this area". 78% are property owners in the area.

These statistics appear at odds with opinions reported at the "Town Meeting" held in Homer, February 17, 1976. Thus the question was asked "did you attend the town meeting?". 71% of those polled said they did not.

This indicates to me that the poll represents the stable citizens of the area and that the opinions reported expressed at the "town meeting" are not representative of the stable long-time residents.

Now I would like to turn to my background of business. A successful business is built on trust between merchant and customer. This trust is established by agreeing to perform a service or sell a piece of merchandise which, when mutually agreed upon, is the basis for the transaction.

The current proposal to, in effect, recind the leases in lower Cook Inlet is unbusinesslike and can have continuing adverse effects on further state leasing. Think how my customer would react if I sold her a dress, collected the money, but refused to let her wear it. Word would get around quickly and my business would surely deterioriate. I believe the State of Alaska is courting the same fate.

Therefore, I wish to leave this committee with a few recommendations:

1) Act in a businesslike manner. To do otherwise will do the citizens an injustice.

2) Encourage a stable economic environment so the state can become self-sufficient.by virtue of a strong industrial base.

3) Permit the citizens to assist the state in becoming economically stable by encouraging oil drilling in lower Cook Inlet and Kachemak Bay. Experience in other states and nations shows fishing and petroleum industries are compatible.

4) Much of our area, especially up the peninsula and across the bay, is already a state park or national forest. We need revenues to help restore fisheries, to build roads, schools and hospitals. The Bay is already protected as a critical habitat. Please don't further restrict us by making it a sanctuary or park.

5) Please listen to the citizens who have supported this state through its lean years.

In conclusion, I respectfully request that this testimony and these 710 questionaires be made a part of the record of this hearing.

SELDOVIA NATIVE ASSOCIATION, INC.
P.O. BOX 185
SELDOVIA, ALASKA 99663
234-7625

APRIL 9, 1976

SSHB 626

HONORABLE NELS ANDERSON, CHAIRMAN
NATURAL RESOURCES COMMITTEE
HOUSE OF REPRESENTATIVES
POUCH V
JUNEAU, AK. 99811

DEAR SIR:

MY NAME IS FRED ELVSAAS. I AM THE PRESIDENT OF THE SELDOVIA NATIVE ASSOCIATION, INC.. I AM A COMMERCIAL FISHERMAN AND HAVE FISHED COOK INLET FOR SALMON AND CRAB MOST OF MY LIFE.

IF SSHB 626 OR ANY SUBSTITUTION IS PASSED, IT WOULD NOT BE IN THE BEST INTEREST OF THE PEOPLE OF THE SOUTHERN KENAI PENINSULA, OR THE PEOPLE OF THE STATE OF ALASKA.

COMMERCIAL FISHING SHOULD BE THE NUMBER ONE ACTIVITY IN KACHEMAK BAY IN AS MUCH AS IT SUPPORTS MOST OF THE RESIDENTS OF THE AREA.

SHRIMP TRAWLS AND CRAB POTS HAVE TO BE ON THE SEA-BED OF THE BAY IN ORDER TO FISH. AS THIS IS COMMON KNOWLEDGE, IT WOULD BE A VERY SHORT TIME AFTER PASSAGE OF ANY BILL SUCH AS HB 626, THAT SOME "EXPERT" WOULD NOMINATE COMMERCIAL FISHING IN THE BAY AS INCOMPATIBLE. THIS WOULD BE A COMPLETE DISASTER TO THE LOCAL SHELLFISH INDUSTRY AND THE KACHEMAK BAY COMMUNITIES.

BECAUSE OF "CONCERNED CITIZENS" AND STATE FISH AND GAME OPPOSITION, BASED ON LACK OF ENVIRONMENTAL STUDIES, THERE HAS BEEN A LENGTHY DELAY IN EXPLORATORY WORK IN THE BAY. IT WOULD SEEM THAT IF THE CONCERNED FISH & GAME PERSONNEL WERE SERIOUS ABOUT THEIR STUDIES, THE NEEDED REPORTS WOULD BE FINALIZED BY NOW.

THE ALASKA DEPARTMENT OF FISH AND GAME BIOLOGIST AT HOMER HAS REPEATEDLY STATED THAT THE SHELLFISHERY IN KACHEMAK BAY IS THE RICHEST IN THE WORLD.

THE STAFF OF THE ALASKA DEPARTMENT OF FISH AND GAME IS RECOMMENDING A 33 1/3% CUT IN THE 1976 CRAB SEASON. PRESENTLY THERE IS NO OIL ACTIVITY IN KACHEMAK BAY, YET OUR LOCAL INDUSTRY IS BEING SUBJECTED TO A 1/3 CUT IN PRODUCTION.

THE PRESENT HIGH PRICE PAID FOR CRAB IS KEEPING THE KACHEMAK BAY FISHERY OPERATING, NOT THE ABUNDANCE OF CRAB. THIS IS PROVEN BY THE FISHERMANS STRIKE LAST FALL WHEN THE FISHING IS USUALLY BEST, BUT THE PRICE WAS DOWN.

SIMPLY BY NOMINATION, ANY ACTIVITY WITHIN THE AREA CAN BE DESIGNATED AS INCOMPATIBLE WITH THE MARINE SANCTUARY. THIS MEANS THAT ALL THE CONSERVATIONISTS, OR ANY OF THE BUTTERFLY CLUBS WOULD IMMEDIATELY START NOMINATING THE VARIOUS COMMERCIAL FISHING ACTIVITIES IN THE BAY AS INCOMPATIBLE.

THE LOGGING OPERATIONS WOULD BE A PRIME AREA FOR NOMINATION OF INCOMPATIBILITY AND UNDUE HARRASSMENT SHORTLY AFTER PASSAGE OF THIS ACT.

THE GOVERNOR HAS REPEATEDLY STATED THAT HE DOES NOT SUPPORT ANY SELF-INTEREST GROUPS; THAT INSTEAD THIS ADMINISTRATION WILL SUPPORT ALL OF THE PEOPLE OF ALASKA EQUALLY, YET THE KACHEMAK BAY CONTROVERSY MAKES THE GOVERNOR APPEAR TO BE ONLY INTERESTED IN THE CONSERVATIONIST TYPE ORGANIZATIONS.

WITH THE PASSAGE OF THIS BILL, THE EFFORTS OF THE PETROLEUM INDUSTRY WOULD BE STOPPED BEFORE IT EVEN HAD A CHANCE TO BEGIN OPERATING IN THE AREA. IN VIEW OF THE PRESENT AND PROJECTED ECONOMIC FUTURE OF KACHEMAK BAY, THE STATE LEGISLATURE AND THE GOVERNOR SHOULD BE PUSHING FOR A SAFE AND ORDERLY OIL DEVELOPEMENT PROGRAM FOR LOWER COOK INLET, NOT THROWING ROADBLOCKS IN THE WAY OF WHAT MAY WELL BE THE FUTURE ECONOMIC BASE OF THE AREA.

THE SELDOVIA NATIVE ASSOCIATION HAS MADE VALID LAND SELECTTIONS IN THE PRESENT KACHEMAK BAY STATE PARK. FOR THE PAST YEAR, WE HAVE BEEN WORKING TOWARD A LAND TRADE WITH THE STATE THAT WOULD KEEP THE PARKS EXISTENCE YET SATISFY THE SELDOVIA CORPORATIONS LAND ENTITLEMENT. WE WOULD LIKE TO ACQUIRE SOME STATE OWNED LAND AND SUBMERGED LAND IN SELDOVIA BAY BY THIS TRADE FOR AN INDUSTRIAL PARK.

IF HB 626 OR ANY SIMILAR BILL IS PASSED, THE VERY EXISTENCE OF THE SELDOVIA NATIVE ASSOCIATION, INC. WILL BE THREATENED. THIS CORPORATION HAS SELECTED 69,120 ACRES OF LAND IN THE KACHEMAK BAY AREA. ALL THIS LAND WOULD BE SUBJECT TO NOMINATION AS INCOMPATIBLE TO THE SANCTUARY IN ONE FORM OR ANOTHER. WITH SO MUCH OF THE STATE OF ALASKA BEING NONREVENUE PRODUCING, THE LEGISLATURE AND THE GOVERNOR SHOULD BE WORKING TOWARD THE FULL PRODUCTIVITY OF ANY AREA SUCH AS KACHEMAK BAY. WHERE WOULD THE KENAI PENINSULA AND THE STATE OF ALASKA BE TODAY IF THE COOK INLET AND SWANSON RIVER OIL FIELDS WERE NOT ALLOWED TO GO INTO PRODUCTION?

THE INDUSTRIAL PARK AND OUR OTHER VENTURES SUCH AS LOGGING AND SEAFOOD PROCESSING WILL BE IN JEOPARDY IF KACHEMAK BAY IS MADE A SANCTUARY.

THE SELDOVIA NATIVE ASSOCIATION FEELS THAT THE OIL LEASES IN KACHEMAK BAY SHOULD BE HONORED AND DRILLING STARTED AS SOON AS POSSIBLE.

FOR THESE STATED REASONS AND COMMENTS, THE SELDOVIA NATIVE ASSOCIATION, INC. MUST ASK THAT HB 626, OR ANY SIMILAR BILL, NOT BE PASSED.

FRED H. ELVSAAS
PRESIDENT, SELDOVIA NATIVE
ASSOCIATION, INCORPORATED

John Crawford

Box 207
Seldovia, Alaska 99663

Testimony re: CSHB 626

CSHB 626 would be disastrous to the economy of the lower Kenai Peninsula. Although parks and recreational areas may be nice to have, they do not have the tax base to support themselves.

THE USE OF STATE WATERS SHOULD BE AVAILABLE FOR EVERYONE, INCLUDING INDUSTRY.

We are attempting to create more employment in this area, by developing our forestry and seafood resources. The natural resources of the State are it's best source of revenue. This bill would seem to restrict or eliminate development of these resources -- timber, oil, fisheries and other support systems. These uses of the adjoining land could conceivably be construed as incompatible or undesirable for the area.

The decision of the Supreme Court should decide the legality of the Kachemak Bay Oil leases. There is no need for a marine Sanctuary. I believe that with the proper impact and environmental studies required, that the resources can be developed in a manner which would not destroy or harm the area. There are laws and regulations already in existance(such as the Critical Habitat area) which, if enforced, could cover possible problems.

CAN THE STATE AFFORD TO BUY BACK THE LEASES????? plus other costs - interest and legal costs. If the State does not honor their leases or commitments, can we expect others to honor their commitments to the State??

The majority (by far) of the citizens of Seldovia do not want to live in a Marine Sanctuary. Our life and livelihood is tied to the water (Inlet). It is a part and parcel of Seldovia. It must remain open, free and clear for use by all, without undue restriction, or stumbling blocks to developing industries.

Government should not circumvent judicial procedure with legislation.

John Crawford

CHAIRMAN ANDERSON AND MEMBERS OF THE RESOURCE COMMITTEE

I'M NORMA TURKINGTON, A TAX PAYING VOTER IN HOMER FOR 17 YEARS. AM MARRIED, MY HUSBAND HAS A SMALL BUSINESS IN HOMER. WE HAVE 4 CHILDREN. 3 ARE GROWN, LIVING & WORKING IN ALASKA. ONE IS STILL IN HIGH SCHOOL. I DON'T BELONG TO A LONG LIST OF ORGANIZATIONS BECAUSE I DON'T OBLIGATE MYSELF TO MORE THAN I CAN ACCOMPLISH. I don't mean To belittle Mrs. Heath. She contributes To organizations rather than use them. MY PRIME CONCERN IS MY FELLOWMAN, AND PARTICULARLY HELPING THEM BE HEALTHY AND PRODUCTIVE. I BELIEVE PEOPLE ARE OUR MOST VALUABLE RENEWABLE RESOURCE. THEREFORE MY EFFORTS HAVE BEEN MOSTLY HEALTH ORIENTED.

PEOPLE NEED FOOD, CLOTHING AND WARM SHELTER. IF THEY ARE TO PROVIDE FOR THEMSELVES, THERE MUST BE JOBS. INDUSTRIES AND SERVICES CREATE THIS NEED. MANY INDEPENDENT CHILDREN OF OUR COMMUNITY HAVE HAD TO SEEK WORK ELSEWHERE. THE HIGH UNEMPLOYMENT PROBLEM NEEDS TO BE RECOGNIZED AND ADDRESSED. OUR YOUNG PEOPLE SHOULD ALSO BE ALLOWED TO MAKE A LIVING IN OUR BEAUTIFUL KACHEMAK BAY COUNTRY. IT SHOULD NOT BE LOCKED UP.

THE ENTIRE KACHEMAK BAY IS A CRITICAL HABITAT AREA. THUS, ONE DEPARTMENT ALREADY CAN RESTRICT USE. A PORTION, ROUGHLY 5 x 20 MILES IS A CRAB SANCTUARY. WE HAVE REGULATIONS. PERHAPS THEY NEED TO BE AUGMENTED. I REALLY WONDER IF SOMEONE IS AFRAID TO ENFORCE THEM? ...THE PROBLEM <u>WILL NOT</u> BE SOLVED WITH NEW LAWS CREATING COMPETING, SELF PERPETUATING, EMPIRE BUILDING GOVERNMENT. WE ALREADY HAVE 35 MILLION LAWS TRYING TO ENFORCE THE TEN COMMANDMENTS." Earl Wilson

AS FAR AS FISH, OIL, & TIMBER BEING COMPATABLE, I BELIEVE THEY ALWAYS HAVE BEEN. AT LEAST NO ONE HAS SHOWN <u>ME</u> THAT IT ISN'T.

I BELIEVE ITS A MATTER OF COMPROMISE BETWEEN SOME <u>PEOPLE,</u> <u>NOT THE PRODUCT</u>. I'M CONVINCED WE CAN HAVE EACH INDUSTRY WITHOUT HARM TO ANY, IF DEALT WITH BY RATIONAL THINKING ADULTS. WE CAN SHOW THE WORLD THAT WE CAN LEARN FROM HINDSIGHT AND MUTUALLY SOLVE OUR MISUNDERSTANDINGS.

I HAVE LIVED BY THIS CREED. I WOULD LIKE YOU TO CONSIDER IT TOO.

"WHEN FACED WITH A MOUNTAIN, I WILL NOT QUIT. I WILL KEEP ON STRIVING UNTIL I CLIMB OVER, FIND A PASS THROUGH, TUNNEL UNDERNEATH OR SIMPLY STAY AND TURN THE MOUNTAIN INTO A GOLD MINE, WITH GOD'S HELP" by Robert Schuler

GENTLEMEN! WHERE IS YOUR TRUE ALASKAN INTEGRITY AND COURAGE? ~~THIS~~ ISN'T A PROBLEM. To get along Together
IT'S A CHALLENGE!

Thankyou.

Norma Turkington (Mrs.)
Box 233
Homer, Alaska 99603

March 10, 1976 RE: SS HB 626

Dear Representative Anderson:

I have attempted to comment on this bill in a sensible, rational manner and make it short. However I have come to the conclusion it's impossible.

The rewrite leaves many questions and fears for me as an average taxpaying voter. I wonder how attorneys would interpret it in the future. I have seen them spend a half hour or more, arguing before the supreme court, over the definition of just one word.

I can't go along with a sanctuary in Kachemak Bay. Animals in a contained environment will eventually increase in number until their food supply in not sufficient to sustain them. I feel an attempt is being made to put the people of the Kachemak Bay area and Lower Kenai Peninsula, in much the same predicament with a controled economy. The watered down dollars that might be available from Federal Shared Revenue are not dependable. We can't selfishly tell the people of the other states that we don't want our waters to provide oil but we want Federal money to support us.

As to the bill itself: There appear to be provisions for increasing the marine park, but no provision for eleminating any portion. Has there ever been a park given up for another use? (I really don't like to "nit-pik" but we have so much at stake here, I feel I must question all I see now). Allowed are beachcombing for wood and coal, but no sea shells, rocks or other treasurers. Does the geographical description include within the Homer or Seldovia boat harbers? How about the City's tide lands? We paid a good price to get them surveyed. How about Jakalof Bay? Will the lumber operation there be allowed to continue? How about digging clams? Will ships and barges be allowed in the bay? Not just the ones stopping at the Port of Homer, but the ones that unload on the beach or come for shelter and repairs. How about marine repair facilities? Will the owner of any sunken boat or ship be required to retriev it from the bay bottom so it won't environmentally damage anything?
I oppose to condemning the leases or buying them back. I especially oppose the power of eminent domain.
I oppose creating another department (The division of Natural Resources Department for Marine Sanctuaries) This administration is going to cost this state a bundle with its many new departments, positions and councils, and creating huge debts for lease pay back and the degrading of Alaska's creditablity.

This bill was written in haste and often haste makes waste. Can't we work out uses of Kachemak Bay to the best interest of all concerned. Please just find funds to strictly enforce regulations for each use of the bay. Many thanks.....

Sincerely,

Norma Turkington

Norma Turkington (Mrs.)

cc/ All legislators

Mrs. Norma Turkington
Box 233
Homer, Alaska 99603

Feb. 18, 1976

The Honorable Jay S. Hammond
Governor, State of Alaska
Juneau, Alaska 99801

Dear Governor Hammond:

I believe by now that you realize HB 626 is completely unacceptable. I concur with that feeling.

I also reject SB612. I believe in controling all our resources but have many question as to why these approaches are taken. I believe our fish and wildlife can be protected with the laws that now exist. The department of Fish and Game can reduce or close areas and seasons when and where they feel it necessary to protect our creatures. These proposed laws imply that the department isn't able to do its job. I don't believe the legislature should get involved in management. I believe there are qualified people in the department to make decisions. The approach that I think the legislature and administration should take is to allow sufficient funds for study and enforcement of the regulations necessary for protection. DON't WRITE ANY MORENEW LAWS.

It appears the bills we are seeing are written in a panic, with far too much emotion and haste.

I object to taking a partially good bill and tacking on any clause that "just gets rid of the oil company leases". Its discrimination to pick on any one industry or group. I can't go along with this approach.

I appreciate Mr. Vennekens, Mr. Gross and Mr. Palmer comming to Homer and meeting with us. A few questions that had been on my mind were answered. I couldn't go along with the "straw poll" of various ways of wording a new bill. The wording was confusing. After seeing some of the bills already written, I wouldn't commit myself to any suggested concept. It might just come back with a different interpertation. (like HB 626) With all due respects to Mr. Gross, He seems like a very nice man, I didn't think is fair to have an attorney chair the meeting. How many laymen can ask an attorney a question and get an answer he can understand? As for the meeting in general, I was dissappointed. Where the meeting was intended to get the thinking of the people,(I thought) it left a feeling that the people were being guided as to how they should think.

I sincerely hope we can find a way to be fair to all concerned. To quote Earl Wilson " We have 35 million laws trying to enforce the Ten Commandments" Do we really need any more?

Sincerely,

Norma Turkington

INGLIMA'S

RICHARD AND LYNN INGLIMA'S
P. O. BOX 1296 HOMER, ALASKA 99603

April 6, 1976

Honorable Nels Anderson, Chairman
Natural Resources Committee,
House of Representatives
Juneau, Alaska

Dear Sir:

I have been a resident of Alaska for thirty years, most of which has been spent on the Southern Kenai Peninsula. I am an owner-operator of Inglima's Supermarket and have been in the retail business for twenty two years; I also fished commercially for ten years.

I believe the economic conditions on the Southern Kenai Peninsula, although they have improved, cannot support the people of the area, and while tourism is important, it is only a three month season.

Herring and salmon were the major fisheries in the twenties, thirties and forties, but were depleted in the fifties and sixties, though they are now making somewhat of a comeback in the seventies. Shrimping and crabbing are the major fisheries in the area now, but both are on a quota limit. Shrimping was in trouble when a group of Kodiak boats came in to Kachemak Bay and in a few days got enough shrimp to close the area, due to the quota. The king crab fishery is a very important industry to the area, but when the first crabbing started, the winter crabs averaged close to fifteen pounds and now the average is eight to nine pounds. The summer crab has also dropped proportionately, which means the fishermen are harvesting the crab as they become of legal size. One years poor return on crab would cause the fishermen much economic hardship. The reason I bring this up is to show that the whole economy could be severely hurt with just one poor season.

All branches of our fishing industry need money; for research, for enforcement, loans for boats and equipment, etc. I feel that the only way to get this money is from the tax revenue brought in from the oil industry. I believe the oil and fishing industries can be compatible, with the proper safeguards. It will take a lot of people a lot of time to sit down and compromise and come up with a solution that would be equitable to both the fishing and oil interests, but I feel that we need them both.

Very sincerely yours,

Richard P. Inglima

Richard P. Inglima

South-Central Timber Development, Inc.

April 8, 1976

Repr. Nels A. Anderson, Jr.
Chairman
House Resources Committee
Pouch V
Juneau, Alaska 99811

Re: SSHB 626 (Kachemak Bay Marine Sanctuary)

Dear Representative Anderson and Members of the House Resources Committee:

By way of introduction let me state that I am the sawmill manager of South-Central Timber Development, Inc.'s sawmill at Jakalof Bay. Jakalof Bay is within the proposed Kachemak Bay Marine Sanctuary. The logging operations of Western Alaska Logging Company, Inc. and the milling and shipping operations of South-Central Timber Development, Inc. in this area provide employment for over 55 people.

We are concerned that the establishment of a Kachemak Bay Marine Sanctuary would have the effect of eliminating these timber harvesting and processing activities.

We believe that the existing systems of environmental control and fishery regulation through general law are more than sufficient, and we suggest that the establishment of a marine sanctuary is not needed.

Detailed comments prepared by our legal counsel are attached to this letter.

Thank you for noting our opposition to those portions of SSHB 626 which would establish a Kachemak Bay Marine Sanctuary.

Sincerely yours,

SOUTH-CENTRAL TIMBER DEVELOPMENT, INC.

By Floyd Beach
Floyd Beach
Sawmill Manager

dkl

Enclosure: Letter of James N. Wanamaker, attorney for South-Central Timber Development, Inc. and Western Alaska Logging Company, Inc., dated April 5, 1976

255 EAST FIREWEED LANE • ANCHORAGE, ALASKA 99503 • TELEPHONE: 279-1493
SUITE 104
TELEX 090 25-246
CABLE ADDRESS: SCTDANC

WANAMAKER AND DEVEAUX
ATTORNEYS AT LAW
750 WEST 2ND AVENUE
ANCHORAGE, ALASKA 99501

JAMES N. WANAMAKER
LEROY EUGENE DeVEAUX
RICHARD L. CRABTREE

TELEPHONE
AREA CODE 907
279-6591

April 5, 1976

Repr. Nels A. Anderson, Jr.
Chairman
House Resources Committee
Pouch V
Juneau, Alaska 99811

Sen. Kay Poland
Chairman
Senate Resources Committee
Pouch V
Juneau, Alaska 99811

Committee Members:

Theodore G. Smith, (V. Chmn.)
Alvin Osterback
Fred E. Brown
Richard I, "Dick" Eliason
H. M. "Mike" Hershberger
Leo Rhode
James H. Huntington
Leslie E. "Red" Swanson

H. D. "Pete" Meland, (V. Chmn.)
Chancy Croft
John L. Rader
Patrick Rodey
John Butrovich
Joseph L. Orsini

Re: SSHB 626 (Kachemak Bay Marine Sanctuary)

Dear Legislators:

I am writing on behalf of our clients South-Central Timber Development, Inc. and Western Alaska Logging Company, Inc. companies which currently employ over 55 people in the Kachemak Bay Area. These companies are operating logging and sawmill activities in the Jakalof Bay and Kasitsna Bay Areas.

These companies are concerned that their logging and sawmill activities could be curtailed or eliminated under the permit type system to be established by the Marine Sanctuary portions of this bill. They therefore strongly oppose the creation of the Kachemak Bay Marine Sanctuary as proposed in this bill. They submit that the present system of environmental control through general law are sufficient.

SSHB626 HAS MANY SUBJECTS:

SSHB has many subjects. I would characterize these subjects as follows:

1. Amendment to Alaska Statutes Title 38 to empower The Department of Natural Resources to establish and regulate marine sanctuaries.

2. To amend Alaska Statutes Title 41 to add planning and implementation for marine sancturaries to the powers of the Department of Natural Resources.

3. By a new section, 41.20.415 to declare all of Kachemak Bay and a large area of the adjoining Cook Inlet as the "Kachemak Bay State Marine Sancturary".

4. By a new Section 41.20.420 to create a new form of government for Kachemak Bay similar to the structures of the earlier proposed Coastal Zone Management Bill. Natural Resources will have primary "management responsibility" subject to seven special exceptions.

5. A new section 41.20.425 is created to provide a means to buy or condemn existing oil and gas leases.

Our principal comments relate to points numbered 3 and 4 as identified above. Our clients are strongly opposed to the passage of points 3 or 4.

THE MARINE SANCTUARY REGULATORY SCHEME:

SSHB 626 pays little attention to the fact that there are already in existence extensive mechanisms for the control of water pollution, solid waste pollution, air pollution, and any other activities which could potentially damage the environment of this area.

It attempts to establish a new layer of governmental authority to have "management responsibility" for the area.

It contains a shift in emphasis from the present concept of free movement and use of the waters and lands provided one does not break the law, to a new concept that the land is a preserve and no use may be made of the preserve without permission.

It is readily obvious that all parties recognise the true nature of this bill as being an attempt to put Kachemak Bay under a new governmental system of permits and exceptions. This is implicit in the Governor's letter of March 2, 1976, transmitting the "sponsor substitute".

Thus in this new version seven special uses ranging from the gathering of driftwood to the development of deep water ports and the discharge of treated fish wastes are "legislatively determined not to significantly affect the environment of the areas" (AS 41.20.420(b) page 5 SSHB 626).

If this is how the system is to be structured we would request a special exemption No. 8 to read as follows:

> (8) Activities related to commercial or subsistence logging including the operation of all authorized logging gear and the building, operation and maintenance of wood products processing plants.

WHAT LANDS ARE PUT IN THE SANCTUARY?

The area of the sanctuary as delineated by proposed AS 41.20.415 is Huge. The area goes well beyond the head of Kachemak Bay and out into Cook Inlet. The sanctuary extends far beyond the area of the Kachemak Bay State Park.

In effect, all of Kachemak Bay and this portion of Cook Inlet would be put under a permit system run by the Department of Natural Resources.

LIVING WITHIN THE EXISTING LAW:

It being the case that the State of Alaska already owns the tidelands concerned, and already has an extensive system of environmental monitoring and environmental control as well as a fine system of fish and game enforcement, one wonders why it is necessary to create a new level of government.

The only addition made by parts 3 and 4 of SSHB 626 would be that it would exchange a "permit system" for the present freedom of action system.

We emphasize our clients' opposition to SSHB 626, parts 3 and 4 (as summarized at the start of this letter).

We understand that other versions of this bill are in preparation. We request copies of such new versions at the earliest opportunity.

Thank you for your attention to the concepts set forth in this letter.

Sincerely yours,

WANAMAKER and DeVEAUX

By James H. Wanamaker

JHW/dkl

City of Seldovia
P. O. DRAWER B TELEPHONE 234-7643
SELDOVIA, ALASKA 99663

House Bill 626 was presented in Seldovia as the only avenue open to the State that would provide a means of condemning the Kachemak Bay leases.

Do we need after the fact legislation to remove ourselves from a bad deal? The first thought that came to mind after that presentation was Article one, Section ten of the United States Constitution. That section specifies that no State shall pass any law impairing the obligation of contracts. It could be said that this did not happen entered into by the State.

I have been taught that a man's word is his bond and have always lived with that doctrine.

This bill in its present form and intent will seriously damage the States credibility and the credibility of every Alaskan.

Could it be that this is the reasoning behind the introduction of the bill to further impede any economic growth in the State of Alaska.

If we don't live up to our word we will in the future have trouble getting any one to do business with us

The investment climate in the State of Alaska because of this bill and proposed oil taxation won't be very good.

I say that we should live up to our word, honor all deals we make. Try to get this State on a paying basis and not try to introduce legislation that we can't afford.

City of Seldovia

John Colberg
Mayor

BARBARA C. MANLEY
PO BOX 955
HOMER, ALASKA

TESTIMONY APRIL 9, 1976
HOUSE RESOURCE COMMITTEE
RE: LEGISLATION ON KACHEMAK BAY
CSHB626

MR. CHAIRMAN, THE HONORABLE MEMBERS OF THE COMMITTEE, FRIENDS AND FELLOW ALASKANS. I AM BARBARA MANLEY AND I AM FROM HOMER.

DURING THE PAST TWO YEARS THERE HAS BEEN SO MUCH PUBLICITY FROM ONE SEGMENT OF OUR COMMUNITY OVER THE KACHEMAK BAY OIL LEASES THAT GOVERNMENT AGENCIES, THE NEWS MEDIA, PETROLEUM INDUSTY AND OTHER COMMUNITIES WERE FIRMLY CONVINCED THAT HOMER DID NOT WANT ANY GROWTH OR DEVELOPMENT IN THE COMMUNITY. PARTICULARLY, THE CITIZENS DID NOT WANT ANY OIL AFFILIATED BUSINESS IN HOMER, WHETHER IT WAS SUPPLY AND SUPPORT VESSELS, THE PERSONNEL OF THE INDUSTRY OR EXPLORATION AND ACTUAL DEVELOPMENT OF OIL AND GAS.

THE FUROR CREATED BY THIS MINORITY SEGMENT HAD TOTALLY OVERSHADOWED THE FACT THAT THERE WERE OTHER COMMUNITIES ADJACENT TO KACHEMAK BAY. IT WAS ASSUMED THAT THE HOMER PEOPLE'S ATTITUDE WAS ALSO THE VIEW OF THEIR NEIGHBORS.

IN JANUARY THIS YEAR, SEVERAL BUSINESS PEOPLE HAD DIRECT AND INDIRECT INFORMATION FROM SOME OF THE OIL COMPANIES THAT SINCE THIS WAS THE ATTITUDE OF THE HOMER RESIDENTS, THEY WOULD NOT IMPOSE THEMSELVES ON THE COMMUNITY; THAT HOMER WOULD BE TOTALLY BY-PASSED WITH ANY DEVELOPMENT, EVEN FROM THE LOWER COOK INLET.

ON JANUARY 20, 1976 A GROUP OF BUSINESSMEN MET TO DISCUSS THE MEANS

BY WHICH THE COMMUNITY COULD OVERCOME THE ERRONEOUS CONCEPT OF OUR COMMUNITY'S ATTITUDE TOWARD THE PETROLEUM INDUSTRY. THE GROUP BELIEVED THE FIRST APPROACH WOULD BE TO TRY TO PROMOTE THE USE OF THE PORT OF HOMER. THE GROUP ELECTED TO CALL THEMSELVES "THE COMMITTEE TO PROMOTE THE UTILIZATION OF THE PORT OF HOMER".

A LETTER WAS WRITTEN TO GOVERNOR HAMMOND ADVISING HIM OF THE FORMATION OF THE COMMITTEE AND ITS PURPOSE. A COPY WAS ALSO MAILED TO EACH OF THE 60 LEGISLATORS.

WHEN THE COMMITTEE BECAME AWARE OF HOUSE BILL 626, IT SEEMED TO IMMEDIATELY DEFEAT THE PURPOSE OF THE COMMITTEE IN PROMOTING THE USE OF THE PORT OF HOMER. A PETITION, READING: "WE, THE UNDERSIGNED, PETITION JAY HAMMOND, GOVERNOR OF THE STATE OF ALASKA, HIS ADMINISTRATION AND THE LEGISLATORS OF THE 9TH LEGISLATURE OF THE STATE OF ALASKA TO RENDER ASSISTANCE THROUGH EVERY MEANS AVAILABLE TO THEM TO PROMOTE THE MAXIMUM POTENTIAL FOR DIVERSIFIED UTILIZATION OF THE PORT OF HOMER LOCATED ON KACHEMAK BAY, HOMER, ALASKA."

THESE PETITIONS WERE DISTRIBUTED THROUGHOUT THE AREA FOR A PERIOD OF TWO WEEKS. ON FEBRUARY 19TH, THE PETITONS, WITH 624 SIGNATURES, WERE SENT TO GOVERNOR HAMMOND. ON FEBRUARY 27TH GOVERNOR HAMMOND ACKNOWLEDGED RECEIPT OF THE PETITIONS, AND THE REMAINDER OF HIS THREE PAGE LETTER WAS AN IN-DEPTH EXPLAINATION OF THE "TOWN MEETING" CONDUCTED IN HOMER ON FEBRUARY 17TH BY ATTORNEY GENERAL GROSS, BOB PALMER AND PAT WENNEKENS. THE NOW FAMOUS "TOWN MEETING" PROVED TO HIM THAT ONLY 17 PEOPLE IN HOMER OPPOSED THE CONDEMNATION OF THE KACHEMAK BAY LEASES AND WHO SUPPORTED ANY KIND OF OIL DEVELOPMENT THROUGH HOMER.

IT WAS NOT THE INTENT OF THE COMMITTEE TO BECOME INVOLVED IN THE KACHEMAK BAY ISSUE AS IT WAS THE CONSENSUS OF THE GROUP THAT THIS WAS A MATTER TO BE DECIDED BY THE SUPREME COURT OF THE STATE OF ALASKA. HOWEVER, IN VIEW OF THE "TOWN MEETING" ATTENDED (AND VOTES ACCEPTED BY MR. GROSS) BY UNDER VOTING AGE HIGH SCHOOL STUDENTS, NOT ONLY FROM HOMER BUT ALSO KENAI, AND THE ORGANIZED BLOCK OF ONE SEGMENT IN THE COMMUNITY, THE COMMITTEE FELT THIS WAS NOT REPRESENTATIVE OF THE RESIDENTS OF MANY YEARS, THE TAXPAYERS, AND THAT IT SHOULD NOT BE THE BASIS FOR A DECISION THAT NOT ONLY AFFECTED THE KACHEMAK BAY COMMUNITIES, BUT EVERY TAXPAYER WITHIN THE STATE OF ALASKA.

ON JANUARY 25TH THE COMMITTEE, AS A COMMUNITY SERVICE, MAILED 500 SETS OF POST CARDS, FIVE CARDS PER SET, ASKING YES OR NO QUESTIONS ON CONDEMNATION, IF THE AMOUNT TO BE PAID SHOULD BE ON A REFERENDUM, IF IT SHOULD BE A LEGISLATIVE DECISION AND IF THE INDIVIDUAL OWNED PROPERTY. THE CARDS WERE TO BE SIGNED AND MAILED DIRECT. THEY WERE ADDRESS TO GOVERNOR HAMMOND, HONORABLE NELS ANDERSON, HONORABLE KAY POLAND, HONORABLE LEO RHODE AND OUR COMMITTEE.

THE COMMITTEE DID NOT ATTEMPT TO PERSUADE THE PEOPLE TO BE FOR OR AGAINST REVOKING THE LEASES, ONLY TO EXPRESS THEIR OPINIONS AND SEND THEM TO GOVERNOR HAMMOND AND EACH OF THE RESOUCE COMMITTEES. IT WAS OUR BELIEF THAT THE FISHERMEN'S OPINIONS HAVE BEEN WELL KNOWN AND STATED MANY TIMES DURING THE PAST TWO YEARS, HOWEVER, THERE ARE MANY RESIDENTS IN HOMER WHO ARE NOT FISHERMEN. EACH INDIVIDUAL HAS AN EQUAL RIGHT TO HIS OPINION, HIS RIGHT FOR A VOICE IN OUR DEMOCRATIC PROCESS. WE WERE ONLY ENCOURAGING THE USE OF THESE RIGHTS AND TRYING TO PROVIDE THE CHANCE FOR MORE PEOPLE TO HAVE A VOICE ON AN ISSUE IN OUR STATE GOVERNMENT.

OUR COMMITTEE HAD 342 POST CARDS RETURNED. OUT OF THIS NUMBER 322 DID NOT WANT THE OIL LEASES IN KACHEMAK BAY CONDEMNED. OF THE 20 WHO WANTED TO REVOKE THE LEASES TEN INDICATED THEY WANTED THE COST OF THE PURCHASE ON A REFERENDUM, AND TEN WANTED THE PURCHASE AND COST TO BE A LEGISLATIVE DECISION.

HOMER NEEDS A MORE STABLE ECONOMY AND THIS IS A FACT RECOGNIZED BY THE MAJORITY OF THE RESIDENTS, ESPECIALLY THOSE WHO EARN A LIVING THROUGH FREE ENTERPRISE. THE COMMUNITY IS GROWING, THIS IS TRUE. HOWEVER THAT GROWTH IS ALSO CREATING "GROWTH" IN THE DEMANDS ON THE CITY FOR SERVICE, THE SCHOOLS, THE WHOLE ECONOMY. GROWTH IN POPULATION DOES NOT CREATE GOWTH IN REVENUE THAT IS DIRELY NEEDED TO PROVIDE THE SERVICES DEMANDED, IT DOES NOT CREATE EMPLOYMENT FOR THE YOUTH WHO HAVE BEEN REARED IN OUR COMMUNITY WHO ARE NOW YOUNG ADULTS WHO NEED TO PROVIDE FOR THEIR OWN FAMILIES: NOR DOES IT PROVIDE EMPLOYMENT FOR THE INFLUX OF NEW RESIDENTS.

THE FISHING INDUSTRY CANNOT PROVIDE THIS VOLUME OF EMPLOYMENT THAT IS NEEDED TO STABALIZE OUR ECONOMY. THE SEASONAL CONSTRUCTION WORK THAT FLUCTUATES FROM YEAR TO YEAR CANNOT PROVIDE A LIVLIHOOD FOR MANY OF OUR CITIZENS.

OUR PORT HAS MANY GREAT POTENTIALS. POTENTIALS TO PROVIDE LOCAL EMPLOYMENT AND TO PROVIDE REVENUE TO THE CITY WITHOUT THE BURDEN OF INCREASED PROPERTY TAX FOR THE RESIDENTS. THIS CAN BE GENERATED FROM BOTH STATE AND FEDERAL OFFSHORE LEASES, AND WITH THE LEAST IMPACT ON THE COMMUNITY.

IT IS DISTRESSING TO ME THAT OUR ADMINISTRATION IS ATTEMPTING TO

DETER THIS DEVELOPMENT THROUGH DISCRIMINATION AGAINST ONE INSUSTRY, ESPECIALLY WHEN THE DISCRIMINATION IS BASED ON EMOTIONALISM RATHER THAN SCIENTIFIC FACT. THE ENCROACHMENT ON THE RIGHTS OF A COMMUNITY AND ITS CITIZENS BASED ON EMOTION AND/OR PERSONAL PREJUDICE OF ANY ADMINISTRATION IS INCONCEIBLE FOR A DEMOCRATIC GOVERNMENT.

I AM DEEPLY CONCERNED, NOT ONLY FOR THE WELFARE OF MY CITY, BUT FOR THE IMAGE OF OUR STATE. THROUGHOUT THE YEARS, THE IMAGE OF ALASKA HAS HAS NOT ONLY BEEN THAT OF THE VASTNESS OF THE STATE IN SIZE AND AESTHETIC BEAUTY, BUT ALSO OF HER PEOPLE: PEOPLE OF STAMINA, HOSPITABLE PEOPLE, NEIGHBOR HELPING NEIGHBOR, PEOPLE OF INTREGRITY AMONG WHOM A MAN'S WORD WAS HIS BOND, CREDITABLE PEOPLE.

UPON THE ADVENT OF STATEHOOD, I BELIEVE IT WAS THE INTENT OF THE PEOPLE OF ALASKA THAT THEIR STANDARDS OF INTREGRITY AND CREDIBILITY BE EXERCISED BY THE ADMINSTRATIONS OF THE STATE OF ALASKA.

THE KACHEMAK BAY OIL LEASES ARE LITIGATED TO THE STATE SUPREME COURT. ALTHOUGH NO DECISION HAS BEEN HANDED DOWN, THIS ADMINISTRATION HAS PERSISTED IS PASSING LEGISLATION TO CIRCUMVENT AN ANTICIPATED RULING OF THE SUPREME COURT. THIS IS A DEPLORABLE REFLECTION ON THE ABILITY OF THE STATE SUPREME COURT. IT LENDS TO THE DESTRUCTION OF THE PUBLIC'S CONFIDENCE IN JUSTICE FROM THE HIGHEST COURT IN OUR STATE. ADVOCATION OF REVOKING THE KACHEMAK BAY OIL LEASES INFERS THE TOTAL DISREGARD BY THE ADMINISTRATION FOR THE HIGHEST JUDICIAL AUTHORITY OF THE STATE OF ALASKA IF ITS DECISION IS NOT IN AGREEMENT WITH THE DESIRES OF THE ADMINISTRATION. I FIND THIS TRAGIC AT T TIME IN OUR SOCIETY WHEN SO MANY YOUNG PEOPLE BELIEVE THERE IS NO CREDIBILITY IN ANY GOVERNMENT.

I BELIEVE THAT ANY LEGISLATION TO REVOKE THE KACHEMAK BAY OIL LEASES NOT ONLY DESTROYS THE CREDIBILITY OF THE ADMINISTRATION TO THE PEOPLE OF ALASKA, BUT TO THE NATION AND TO THE WORLD.

IN CONCLUSION, MAY I EXPRESS MY SINCERE APPRECIATION TO EACH MEMBER OF THIS COMMITTEE FOR YOUR DELIGENCE IS SEEKING OUT ALL OF THE FACTS AND WEIGHING THE OPINIONS OF ALL OF THE CITIZENS IN YOUR SINCERE EFFORT TO ARRIVE AT A RECOMMENDATION THAT IS TRULY IN THE BEST INTEREST OF THE TOTAL OVER-ALL COMMUNITY. I AM DEEPLY GRATIFUL TO EACH OF YOU.

THANK YOU.

As requested by you on March 11, 1976, I have reviewed the document Kachemak Bay A Status Report prepared by the staff of the Alaska Department of Fish and Game. My review and comments are enclosed.

The main point that I wish to make in this covering letter is that, after reading the document, I am forced to conclude that the department has acted hastily by releasing this report in its present form. I recognize that it is not always possible to afford the time necessary for an independent review of such a report, but this report does not appear to have received even internal review and editing. As a consequence it is extremely difficult to read and comprehend, and contains many inconsistancies and factual errors. In addition, much of it is written in an extremely emotional style, which may embarrass the department.

Of greater importance than possible departmental embarrassment, however, is that the release of this report to the public cannot help but confuse and inflame the controversial issues surrounding the leases in Kachemak Bay. It seems to me that what was needed was a status report on the several ongoing studies of the area to provide factual, preliminary information to decision makers and the public. This document in its present form does not meet that objective.

The potentially most valuable information in the document is contained in Section I concerning the mass transport question. I suggest that all the available data and the methodology for this study be reviewed in detail. I would recommend that this be done by the Department of Oceanography at Oregon State University because of their considerable experience with coastal drogue work. Such a review need not take more than a few weeks.

I appreciate this opportunity to be of service. If you have any questions regarding my review and comments, please do not hesitate to call me.

FRANK ~~HEUFF~~
HEUER.

REVIEW

STATUS REPORT KACHEMAK BAY

SCOPE

This report, a document in five sections, is intended to "discuss and summarize salient findings emerging from ongoing field studies and analysis(sic) of current literature as they relate to man's disruption of the marine environment, especially by oil and gas related activities" - page one of the introduction. Sections I and II of the report are concerned with the ongoing field studies, Section III is a literature study, and Section IV and V are philosophical essays that do not meet this stated intent.

CONTENT AND FINDINGS

Section I, The Marine Environment of Kachemak Bay is concerned chiefly with a recent Alaska Department of Fish and Game (ADF&G) radar tracked drogue study of water circulation and transport in Kachemak Bay and vicinity. Some additional data on circulation and physical oceanography are provided.

The main purpose for the circulation study was to test a hypothesis that water transport in Kachemak Bay is sufficiently slow that the drifting, planktonic, larvae of resident bay animals can develop and settle within the bay. For this hypothesis to be tenable, it is necessary to demonstrate that the exchange rate of water between Kachemak Bay and the outside is longer than the time of the planktonic existence of the larval animals - approximately 60 days (or 3 to 4 months according to the quote on page IV-3 of the report).

For some reason this question, though raised on page I-5, is not discussed again in this section in terms of the study results. The abstract of the report does state, "Residence time of the waters within the Bay appears to be 20 days at the most and the Bay must be considered as an input-output system with respect to the dispersal and settling of crustaceans larvae". How this conclusion was reached is not stated in this section.

The drogue and some concurrent drift card studies both strongly suggest that the previously proposed residence times for water in the bay are excessive. The data given in the report are too incomplete or illegible to allow a detailed critique

of this section. But it is clear that there is considerable net transport into and out of the area, particularly near the surface and to the west of the Homer spit. The conclusion made in the abstract appears to be valid.

The balance of Section I deals with bathymetry (adequately) and the bay. The latter is of limited value owing to the complexities of the circulation in this area. No biological data are included in this section on the "Marine Environment".

Section II, Environmental and Biological Attributes of Kachemak Bay provides a short report on marine algae, presumably a contract study, a considerable amount of fishery information and data, and a discussion of crustacean larval biology. One paragraph and four figures cover the higher vertebrates - birds and mammals.

The fishery data are in two parts: an overview that deals primarily with the economic aspects of the Kachemak Bay fisheries, and a species by species historical review of the more important fisheries. The economic discussion lacks objectivity as does the immediately following pages covering the productivity and aesthetics of the area (see Reviewer's General and Specific Comments). The base year used in the economic discussion is 1973, a record catch year, although data for 1974 and 1975 were available. No attempt was made to put the Bay's fisheries into proper prospective with those of the rest of the state. (In 1973 the ex-vessel value of Kachemak Bay fisheries was 2.58% of the state total.)

The species overview, which begins on page II-23, shows signs of hasty preparation and is difficult to interpret. This is particularly true of the figures, many of which do not provide the units of measure. The introduction to this section needs editing to gain objectivity.

The section on marine plants consists of observational notes at a series of stations in the bay. The locational and observational data are qualitative in the report, but precise locations and quantitative measurements presumably are available. The purpose of this study was not stated.

The section on crustacean larval biology beginning on page II-60 continues the discussion of larvae persistance in the "gyre" begun in Section I of the Status Report. There is considerable confusion in this section between the tentative conclusions drawn from a 1972 plankton survey of the area and the results of the 1975 circulation study discussed in Section I. These discrepencies should be resolved. In this section, on page II-63, the basis for the 20 day transit time given in the abstract may possibly be found. The maximum transit time on the figure appears to be 16 days, however. The remainder of this section consists of an abstract(?) of the 1972 National Marine Fisheries Service (NMFS) study of crab and shrimp

larvae distribution in the Bay. Since these investigations preceded the drogue and drift card studies, the interpretation of these data are probably in error, although this point is not made clear by the author of this section.

Section III, Sensitivities of Kachemak Bay to Man's Impact attempts to estimate the effect of man's activities upon the ecosystem. With the exception of one paragraph on page III-1, the discussion is directed at oil and gas development activities. No further mention is made of the possible effects of population pressures, waste disposal, renewable resource use, i.e. logging, fishing, etc. Since oil and gas activities are the main issue at this time, this dismissal of other factors is understandable in view of the intent stated in the introduction, but the title of Section III should reflect this emphasis.

The bulk of section III consists of a restatement of a number of reviews of the effects of oil on marine systems. The attempt is made to put these discussions into the Kachemak Bay site. Some calculated spill trajectories for the Bay are given.

There are many inaccuracies in this section. Some of these are in the statements of the author and some are in the literature quoted.

The author relies heavily on the Metula spill to develop an oil spill scenario for Kachemak Bay. He does not provide any projections of tanker traffic in the Bay but assumes that a Metula size spill will occur near the Homer spit. He provides an estimated oil dosage of 400 bbls per square mile (page III-17) for the inner bay. This apparently alarming statistic will undoubtedly be accepted as fact by some readers of the report. The author does not relate this dosage to the toxicity table on page III-51. If he had he could show that even his major spill does not cause toxic levels to be reached, in fact there is a safety factor of about 100.

This toxicity table, Table 24, page III-51, is a summary of acute toxicity data for several groups of organisms. Because of its convenience one can expect it to be widely quoted. Because of this possibility, the table should be clarified: The first column should be identified as water soluble fractions (chiefly aromatics), the last column should not use exponents but should be written out - e.g. 10,000 - 100,000, and the heading over this and the middle column should be rewritten to emphasize that these values are total oil added to the system i.e. the amount of oil per volume of water.

Figure 54, page III-55 is a summary figure purporting to show potential impacts of oil spills on Kachemak Bay. Because of its summary nature and probable wide use, it should be reviewed for accuracy and the wording changed to reflect its speculative nature.

The impact of oil and gas development and oil spills on fisheries is not discussed in this section. Several case histories of oil spills are reviewed, but not with this objective in mind. The author should be advised that there are data available from several areas of major oil and gas production, notably, the Gulf of Mexico, southern California, and Venezuela, where fishery data are concurrently available. These data do not indicate that the two activities are incompatible. In addition, there have been several major spills, some of which are mentioned by the author, where careful investigation failed to prove or even indicate any damage to the fisheries. These include the Torrey Canyon, the Santa Barbara, and the Chevron Pass Block 41 spills. None of the reports indicate damage to the fishery resources, either short or long term. A report of these findings would seem to be germane to the discussion.

Section IV, Conservancy and Protection of the Renewable Energy Resources of Kachemak Bay is a philosophical discussion of some of the points of conflict in present day resource use. The position taken here, and this is purported to be the position of the ADF&G, is that present practices for oil and gas development in the state waters of Alaska are unacceptable from the standpoint of environmental safety. This concern on the part of the staff of ADF&G also is claimed to be that of the citizens of the entire state (page IV-26), although this position is not supported by any documentation.

This section is not a status report per se on Kachemak Bay, but rather an expression of the ADF&G staff's feelings about the issues. As such it might have been more appropriately published in some other medium.

Section V, Kachemak Bay Perspective and Overview is a continuation of Section IV with additional philosophical discussions of energy and the use of non-renewable resources. This section states that the ADF&G has not been given information on the potential size of the Kachemak Bay field, which presumably would affect their recommendations on the environmental safeguards needed during the development (although from the discussion at the end of Section IV the size of the development does not seem to matter). The price paid for the leases, however, is a matter of record and one wonders why some comparison of the sale price with the value of the fisheries was not made.

This section also infers that using the area to produce fish is in some way more socially valuable than to produce oil, even though the two have not been shown to be mutually exclusive. The fact that the fish produced are luxury items that do not contribute to the world or the U.S. protein needs has been ignored. Further, the high energy imput required for fish production has been sidestepped by comparing foreign distant water fishing with small-boat Alaskan fisheries. The

question could be raised as to why this document does not take this opportunity to recommend a return to salmon traps. This section, as the preceding section, does not constitute a status report on Kachemak Bay.

Reviewer's General Discussion

The purpose of this document is nowhere clearly stated. According to the statement of intent in the introduction, one gets the impression that the document was prepared to provide decision makers in the state government and the interested segment of the public with recently obtained information on the Kachemak Bay question. This goal appears to be met by the abstract which, with the exception of the paragraph dealing with an analysis of the current literature, is concise, factual, and objective.

The balance of the document does not compare favorably with the abstract. All of the five sections are poorly edited and difficult to understand. Section I is objective but suffers from the lack of any useful conclusions about the question of the persistence of larvae in the Kachemak Bay "gyre". Since this was the reason for undertaking the study, this oversight is unfortunate. Instead the reader is forced to rely on the rather confused discussion in Section II to find that the earlier held view had been refuted, that the Kachemak Bay system is not closed, and that larvae enter and leave the system during their planktonic life time.

The remaining four sections of the document lack objectivity. They are used to support what is evidently the ADF&G staff's position on oil and gas development in the area. They include two unnumbered figures of high emotional content, and numerous emotional phrases, and obviously biased statements. This lack of objectivity alone seriously detracts from the usefulness of this document for the decision maker and can not help but stir up those segments of the public that are opposed to oil industry activity in the area. Furthermore, the poor editing, which may be excused in part because of the press of a close release deadline, obscures the factual information and will result in misinterpretation.

It is the reviewer's conclusion that the general release of this document in its present form would be a serious error. Because some of the information contained in it is valuable, the document should be carefully edited for purpose, organization, and objectivity.

Reviewer's Specific Comments

Abstract

Paragraph four suggests that the Metula spill can be used to assess the impact of a similar accident in the lower Cook

Inlet. Nothing in the studies undertaken of that spill suggests that such information will be developed, and this statement should be re-examined.

Introduction

Page one sets the stage for the lack of objectivity characteristic of the report.

It would be helpful if the "intent" statement in the last paragraph were expanded to include a statement of purpose so the reader could be prepared and oriented for what follows.

Page two. The second paragraph leaves one wondering whether the transport studies alone or environmental studies in general are "challenging".

Last page. The 1974-75 NMFS Auke Bay project did include bioassays. These data have not been released. The statement that low levels of oil induced mortalities on early life forms is misleading. What is a low level? Certainly we should be told whether the levels are lower than levels reported elsewhere, assuming that ADF&G know the answer.

The 1975 USFWS; Rutgers University study appears to be of salt marshes. Does Dr. Crow mean that the salt marshes only or the entire bay are the richest area he has ever studied?

Section I

Page I-4. No reference to ADF&G (1974, 1975) is given in the bibliography.

Page I-5. The statement beginning in line five needs a reference.

Page I-32. The results should include some discussion of transport times at the various depths. Although there may be some questions regarding methodology, the evidence is quite strong against the stagnant "gyre" hypothesis.

The question posed on page I-5 should be addressed.

In paragraph three the question of stratification has not been addressed by the drogue work.

Page I-39. Site E results deserve some comment, particularly in light of the trajectories in Section III.

Page I-43. Why are the low temperatures, line seven, of interest?

How does this discussion relate to the stratification statement in paragraph 3 on page I-32? An explanation of sigma-t density surfaces should be given so that the public can make some sense out of what follows.

Section I needs editing and careful synthesis. Preliminary conclusions should be presented in a summary at the end.

Section II

Page II-1. Why was 1973 selected as the statistical base year? It would be useful to give some relative comparisons here between the $3.2 million catch from Kachemak Bay and the catch for the rest of the state. What is the value of the oil leases to the state? What is the value of oil and gas production in the upper Cook Inlet to the state?

Page II-2. The statement in line three and four needs a reference.

Bluff Point is not shown on figure 35.

Page II-5. It would be enlightening to be told why the area was set aside as a crucial critical habitat, and what does this mean?

The wording of paragraph three is more suitable for a travelogue than a scientific status report, even including the Freudian slip re: crabs. Such obviously emotional reporting is prevalent throughout the report and should be edited out.

The last paragraph is an attempt to paint a false picture of the bay. The blanketing of the bottom of the bay by individual shrimp is not supported by the T.V. survey in figure 36. Nor do the NMFS trawl surveys support his statement. To be conservative and assume that the statute mile is used for the distance of the drag rather than the more likely nautical mile, and that the foot rope of the trawl covers 40 feet, the highest catch - 4444 lbs - gives a density of 0.02 lbs/ft^2 or about two individuals per square foot of bottom. Most of the stations are less productive by a factor of 10 or more.

Page II-8. This section on Macrophytic ecology is too technical for the purpose of this report. It needs to be summarized in a more detailed fashion than is done on page II-22 if it is to have any meaning for the general or technical reader.

Page II-23. There seems to be a size discrepancy between the 35 by 10 miles given here and the 45 by 22 miles given on page I-1.

Page II-24. No reference in bibliography for the report cited in line 13.

The last paragraph is more travelogue rhetoric.

Page II-25. The 1973 Kachemak Bay catch of $3.2 KK was 2.58% of Alaska catch.

Line 21. Nearly 60% by weight but less than 50% by value.

Page II-26. What are the units of salmon catch?

Page II-27. Why not use 1974 or 1975? Is it because the value dropped considerably?

A more honest table is given below:

1973 Ex-vessel Value
($millions)

Species	Kachemak Bay	Alaska	Kachemak Bay % of Alaska
Salmon	0.2	60.0	0.3
King Crab	1.7	44.7	3.8
Tanner Crab	0.7	10.8	6.5
Shrimp	0.4	3.9	10.2
Dungeness Crab	0.2	3.4	5.9
Herring	0.03	2.6	1.2
Total	$3.23	$125.4	

Note: $\frac{3.23}{125.40} \times 100 = 2.58\%$. This is the percent of the total Alaska ex-vessel value taken in Kachemak Bay.

Page II-31. What are the units?

Page II-33. What do these numbers mean?

Page II-51. The first paragraph needs some data and references to support the statement.

Page II-60. This begins a very poorly edited and confusing section. The problem stems in part from combining speculation based on a 1972 study with the recent investigations by the department described in Section I. The results is that statements such as that in line 18ff are in conflict with statements elsewhere - cf. page II-61, bottom and page II-62, bottom.

Page II-62. Line three admits that the conclusions in these studies do not "quite tally". "Quite" should be omitted.

The planktonic times given in paragraph four should be checked and references given.

Page II-65ff. This portion of the section needs editing and clarification as to who did it, when, and what it now means.

Section III

Page III-3. The choice of words "Nondegradable Pollutant" is unfortunate since the category is defined as including slowly degradable substances. In nature such substances are continuously entering various ecosystems. There they are usually quickly dispersed or otherwise kept below effective concentration levels by various natural processes. This point should be made here for the discussion that follows on page III-5ff.

There is little evidence to suggest that biological magnification in the food chain really occurs. The so-called magnification is confined to only one or occasionally two trophic levels.

Page III-5. The transition from an introductory discussion to the specifics of Kachemak Bay came swiftly. The Bay as an input-output system must be considered in order for the Odum model to apply. The author has lost sight of the fact that figure 47 is an illustration of principles and does not actually depict Kachemak Bay. The assumption that the "pollutional state" of Kachemak Bay lies close to the ordinate is not a fact that has been verified for inclusion in a status report.

Page III-7. This figure needs an explanation of where these data came from. If these are speculations on the part of the author, he should so state.

Page III-8. The choice of the Metula spill for developing a spill scenario is ridiculous. There is virtually no data available yet from this spill, nor is there likely to be. The Gunnarson narrative does not reveal anything that enables one to make a quantitative assessment of the effect on the fisheries (if there was any effect, or any fisheries to be affected).

If a total of only 7 tissue (mussel) samples were collected as is stated then the outlook for an intensive study is dim.

There have been several major spills that have been studied and that occurred in areas where fishery statistics were available. None of these spills resulted in any detectable effect on the fisheries. Many of these are summarized in Table 4-1 of Petroleum in the Marine Environment, National Academy of Sciences (1975). Others are available in the recent literature. The only thing that recommends the Metula spill is its size and the high latitude location. However, in view of the lack of quality investigations, this spill cannot provide an insight into the Kachemak Bay situation.

Page III-13. The conversion of tons to gallons should be checked.

It is unlikely that an uncontrolled well could spill anywhere near the amount suggested, namely, more than 20,000,000 gallons.

Page III-17. This discussion of dosage is pointless, however, if it is to be made, the author might carry it a bit further. Four hundred barrels of oil per square mile is about 20 g/m^2. Taking only the upper meter of the bay, this dosage would be less than 20 ppm total oil or 0.02 ppm SAD (as defined in his table 24, page III-51). Since the bay is more than one meter deep, this is a high estimate of dosage and well below the LD_{50} for larvae (table 24). This is a good indication of why spills do not seem to affect open water fisheries.

Page III-22. The second paragraph needs to be developed further. The studies mentioned seem to suggest that an accident in the leased area would not remain in the bay but would be carried away. The drogue trajectories and the spill trajectories would not coincide. He should differentiate between the slicks on the surface and the hydrocarbons in the water column.

Page III-27. Forester also provided some concentration data in his tar particle study. These were all in the low parts per billion <u>total oil</u>.

Page III-29. Lethal levels should stipulate the exposure time. Most of the values in the literature are for four day (96 hr) exposures. The best study of field dosage to date is the McAuliffe et al study: <u>Chevron Main Pass Black 41 Oil Spill: Chemical and Biological Investigations</u>. In the 1975 Conference on Prevention and Control of Oil Pollution. (555-566) According to this study neither the dosage nor the exposure time were great enough to cause biological effects during a multi-day spill of some 65,000 bbl.

Page III-37. The author does not tell us that prior to the spill similar quantities of oil were found in the sediments in the Santa Barbara Channel, evidently from the natural seeps. Nor does he mention that natural seeps in the Santa Barbara area produce the equivalent of two Santa Barbara spills each year. It would be interesting to learn what the flow rates are in the Cook Inlet seeps, and how that volume is assimilated by the ecosystem.

Page III-44. The <u>Torrey Canyon</u> spill was a tragedy perhaps, but it did not result in any detectable damage to the fisheries in the area, a fact that needs to be emphasized.

PageIII-38. The following, and the preceding for that matter, are much better discussed in the 1975 National Academy of Sciences <u>Petroleum in the Marine Environment</u>.

Page III-55. This summary figure suffers from the use of "will" rather than less definite verb. As a result, the fact that this is the author's conjecture of fate and effects is easily lost.

Section IV

This entire section does not seem to belong in a status report. Rather it expresses the view of a single author who is using this opportunity to publicize his particular philosophy. His desire may be understandable but the use of this forum is questionable.

One of the false impressions that this section gives is that the designation of the Kachemak Bay Critical Habitat preceded the lease sale when in fact this designation was imposed after the state had received its money.

Following page IV-27 there is an unnumbered figure of questionable value to the report.

Section V

This section is a continuation of the author's philosophical essay on environmental affairs. His arguments do not add to the usefulness of the document as a status report.

The author makes much of the use of the area for food production, but ignores the fact that none of the species exploited are cheap food, all are luxuries. Almost all the catch is exported. His statement on page V-11, second paragraph is clearly fallacious.

Following page V-14 is another unnumbered figure.

Frank J. Hester
Santa Barbara, CA
March 17, 1976

Draft Statement to State of Alaska - House of Representatives Committee on Resources Hearing on Proposed Legislation to Create a Marine Sanctuary in Kachemak Bay and Prohibit Oil and Gas Operations

Much of the concern about compatibility of oil and gas operations with fishing has addressed the effect of oil on the marine life if it does enter the water. At least as important is the question of whether or not an oil spill might occur during exploratory drilling.

A number of safeguards are applied in the drilling of any exploratory well to prevent oil from getting into the water.

First, during the drilling of any well where oil or gas may be encountered, the well is filled with drilling mud to prevent uncontrolled flows of fluids to the surface. This is called primary control.

Second, a system of valves and control devices is placed on the well during drilling to provide a means of closing the well, should the control by mud be lost. This equipment is called a blowout preventer and provides a back-up if the mud system fails. It is, therefore, called secondary control. Personnel on the drilling vessel are thoroughly trained to recognize symptoms indicative of a loss of primary control and to take the requisite control measures before the well can begin uncontrolled flow. Regular and frequent drills are performed by the crew using the blowout preventers to assure prompt and correct response by the personnel and proper working order of the equipment.

Third, equipment and response capability are provided, both on board the drilling rig and at convenient shore sites to contain and recover any spilled oil which could result from a failure of one of the above systems.

This is called the oil spill response capability. The rig itself has on board some 800 feet of boom to be deployed if significant oil volumes were spilled. Additionally, the rig will have on board a skimmer to pick up any oil contained by the boom. Sorbent and dispersant materials will also be available for use in picking up or dispersing small amounts of oil not recoverable by the skimmer. Again, the drilling crew and the crews of the support boats will be trained in handling the oil spill containment and recovery equipment.

A massive oil spill, such as have been associated with tanker groundings, is not a realistic prospect from exploratory drilling. In all offshore drilling to date, only 3 significant oil spills have resulted from blowouts of drilling wells. Even in such cases where considerable volumes of oil have been released to the water such as in the Santa Barbara spill, follow-up environmental studies have shown rapid and thorough recovery of the biota.

In summation of this necessarily brief and simple statement about a highly complex problem, I want to emphasize:

1. If oil and/or gas are encountered, the chance is [redacted] remote [redacted] that the well fluids will not be controlled by the drilling mud.

2. If the drilling mud should fail to provide primary control of any oil or gas the blowout preventers would be activated to close in the well.

3. If all of the above should fail, oil spill containment and recovery equipment is provided on board the drilling rig for

prompt deployment and recovery of any significant amounts of spilled oil.

4. In the very unlikely event of an oil spill, experience has shown, without exception, that there has been rapid recovery of the biota and no significant lasting damage has occurred.

Summary Chapter from:

ACUTE TOXICITY AND UPTAKE-DEPURATION STUDIES WITH COOK INLET CRUDE OIL, PRUDHOE BAY CRUDE OIL, NO. 2 FUEL OIL AND SEVERAL SUBARCTIC MARINE ORGANISMS

By

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Final report to Marathon Oil Corporation, Phillips Petroleum Corporation, Shell Oil Company, Standard Oil Company of California, Texaco Incorporated, and Union Oil Company of California on contracted laboratory studies relevant to oil development in Kachemak Bay, Alaska.

December 1, 1975

1 Summary

1.1 Background and Scope

This is a laboratory study of the effects of petroleum hydrocarbons on selected Alaskan marine animals. The purpose was to determine whether or not commercially important Alaskan marine animals react differently to crude oil than do marine animals in other areas, particularly those areas where oil and gas development activities have been established for a considerable time with no apparent effect on the fisheries.

This study was conducted by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northwest Fisheries Center, using the facilities and personnel at the Auke Bay Fisheries Laboratory and the Kasitsna Bay Field Station. Funding was provided by a contract with the Shell Oil Company, and was cosponsored by Marathon Oil Corporation, Phillips Petroleum Corporation, Standard Oil Company of California, Texaco Incorporated, and Union Oil Company of California.

The primary objectives of this study were:

to determine the acute toxicity of Cook Inlet crude oil to various life stages of fish and shellfish found in Kachemak Bay.

to determine the rate and degree of uptake and depuration of hydrocarbons by these animals when they were exposed to sublethal concentrations of the water-soluble fractions of crude oil.

to compare our results to published literature to determine to what degree, if any, Alaskan marine animals differ from animals in other areas in their response to oil contamination.

Secondary objectives included the identification and quantitation of some sublethal behavioral and physiological effects.

1.2 Methods

1.2.1 Acute Toxicity

The acute toxicity of crude oil to Alaskan marine animals was determined by standard bioassay. All the bioassays were static; that is, the test solution was not replenished with fresh solution during the course of the four-day (96-hour) test period. As a consequence, evaporation and bacterial decomposition decreased the concentration of many of the soluble fractions during the tests. Both oil-water dispersions (OWD's)* and water-soluble fractions (WSF's)* were used for the bioassays. The oil-water dispersions (microscopic oil droplets in water) were prepared by short-term but high-energy mixing of oil and seawater. The water-soluble fractions were prepared by stirring an oil-water mixture for 20 hours and then siphoning off the water and dissolved oil fractions from under the remaining oil slick. The concentrations of hydrocarbons in the test solutions were determined by infrared and ultraviolet spectrophotometry. Ultraviolet measurements appear to be the superior method for monitoring toxicity.

1.2.2 Uptake and Depuration

The rate and amount of hydrocarbon uptake and depuration (the release of hydrocarbons from body tissue) were determined as follows.

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*For a glossary of the abbreviations used throughout this report, see Appendix A.

The test animals were exposed to seawater containing less than 20% of the WSF concentration that would be expected to kill 50% of the animals in 96 hours (the 96-hr TLm [median tolerance limit]). Samples of tissue from the test animals were taken periodically during exposure and depuration for determination of their hydrocarbon concentrations by gas chromatography. Exposure and depuration periods typically lasted for 96 hours each.

1.2.3 Low Level Effects

In addition to acute bioassays and uptake-depuration experiments, some preliminary investigations were made of the effects of low-concentration exposures on behavior and physiology. These included behavioral observations of larvae in the vicinity of surface oil slicks, and physiological studies of crab respiration as affected by dissolved oil fractions.

1.3 Results

1.3.1 Acute Toxicity

Acute oil bioassay studies are subject to technical problems not usually encountered in acute bioassays using less complex substances. As a consequence, the values obtained from oil bioassays are dependent to some extent on experimental techniques. The results generally exhibit a considerable range of variability making it difficult to assess minor differences in sensitivity among different species, especially among different studies.

The results of the acute toxicity studies on both adults and

larvae are summarized in Table S-1. For comparative purposes, data from other investigations of oil toxicity on marine animals from the west coast and the Gulf of Mexico are included. The Alaskan species appear to be more sensitive than the Gulf of Mexico or Pacific coast animals tested by Anderson et al. (1974b) and Battelle (1973b, 1974a) since the ranges of median tolerance limits for Alaskan species are lower and do not overlap those for Gulf of Mexico or Pacific coast species. This apparent sensitivity of Alaskan species may actually reflect differences in test oils, temperature, salinity, or test procedures used in this study and the other studies. Since as previously stated, there is considerable variation between replicate bioassays in this and the other studies, we cannot state that these apparent differences in sensitivity are statistically significant.

Larvae tested in this study are generally more sensitive than adults, but their range of sensitivity does overlap with those reported for adults.

1.3.2 Uptake and Depuration

The uptake and retention of hydrocarbons by Alaskan species appears identical to the pattern reported for temperate and subtropical species. Actual quantitative differences in accumulation or depuration rates may exist but cannot be determined for lack of statistical confidence limits on the tissue analysis of hydrocarbon concentrations. All of the species we tested accumulated significant amounts of aromatic hydrocarbons. Methylnaphthalene was accumulated to the greatest extent and persisted the longest (Figure S-1). Naphthalene and other

substituted naphthalenes showed similar uptake and depuration behavior but did not accumulate to such high levels in the tissues.

1.3.3 Low Level Effects

Larvae were apparently unable to detect or avoid oil slicks.

The results of the preliminary experiments on crab respiration were inconclusive and their chief interest lies in suggesting paths for future inquiry.

1.4 Conclusions

We caution the users of these data that the reported concentrations are for dissolved or dispersed petroleum hydrocarbons. They should not be confused with volumetric additions of oil to water.

1.4.1 Conclusions on Acute Toxicity

1. The acute toxicity bioassays (Table S-1) suggest that the Alaskan species tested are more sensitive to dissolved and dispersed petroleum hydrocarbons than are species from other areas. However, this apparent sensitivity may be the result of differences in test oils, temperature, salinity, and test procedures. The precision of the comparative data is not sufficient to permit us to test these differences for statistical significance. However, the magnitude of the differences suggests that they may not be statistically significant.

2. The median tolerance limits of the eight species tested with oil were quite similar. Juvenile king crabs and scallops were consistently the most resistant while fish and shrimp were least resistant.

3. The median tolerance limits of Cook Inlet crude oil water-soluble fractions (WSF's) to herring, crab, and shrimp larvae ranged from 1.8 ppm to above 8 ppm (determined by infrared spectrophotometry). Many of the early stage larvae would lie moribund on the bottom, unable to swim, for several days before actual death. The median effective concentrations (ECm's) for this condition of moribundity ranged between 0.3 and 3 ppm (determined by infrared spectrophotometry). The later stages of coonstripe shrimp larvae appeared to be more sensitive to oil than earlier stages. Molting coonstripe larvae were more sensitive than inter-molt larvae.

4. Larvae are the most vulnerable of the life stages of the organisms tested in this study. They were quantitatively more sensitive to oil toxicity, especially during molting. Crustacean larvae may be particularly susceptible to oil toxicity compared to adults because of the frequency that larvae molt.

5. Comparisons of dodecylsodium sulfate (DSS) toxicity from several studies show extreme variance within some species. No quantitative conclusion about species differences was made. The use of DSS as a standard toxicant as recommended by La Roche et al. (1970) is not indicated.

1.4.2 Conclusions on Uptake-Depuration of Hydrocarbons

1. We found the uptake and depuration of hydrocarbons by the Alaskan species tested to be qualitatively identical to the patterns reported for species from other areas. The quantitative differences between the hydrocarbon uptake studies cannot be compared directly. There are no

estimates of variance since the cost of chemical analyses precluded running replicates in any of the studies.

2. With the exception of scallops, all the species we tested seemed able to resist n-paraffin accumulation.

3. All species tested accumulated relatively higher concentrations of aromatic hydrocarbons as compared to paraffin accumulation. Pink salmon fry were able to rid themselves of most of the accumulated naphthalenes while remaining in contaminated seawater. Juvenile king crabs were able to depurate within 48 hours after removal to clean seawater. Depuration by scallops and shrimp was slower and incomplete by the end of a 48-hour depuration period in clean seawater. The rate of depuration for these species suggests it would take up to several weeks to return to control levels of aromatic hydrocarbon concentrations.

1.4.3 Conclusions on Behavior and Physiology

1. Dungeness crab larvae and herring larvae were apparently unable to detect and avoid oil. Larvae were observed to touch oil slicks repeatedly in observations on behavior. At high concentrations of oil the larvae began to settle in the water column, which was interpreted as inability to swim to the surface rather than avoidance behavior.

2. When king crabs were exposed to the water-soluble fractions of Cook Inlet crude oil the respiration rate was depressed, but only at oil concentrations equal to or just below the 96-hour median tolerance limit. Measurement of metabolism does not appear to be a sensitive index of oil toxicity stress to crabs.

1.4.4 General Conclusions

1. Our studies do not suggest that major differences exist between the responses of the Alaskan marine animals tested and the responses of marine animals from other areas as reported in the literature.

2. The concentration of oil in water dispersions and water-soluble fractions of oil in solutions is dependent on a number of factors, including oil volume, confinement of the oil, mixing duration, and mixing energy. As a consequence, we do not attempt to transfer the results of our study to a field situation (including Kachemak Bay) or attempt to establish the potential effects of oil contamination on the environment. If oil pollution did occur, the oil concentrations that would occur in the water column are difficult to predict, since the oil volume, mixing duration, mixing intensity, and confinement of the spill are all important but unknown variables that would depend on the specific conditions prevailing at the time of the spill. Further, there are too few quantitative studies on the effects of an oil spill in arctic and subarctic waters that include measurements of oil in the water column for us to state that our laboratory exposure concentrations might be encountered under a field spill situation.

3. Our findings are most useful for establishing the similarities of the effects of oil on Alaskan marine animals and on animals elsewhere, and quantitating the relative sensitivity of larvae compared to adults or juvenile forms.

Table S-1.--Summary of acute toxicity of several crude oils and No. 2 fuel oil to several marine species. Data are from four studies, each using at least two different crude oils. Ranges of 96-hr median tolerance limits (TLm's) are reported in ppm of oil as measured by IR (2930 cm^{-1}).

Study and species tested	Temperature range	(WSF) Crude oil	(WSF) No. 2 fuel oil	(OWD) Crude oil
Battelle 1973b [1/]				
Two species of fish	8°C	15-65	---	---
Battelle 1974a [1/]				
Coonstripe shrimp, juvenile salmon (flowthrough)	10-11°C	6.6-24.9	---	---
Coonstripe shrimp (static)	8°C	1.3-4.9	---	---
Anderson et al. 1974b				
Three crustacean species	18-22°C	3.6->19.8	1.3-4.9	18-62
Three fish species	18-22°C	5.5-19.8	3.9-6.3	38-78
This study				
Four shrimp species	3.5-5.4°C	1.26-4.34	0.53-1.69	2.31-13.9
One crab species	3.8-7.8°C	2.35-4.21	5.10	5.3-7.80
One scallop species	3.9-7.4°C	1.57-3.15	0.8	8.04-9.34
Two fish species	3.6-10.2°C	1.10-2.94	0.81-2.29	3.41-16.4
Coonstripe shrimp	3.6-4°C	1.96-2.72	---	---
Six species of crustacean larvae (Stage I-VI)	3.5-13°C	TLm = 0.54->8 ECm = 0.24-3.9 [2/]	--- ---	--- ---

[1/] Battelle studies do not report TLm's directly in the form of IR ppm. The values presented for Battelle are measured from their raw data. Some of their tests are flowthrough and others are static. They used different mixing procedures and their data may not be directly comparable to ours.

[2/] For larvae we also report this ECm, or mean effective concentration for moribundity. Moribund larvae showed some motion, but were unable to swim, and destined for death.

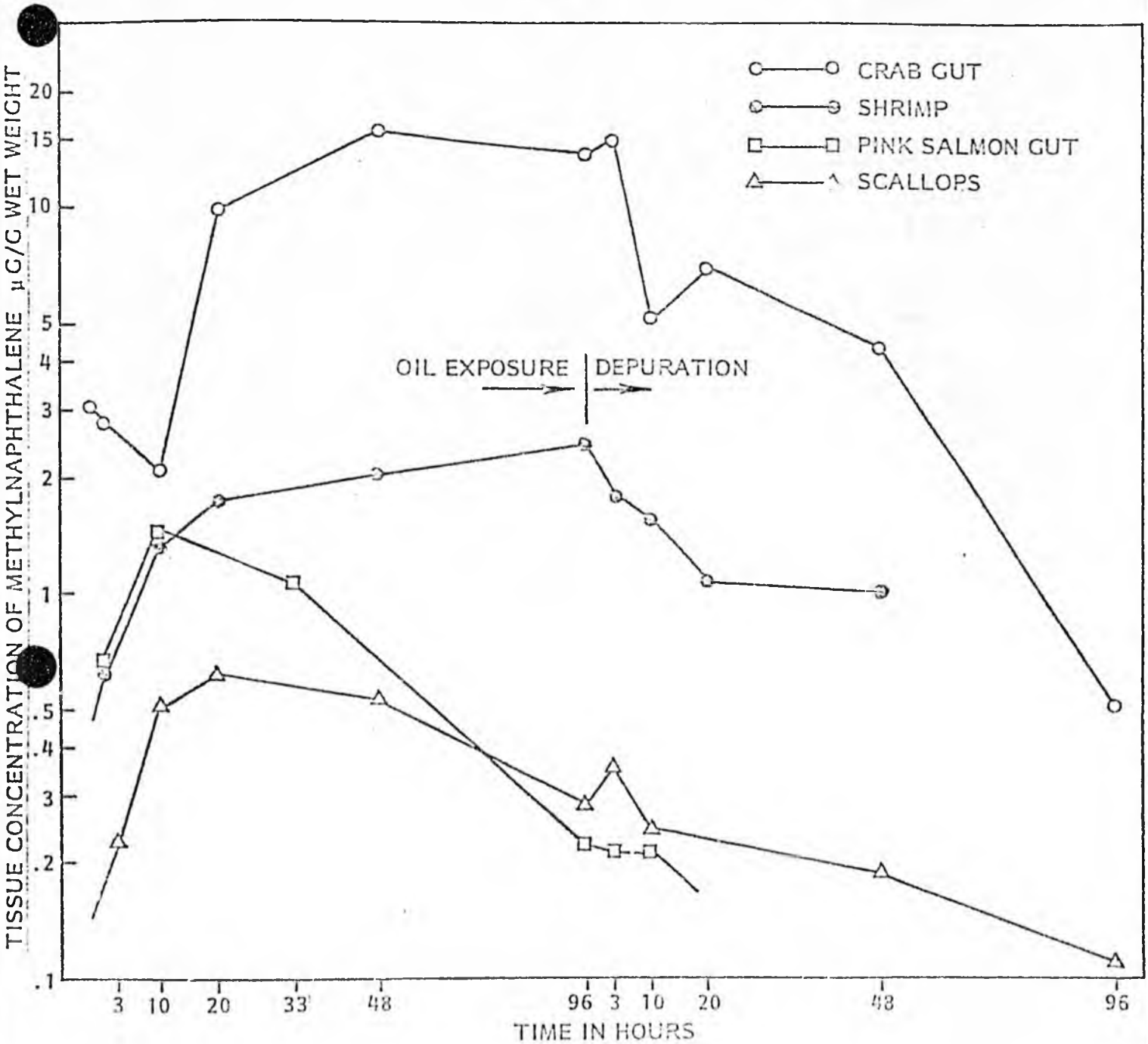


Fig. S-1. Comparison of methylnaphthalene accumulation in juvenile king crab gut, whole shrimp, pink salmon gut, and whole scallops exposed to the water-soluble fraction of Cook Inlet crude oil. Methylnaphthalene accumulated to a greater extent than any other aromatic compound in these tissues. Concentrations during exposure were approximately equal.

Testimony of Loren B. Flagg, Habitat Protection Biologist. Alaska Department of Fish and Game (Homer, Alaska)

before the

Alaska House Resources Committee

on

Sponsor Substitute H.B. 626 relating to establishment of marine sanctuaries and condemnation of the Kachemak Bay Oil and Gas Leases

March 22, 1976
Juneau, Alaska

Mr. Chairman and committee members. My name is Loren B. Flagg and I'm representing the Alaska Department of Fish and Game. I have been employed as a biologist for the state for the past 8 years. During this time I have been stationed in Homer and have worked in the Kachemak Bay and lower Cook Inlet area both as a Commercial Fisheries Management Biologist and, more recently, as a biologist for the Habitat Protection Section of the Department of Fish and Game.

Kachemak Bay, on a per acre basis, is considered by biologists of the Alaska Department of Fish and Game to be one of the most highly productive marine environments in the world. This contention is based upon historical harvest data and from results of oceanographic and biological studies by the Department of Fish and Game and the National Marine Fisheries Service. Five species of salmon as well as king crab, tanner crab, shrimp, dungeness crab, herring and halibut are harvested on an annual basis from Kachemak Bay. In addition to the presence of adult age classes of the species mentioned above, the Bluff Point area on the north side of Kachemak Bay is known to be a major release area for shrimp, tanner crab and king crab larvae. Juvenile age classes of both shrimp and king crab are abundant in the area. Bluff Point is a major reproduction area for king and tanner crab and breeding,

molting and egg hatching take place in this area, primarily from late winter to mid-summer.

To put this in perspective, Kachemak Bay comprises only 2.6% of the marine waters of the Cook Inlet management area, yet yields 60% of the entire shellfish harvest. Tagging studies as well as recent studies of currents and larvae transport indicate that Kachemak Bay harbors important life stages of shellfish ultimately harvested in other areas outside the bay. King crab tagged in the bay during the breeding season have been recovered in harvest areas to the south in the vicinity of Cape Douglas and the Barren Islands (Cook Inlet Map - Figure 1).

In 1973, the year the oil and gas leases took place, there was a total salmon harvest in the Kachemak Bay area of 126,407. The king crab catch for 1973 was 2.1 million pounds, tanner crab 3.8 million pounds, shrimp 4.7 million pounds, and dungeness crab 308,000 pounds. There were also 407,500 pounds of herring taken from Kachemak Bay in 1973. The Kachemak Bay commercial harvest by year and by species appears in Table 1. The total value of the 1973 Kachemak Bay commercial fisheries harvest, was 3.2 million dollars to fishermen and 7.3 million dollars on a first wholesale basis. (Table 2.)

The number of vessels participating in the various Kachemak Bay commercial fisheries during 1973 was king crab-56, tanner crab-80, dungeness crab-53, pot shrimp-40, trawl shrimp-8, herring-12, and salmon-60. There were also a considerable number of halibut vessels that fished Kachemak Bay during 1973, however, statistics on this fishery are kept by the International Pacific Halibut Commission.

The following is a brief discussion of the various commercial fisheries in the Kachemak Bay area.

SALMON

The major portion of salmon taken in Kachemak Bay are taken with seine gear and the major species caught are pink salmon. Pink salmon have made up 82.7 percent of the catch since 1954 followed by chum salmon (8.2 percent), sockeye salmon (7.8 percent), coho salmon (1.2 percent) and king salmon (.1 percent). The annual average total salmon catch for Kachemak Bay since 1954 is 248,886.

Catch figures for Kachemak Bay for 1975 indicate it will be the highest year on record with a total salmon catch of over 900 thousand. The bulk of this year's catch were pink salmon (866,335). The peak escapement counts in 1975 for the pink salmon run to Kachemak Bay totaled 120 thousand to the four major streams. Salmon catch zones and spawning streams in Kachemak Bay are shown in Figure 2.

KING CRAB

In 1973 a total of 56 different vessels landed 2.1 million pounds of king crab from Kachemak Bay. In 1974 there were a total of 138 king crab vessel registrations in the Cook Inlet area. Of these, 76 vessels landed 1.6 million pounds of crab from Kachemak Bay. The bulk of the king crab harvest is taken during the months of August and September and the major fishing area lies along the south side of the bay. (Figure 3).

TANNER CRAB

The commercial catch of tanner crab in Kachemak Bay from 1968 through 1974 has averaged 1.7 million pounds. The peak year of production occurred

in 1973 when 3,763,060 pounds were landed. A total of 80 vessels landed tanner crab from Cook Inlet waters in 1973 and most of these vessels fished Kachemak Bay during the peak of the season. Market conditions were poor and effort fell off during 1974 and these factors as well as an apparent weak year class were responsible for the reduced catch of 1.1 million pounds. Figure 4 shows the tanner crab as well as the winter king crab harvest areas.

DUNGENESS CRAB

The peak year of production for dungeness crab occurred in 1963 when 1.7 million pounds were landed from the bay. Since 1969 the dungeness fishery has been sporadic in Kachemak Bay with an average annual yield of 235 thousand pounds. The highest year of production since 1964 was in 1974 when 721 thousand pounds were landed from the bay. A total of 36 vessels participated in the 1974 fishery and made a total of 609 landings. The bulk of the catch was made in the Bluff Point area between July and November. (Figure 5).

SHRIMP

The trawl shrimp season presently runs from June 1 through March 31. The waters of Kachemak Bay inside a line from Anchor Point to Point Pogibski are on a guideline harvest level or quota of 5.0 million pounds annually. The major fishing areas are shown in Figure 6. The trawl shrimp catch from 1970 through 1974 averaged 5.2 million pounds for the Bay. Since the trawl shrimp catch averages about 100 shrimp to the pound, 5 million pounds then represents about 500 million total shrimp.

The average C.P.U.E. for the Kachemak Bay trawl shrimp fishery is the highest in the state, surpassing even the most productive areas in the Kodiak

region. It is also higher than the Gulf of Mexico and the Gulf of Maine where major trawl fisheries on shrimp also occur. The C.P.U.E. in the Kachemak Bay trawl fishery is the highest we know of in the United States and may quite possibly be the highest in the world. Catch rates have been recorded as high as 22,000#/drag hour in Kachemak Bay.

There is also a pot shrimp fishery in Kachemak Bay. This fishery did not start up on a significant basis until 1971 when 55,665 pounds were landed. The 1974 catch of 678,097 pounds was the highest on record to date and the fishery presently appears to be in a healthy state.

HERRING

Pacific herring have undergone two periods of exploitation in Kachemak Bay. The first period was from 1914 through 1928 when a salt fishery was centered in the Halibut Cove area. A total of nearly 90 million pounds of herring were harvested during this time period. The second fishery on herring in Kachemak Bay started in 1969 when a sac roe market developed. Since 1969 a total of 7.2 million pounds have been harvested from Kachemak Bay. In the peak year of 1970, 11 vessels landed 5.4 million pounds. The herring fishery occurs during May and early June in the Kachemak Bay area and most of the catch comes from the Halibut Cove - Glacier Spit and Mallard Bay areas.

In addition to commercial fisheries there are substantial subsistence and sports fisheries in Kachemak Bay which harvest all of the above mentioned species plus several species of bottom fish and clams. The subsistence fishery is the highest use subsistence fishery in the Cook Inlet area and probably in the state of Alaska. It is a year round fishery on a multitude of species. The Kachemak Bay sports fishery in terms of man days of effort expended was the highest use sports fishery in the state in 1973. Over 31,000 man days of

effort was recorded between June and September. (Sports Fish Investigations of Alaska, 1974 Report)

Kachemak Bay is not only unique as judged by it's greatly diverse and highly productive marine fisheries. It is unique in many other ways. At various seasons of the year the Bay harbors tremendous concentrations of shore birds, sea birds, and waterfowl. There are several species of marine mammals including harbor seals, porpoises, sea otters, sea lions and several species of whales which are common in the Bay. Several major big game species including black bear, brown bear, moose, mountain goats, and Dall sheep inhabit the shore line and adjacent mountainous area around Kachemak Bay. All of the above forms of life are found elsewhere in the state of Alaska. But nowhere else in the State can one find the diversity and abundance of life all together in one place as it is in the Kachemak Bay area. You add to this the fantastic scenic qualities of the area and this is what makes Kachemak Bay so unique and so worth protecting. A map depicting the environmental attributes of the Kachemak Bay area appears in Figure 7.

Productivity of a bay cannot simply be measured by the commercial and sports catch. In the case of Kachemak research studies indicate it is contributing to the catch in other areas of lower Cook Inlet and possibly to the northern areas of the Kodiak district. As mentioned earlier results of tagging and larval transport studies have shown this.

CRUSTACEAN LARVAL STUDIES

In 1971 the NMFS began a comprehensive study of the larvae of commercially important crab and shrimp in Kachemak Bay. In general, the study was designed to determine the distribution, abundance, and survival of larvae.

The patterns of larval abundance and distribution in Kachemak Bay in 1972 can be summarized as follows: king crab zoea (which is the initial stage

larvae after the eggs hatch) were released in Kachemak Bay primarily in the Bluff Point area. Many larvae remained in the release area throughout their planktonic or free floating existence.

Larvae first occurred in the plankton samples during the latter half of April. The area of greatest abundance occurred in the Bluff Point area. Abundance decreased rapidly on either side of this area. During the latter half of May larvae were distributed throughout Kachemak Bay. The most obvious feature of larval distribution at this time was the band of highest abundance which extended across the outer bay south of Anchor Point to Seldovia Bay, (Figure 8). Two centers of abundance existed in the outer bay in June. The first centered around the Bluff Point area and extended as a tail in a southwesterly direction from the Bluff Point area. Another extended as a band of abundance from the Homer Spit southward to Kasitsna Bay. In general, the concentrations of larvae from April through June provide evidence of the location of releasing sites. The initial occurrence and higher abundance of these larvae off Bluff Point indicate that this area is the major releasing area in Kachemak Bay for king crab zoea larvae. This assumption is supported by studies of female king crab by the Alaska Department of Fish and Game. These studies show that egg bearing king crab congregate in this area during spring for the purpose of releasing larvae. During the king crab larval study, information was also obtained on other crustacean larvae including shrimp and tanner crab. An analysis of this information indicates that the area of greatest abundance of these species was also in the vicinity of Bluff Point.

Further insight into the importance of Kachemak Bay to early life stages of shellfish was obtained last year as a result of the Alaska Department of Fish and Game Habitat research program. During studies of current patterns using radar tracking, two circular gyres or eddies were located in outer

Kachemak Bay, (Figure 9). Since the planktonic or "free floating" stage of our key species of shellfish larvae lasts for three to nine weeks, without a gyre system they would not have the opportunity to develop to the settling stage while still residents of Kachemak Bay. The gyres afford this opportunity as demonstrated by benthic (bottom) studies conducted in Kachemak Bay last year. These studies showed a tremendous concentration (preliminary estimate of 35 million per square mile) of post larval or first stage juvenile king crab had settled to the bottom along the northern shore of Kachemak Bay, (Figure 10).

Mr. Chairman, if you would like I can review a few reports which show some of the evidence pointing out the dangers to which we are exposing Kachemak Bay with the pending oil development. (Chairman Anderson approves).

The first is a report from the Federal Government entitled "Oil Pollution--A Report to the President" and concerns some of the effects upon the aquatic environment, vividly illustrated by the grounding of the Torrey Canyon. The report states: "The shock, economic to man and lethal to marine and bird life, was created by the thousands of tons of crude oil which were disgorged into the open seas and subsequently blanketed portions of the shores of Great Britain and France.

When surface feeding fishes were observed swimming into the floating oil their bodies and gills became coated. If death did not result from such contact, their flesh absorbed the taste and odor producing fractions of the oil rendering them unfit for human consumption for a long time afterwards. As an oil mass moves landward, toxic oil fractions can bring death to both larval and adult forms of invertebrate marine life which inhabit the shallow inshore areas. Marine life valuable to man as a food resource may be totally destroyed by the oil. When chemical compounds are used in the shallow or littoral areas to precipitate or sink oily materials or otherwise cleanse the surface of the water, the effect to the aquatic community may be more deadly than the floating oil itself."

There have been two oil spills on the east coast of the United States that have been well documented. The first occurred in 1963 in the State of Maine where the effects of a spill were monitored for ten years under the direction of Robert Dow, Research Director of the Maine Department of Marine Resources. His studies showed that 7,000 parts per million of oil in bottom sediment and 200 parts per million in soft shell clams still existed ten years after an 850,000 gallon oil spill by the tanker "Northern Gulf" outside of Casco Bay in Maine.

Studies conducted by Dr. Max Blumer of the Marine Biological Laboratory of Woods Hole, Mass., show similar results. Dr. Blumer reported in 1973-- "that oil was still chemically identifiable and that the original animal populations had not returned except at the most lightly polluted marginal locations."

Dozens of species of fish, shellfish, marsh grasses and bottom living eels and worms washed up dead on shore. The presence of the latter species was a surprise since most people believed that oil would not affect the bottom, but rather float on the surface. These bottom dwellers, however, were apparently coming out of their burrows in hoards and being washed ashore dying or dead. They comprised a major portion of the kill. When sampled, the sediment was found saturated with oil to a depth of at least a foot, and subsequent samplings showed no perceptible reduction.

A more recent report concerns an area closer to home in that the study took place in Alaska. The report, by Mr. Dale Evans and Stanley D. Rice, from National Marine Fisheries Service at Auke Bay, is on the effects of oil on marine ecosystems. They state the following in their summary: "Assessments of the impact of oil pollution cannot depend solely on evaluation of immediate kills of organisms from acute exposures. Chronic low level oil pollution can

cause subtle changes in organisms and is potentially more dangerous to the ecosystem than dramatic, catastrophic spills.

Chronic pollution may eliminate a species from an area entirely, and once eliminated that species may remain suppressed and may not repopulate the area because of continuing pollution or because its niche has been filled by a more tolerant, possibly less desirable species. The adverse effects of oil on animal populations has been of wide concern when stocks of special interest such as those providing the basis of a sport or commercial fishery have been involved."

A report will be published next month from the National Marine Fisheries Service Auke Bay Labratory which will show results of bioassey studies using Cook Inlet crude in tests with various species and stages of shellfish from the Cook Inlet area. Results of this study will show that levels as low as 0.3 ppm is toxic to larval stages of commercially important shellfish species. this confirms the findings of Moore (Table 3) showing that larvae are more susceptable than other forms of marine life. Our concern is that if levels this low are toxic to shellfish larvae, what will happen in the event of a spill in the proposed lease area/during the time of year the larvae are abundant in the water column? We fear that if a spill entered the eddy or gyre system at the same time the larvae were present the result could be devastating. (Figure 11)

What are the odds that we will have a spill in the Kachemak Bay area? The record from oil activities in upper Cook Inlet speaks for itself. From 1962 to 1973 there were a total of 260 reported oil spills. Most of these occurred from 1966 to 1970 at a time when most of the development phase was occurring, (Table 4).

Mr. Chairman, I think it is safe to say there will be more oil spills with future oil development, and I hope you now share our concern for the dangers that this development will bring to Kachemak Bay.

Thank you.

TABLE 1

Kachemak Bay, Cook Inlet, Commercial

Fisheries Harvest, 1966-75

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1966	60	12,192	4,535	177,544	28,754	223,085
1967	173	26,350	2,393	95,100	23,416	147,432
1968	61	18,716	4,671	154,033	4,518	181,999
1969	59	12,578	485	70,753	2,600	86,475
1970	91	12,245	3,705	208,174	8,174	232,389
1971	41	18,403	3,151	50,066	2,857	74,518
1972	69	31,345	1,283	9,126	4,936	46,759
1973	139	24,072	1,241	97,574	3,588	126,614
1974	182	27,029	3,054	48,075	2,725	81,865
1975 1/	138	27,385	1,240	866,335	5,411	900,509

Shellfish (Pounds)

Year	King Crab	Tanner Crab	Shrimp	Dungeness Crab
1966	1,910,364		309,676	12,523
1967	1,279,708		741,438	7,168
1968	996,520	146,491	26,030	484,452
1969	1,302,554	1,436,680	849,710	49,894
1970	1,501,288	1,152,609	5,815,268	209,819
1971	1,251,142	1,186,488	5,438,091	97,161
1972	1,900,006	2,942,082	5,450,498	38,930
1973	2,114,841	3,763,060	4,709,486	308,777
1974	1,609,530	1,106,263	5,740,647	721,183
1975 2/				

Herring

1969	1.1 Million Pounds
1970	5.4 Million Pounds
1971	25,000 Pounds
1972	2,000 Pounds
1973	407,500 Pounds
1974	219,359 Pounds
1975 1/	48,833 Pounds

1/ 1975 data preliminary.

2/ Shellfish seasons still in progress.

TABLE 2

ESTIMATED VALUE IN MILLIONS OF DOLLARS OF KACHEMAK BAY COMMERCIAL FISHERIES IN 1973

SPECIES	VALUE TO FISHERMEN	FIRST WHOLESALE VALUE
SALMON	.2	.4
KING CRAB	1.7	3.3
TANNER CRAB	.7	1.7
SHRIMP	.4	1.5
DUNGENESS CRAB	.2	.4
HERRING	.03	.06
TOTAL	3.2	7.3

Summary of Toxicity Data

Class of Organisms	Estimated Concentration (ppm) of soluble aromatics causing toxicity	Estimated amount (ppm) of Petroleum substances containing equivalent amount of aromatics	
		#2 Fuel Oil	Fresh Crude
Flora	10-100	50-500	$10^4 - 10^5$
Finfish	5-50	25-250	$10^4 - 10^5$
Larvae (all species)	0.1-1.0	0.5-5	$10^2 - 10^3$
Pelagic Crustaceans	1-10	5-50	$10^3 - 10^4$
Gastropods (snails, etc.)	10-100	50-500	$10^4 - 10^5$
Bivalves (oysters, clams, etc.)	5-50	25-250	$10^4 - 10^5$
Benthic Crustaceans (lobsters, crabs, etc.)	1-10	5-50	$10^3 - 10^4$
Other Benthic Invertebrates (worms, etc.)	1-10	5-50	$10^3 - 10^4$

TABLE 3

TABLE 4

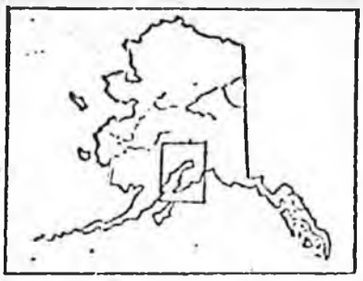
DOCUMENTED OIL SPILLS IN COOK INLET [1]

YEAR	TOTAL KNOWN SPILLS [2]	SPILLS CAUSED BY OIL INDUSTRY [3]
1962	1	1
1965	1	1
1966	27	9
1967	41	22
1968	70	52
1969	39	28
1970	41	17
1971	16	6
1972	17	1
1973	7	6
TOTAL	260	143

[1] SOURCE: EPA RECORDS

[2] TOTAL DOCUMENTED SPILLS IN COOK INLET WATERS.

[3] DOCUMENTED OIL SPILLS IN COOK INLET WATERS CAUSED BY OIL INDUSTRY.



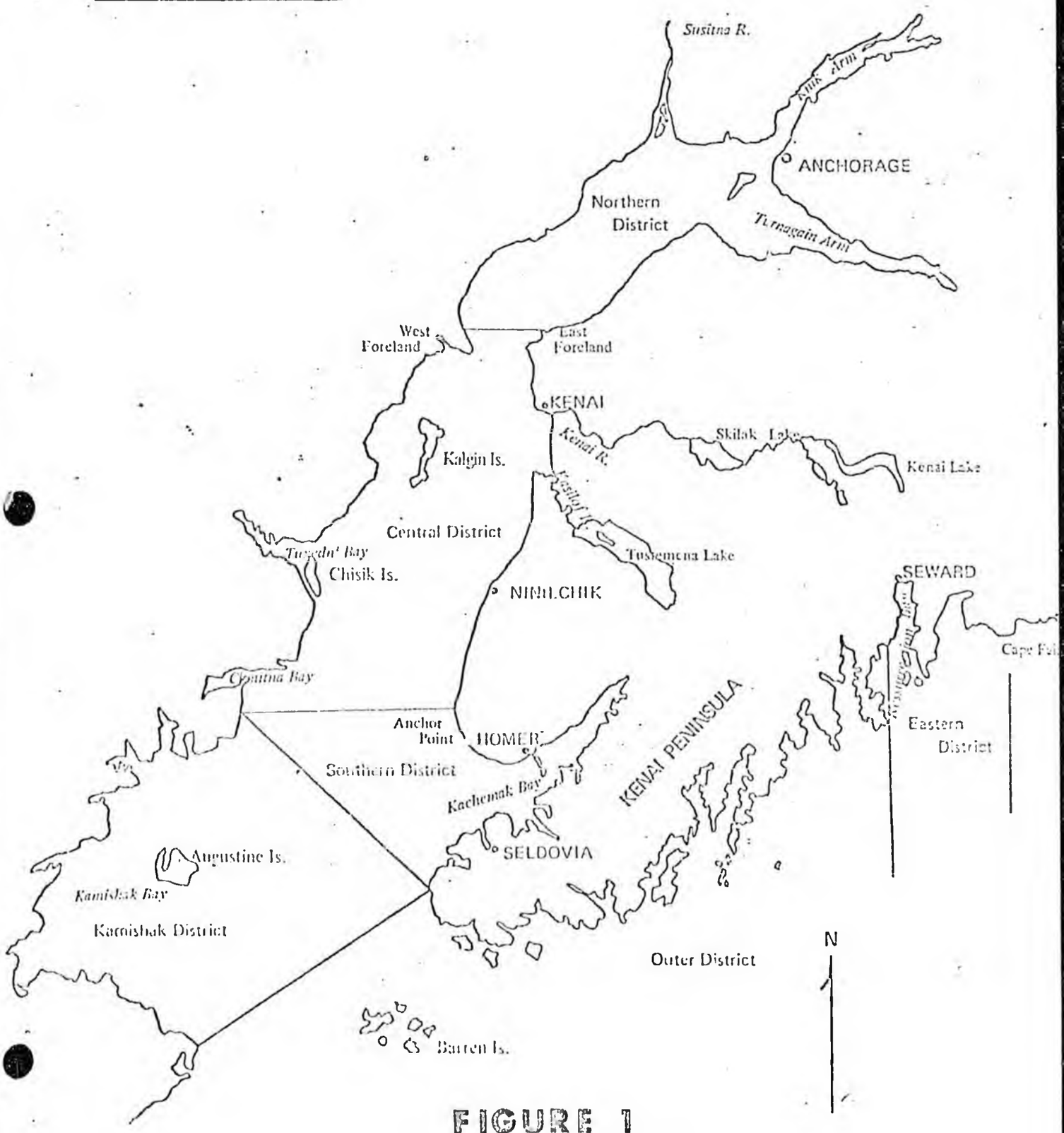


FIGURE 1

Cook Inlet area

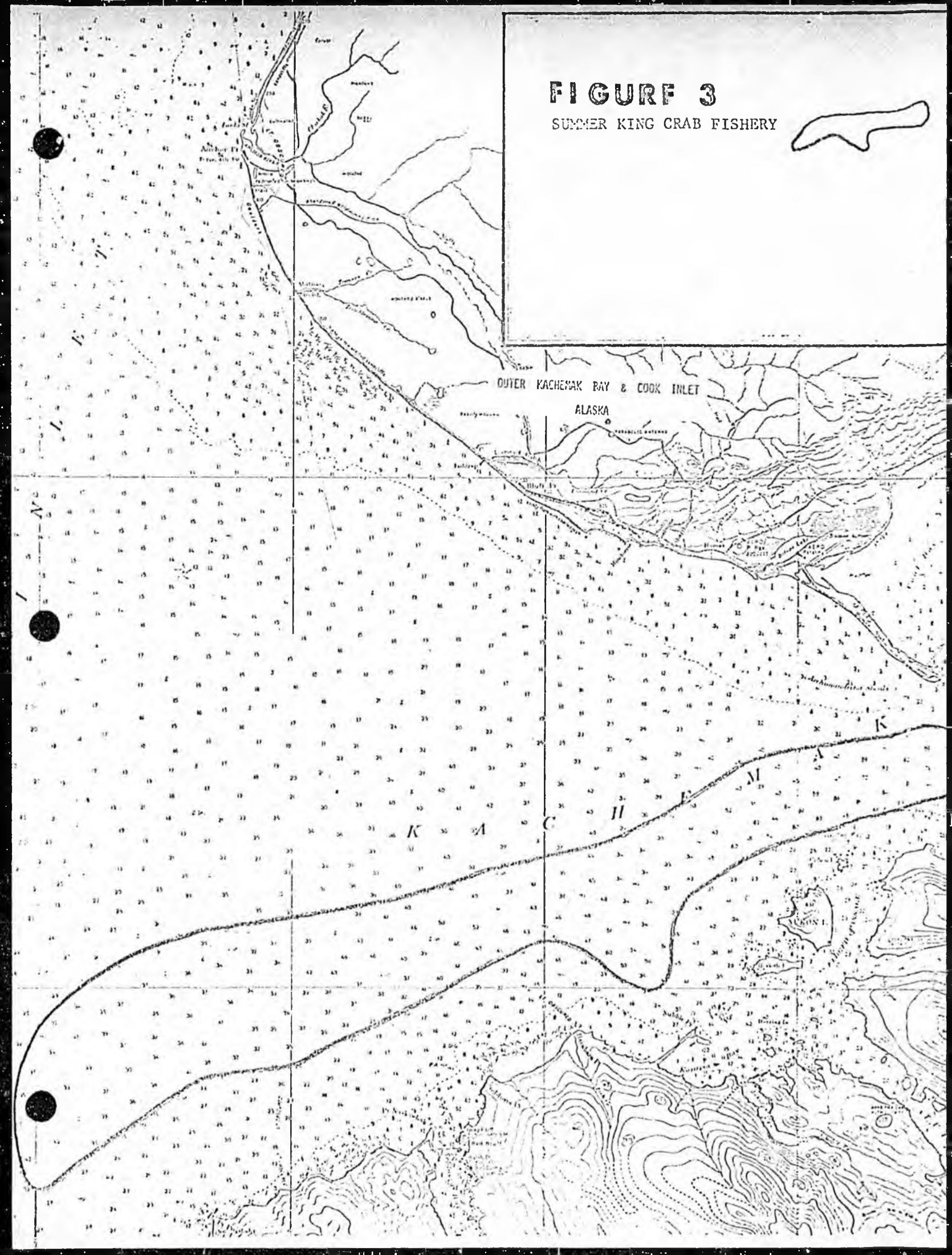


FIGURE 3
SUMMER KING CRAB FISHERY
OUTER KACHEMAK BAY & COOK INLET
ALASKA

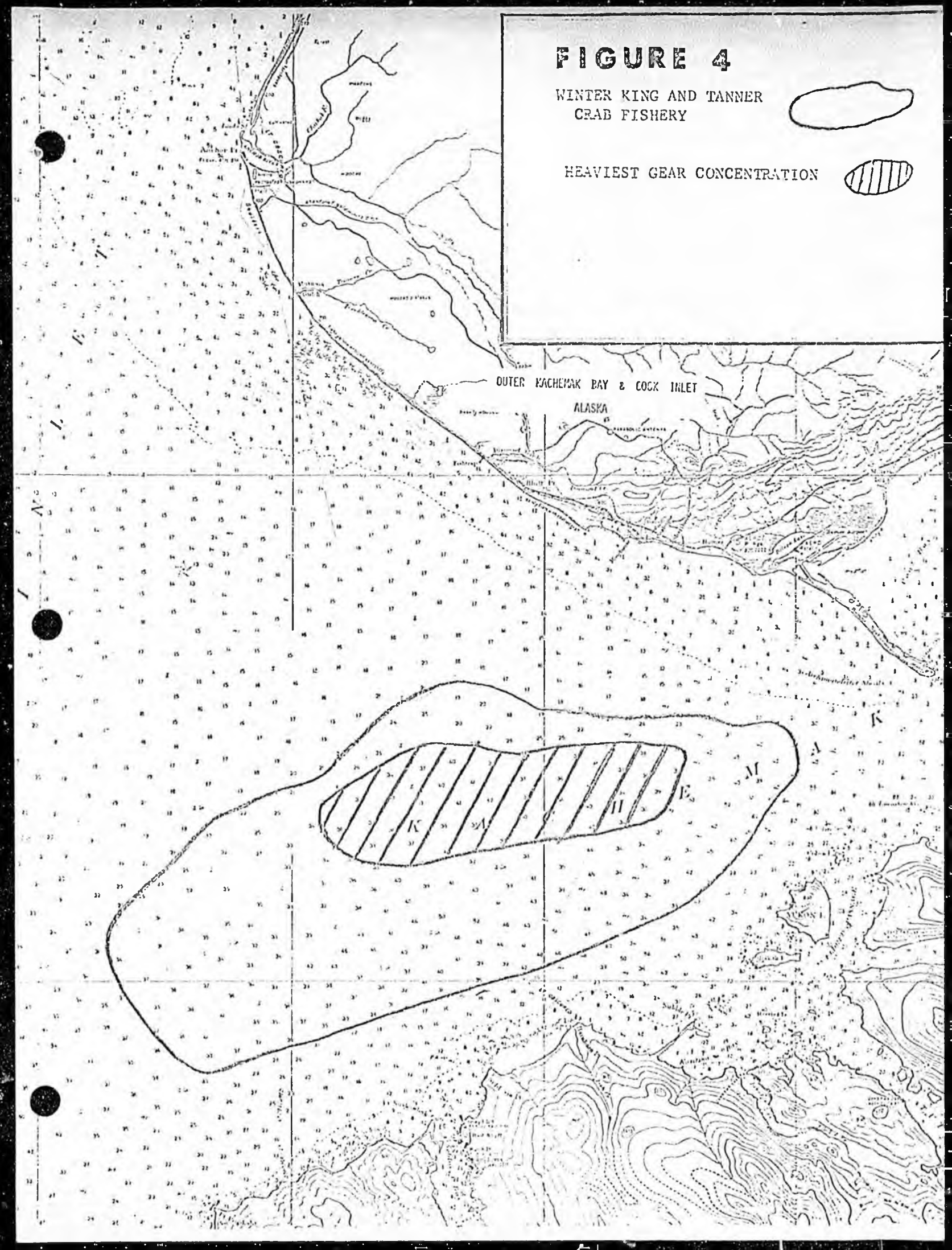
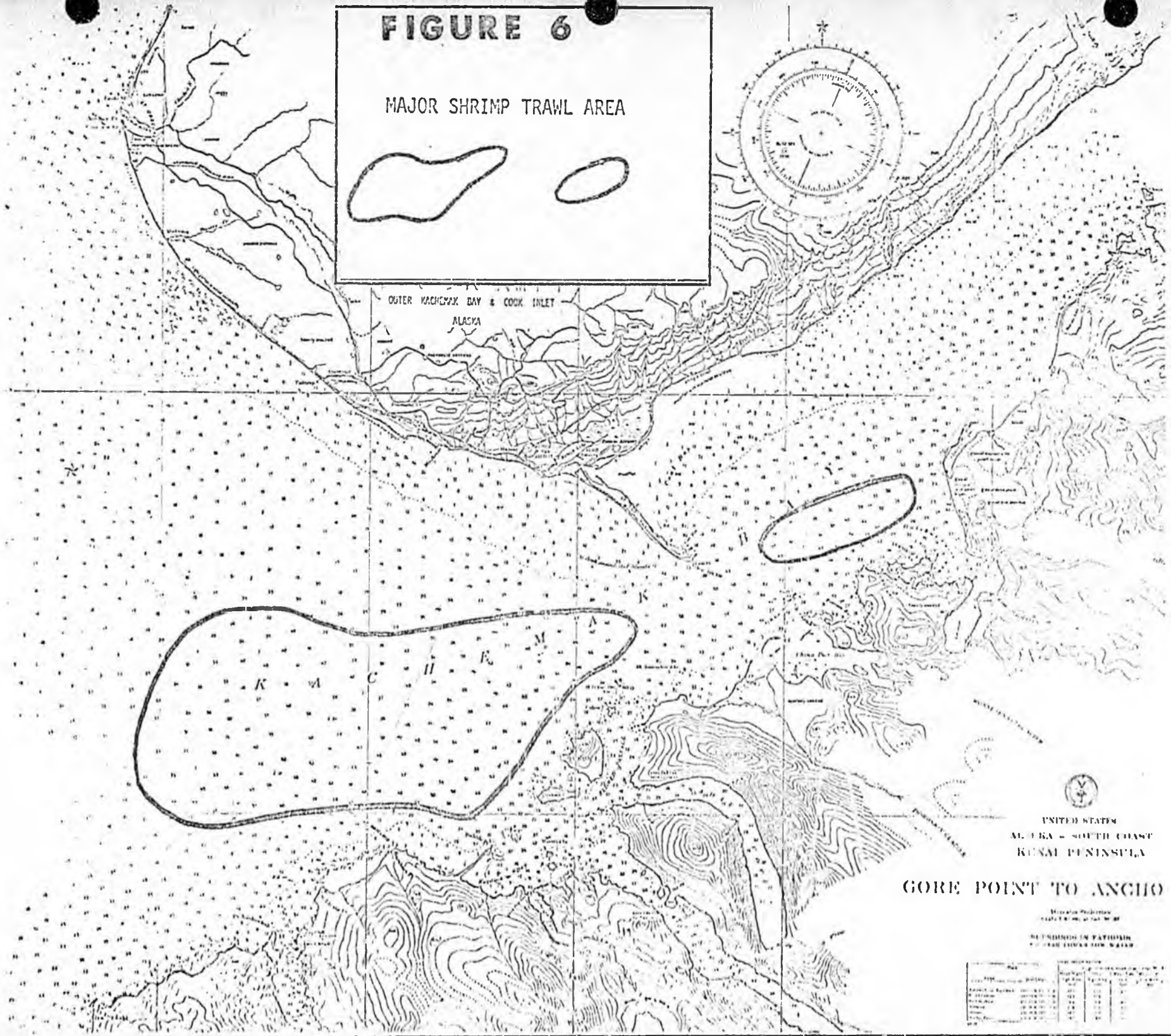


FIGURE 4
WINTER KING AND TANNER CRAB FISHERY
HEAVIEST GEAR CONCENTRATION
OUTER KACHEMAK BAY & COOK INLET
ALASKA

FIGURE 5

FALL DUNGENESS FISHERY

FIGURE 6


MAJOR SHRIMP TRAWL AREA
OUTER KACHEMAK BAY & COOK INLET
ALASKA
UNITED STATES
ALASKA - SOUTH COAST
KENAI PENINSULA
GORE POINT TO ANCHO

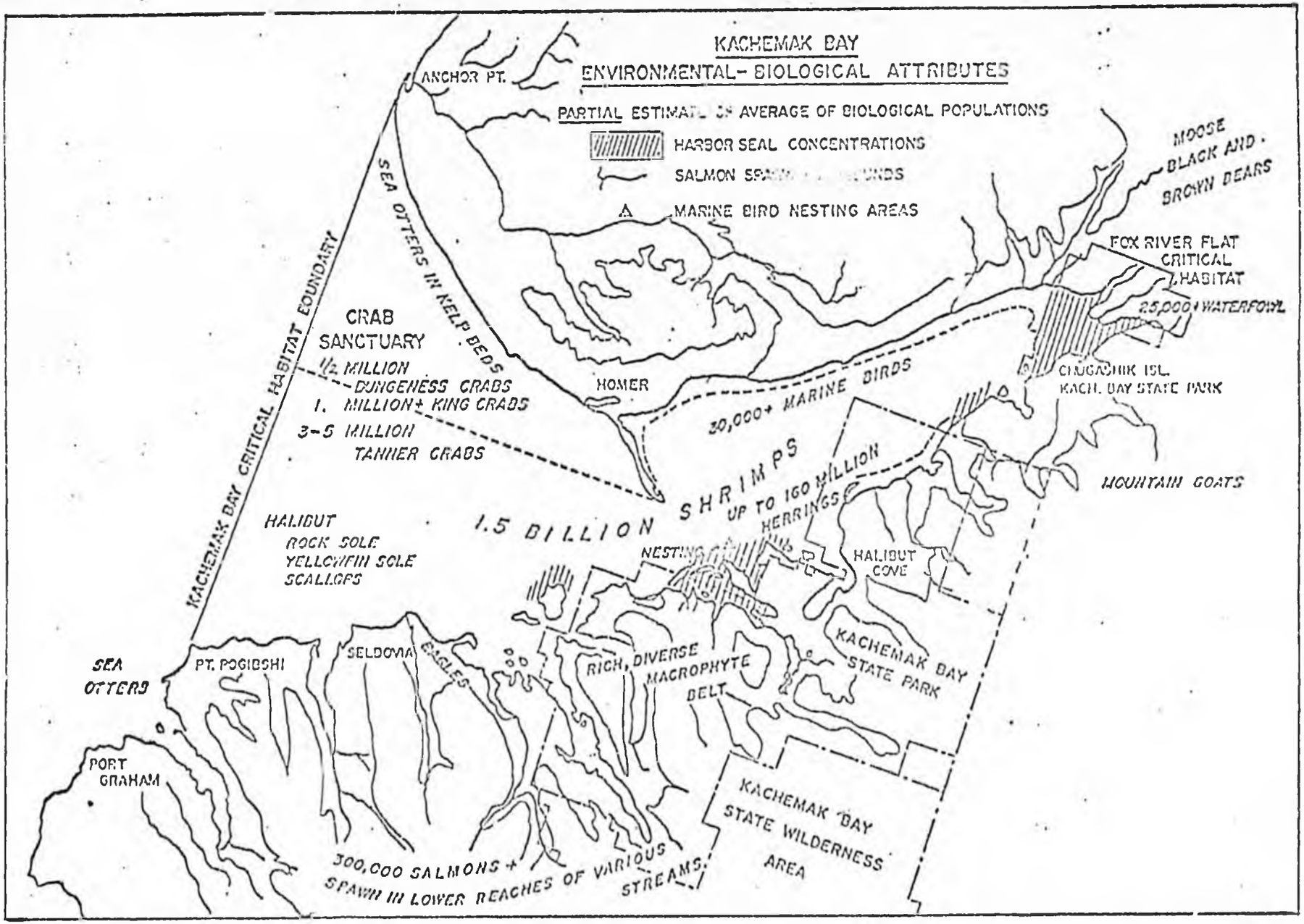


FIGURE 7 Kachemak Bay - Environmental-Biological Attributes

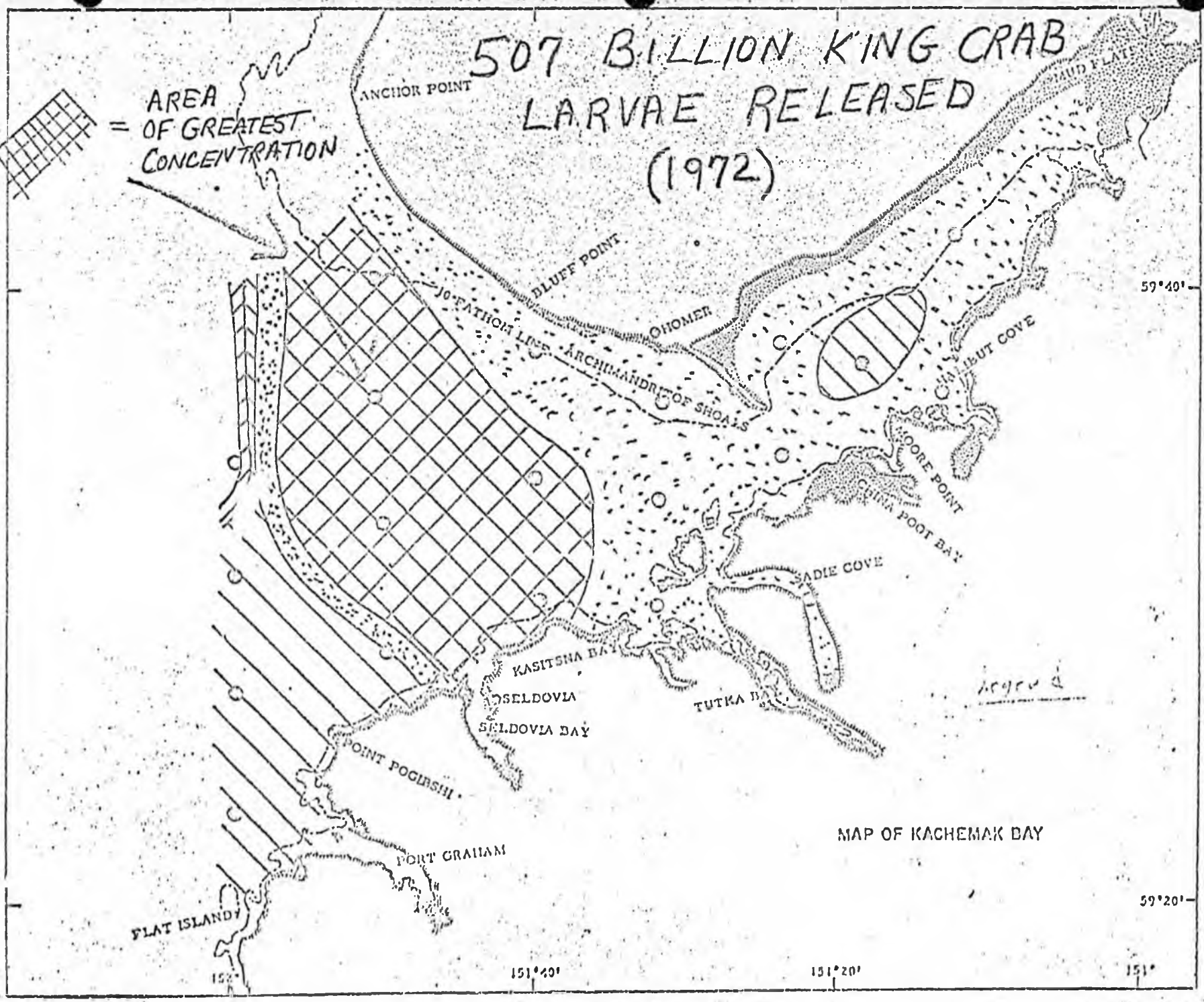

507 BILLION KING CRAB
LARVAE RELEASED
(1972)
= AREA OF GREATEST CONCENTRATION
ANCHOR POINT
BLUFF POINT
OHOMER
ARCHIMANDRITOF SHOALS
59°40'
MOORE POINT
CHINA POOT BAY
SADIE COVE
KASITSNA BAY
SELDOVIA
SELDOVIA BAY
TUTKA BAY
POINT POGIBSHI
PORT GRAHAM
FLAT ISLAND
MAP OF KACHEMAK BAY
59°20'
151°40'
151°20'
151°

FIGURE 8

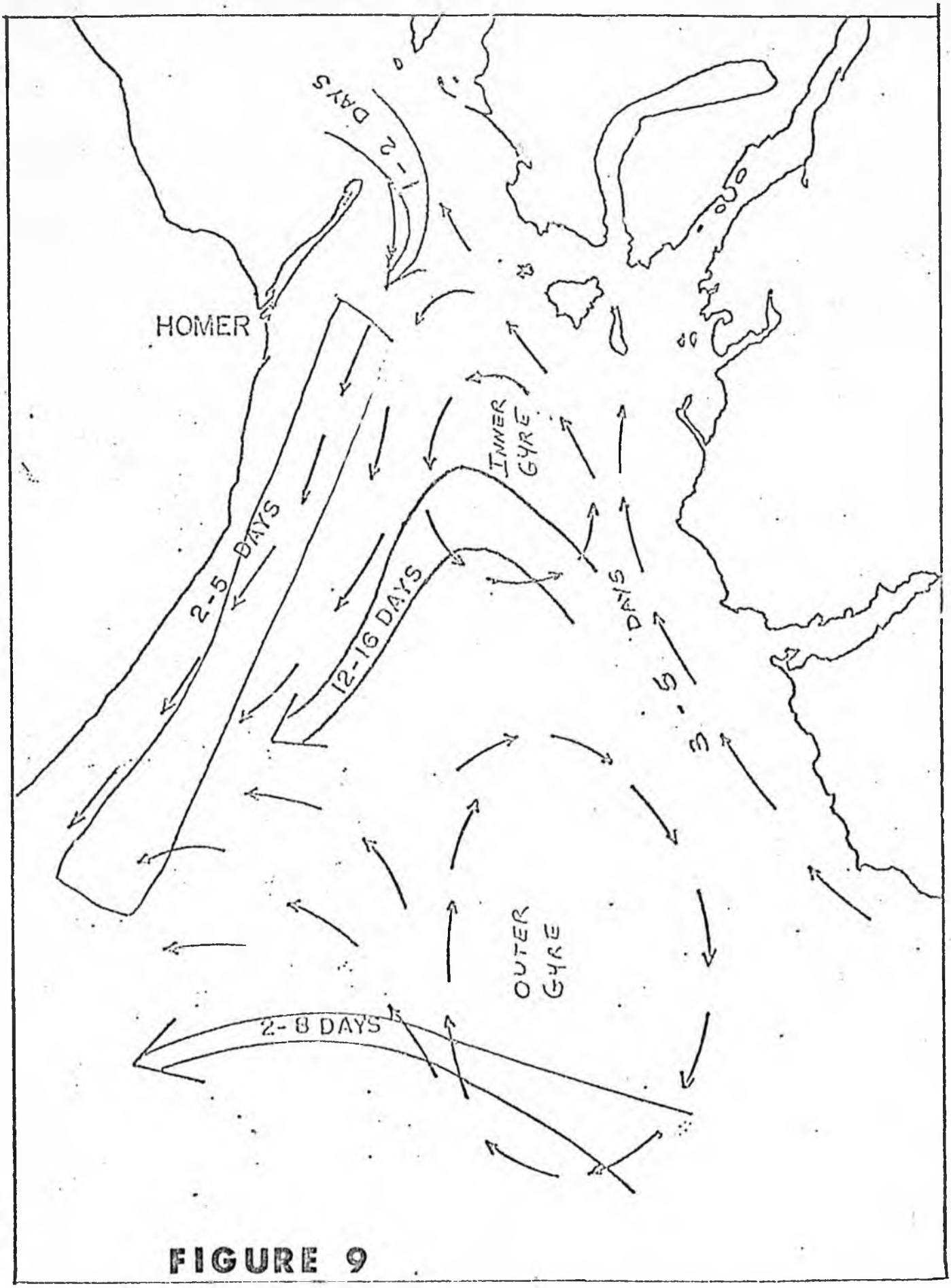
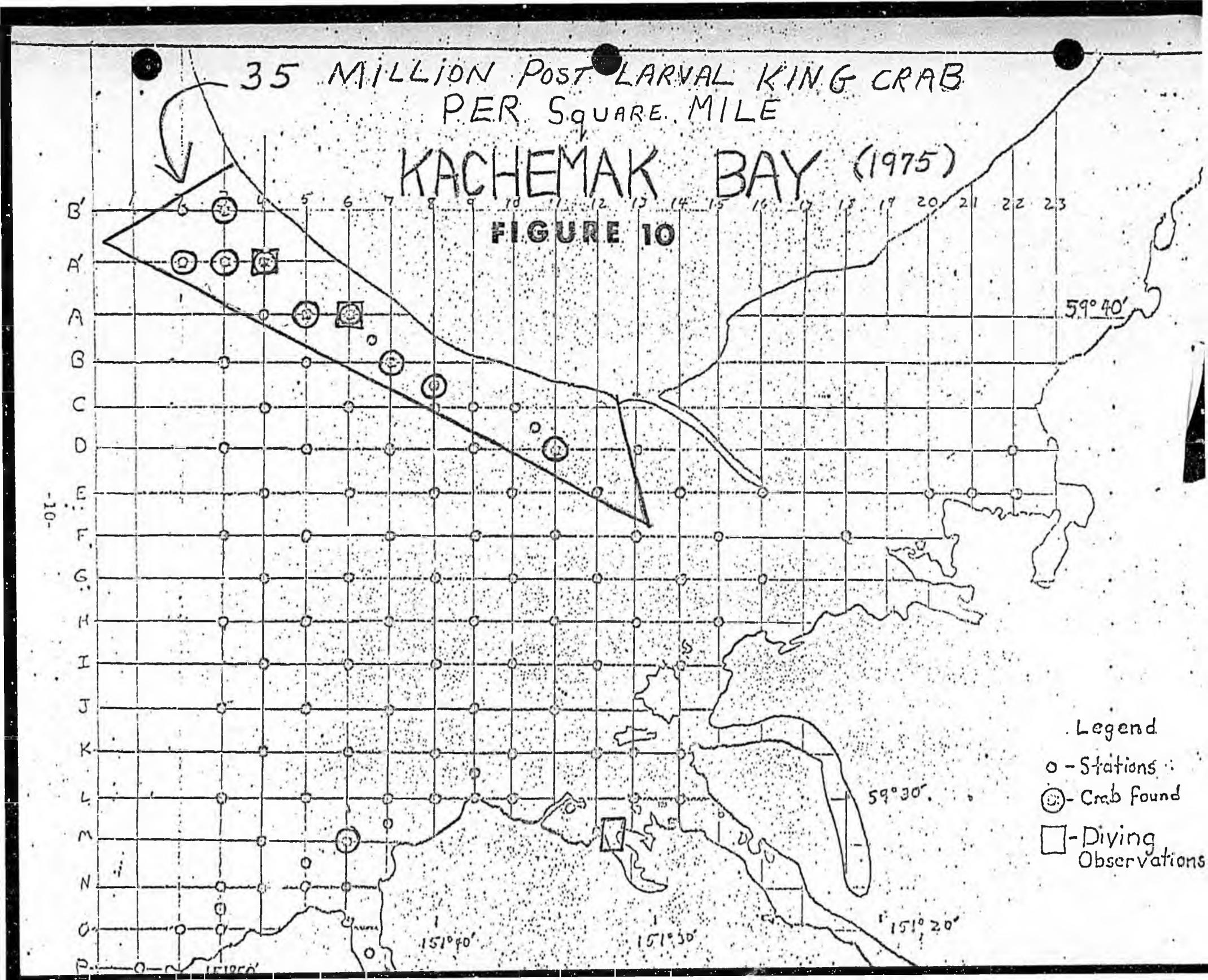


FIGURE 9

NET TRANSPORT VELOCITIES THROUGH KACHEMAK BAY AS DERIVED FROM DROGUE DATA


35 MILLION POST LARVAL KING CRAB
PER SQUARE MILE
KACHEMAK BAY (1975)
FIGURE 10
59° 40'
59° 30'
151° 40'
151° 30'
151° 20'
Legend
o - Stations
- Crab found
- Diving Observations

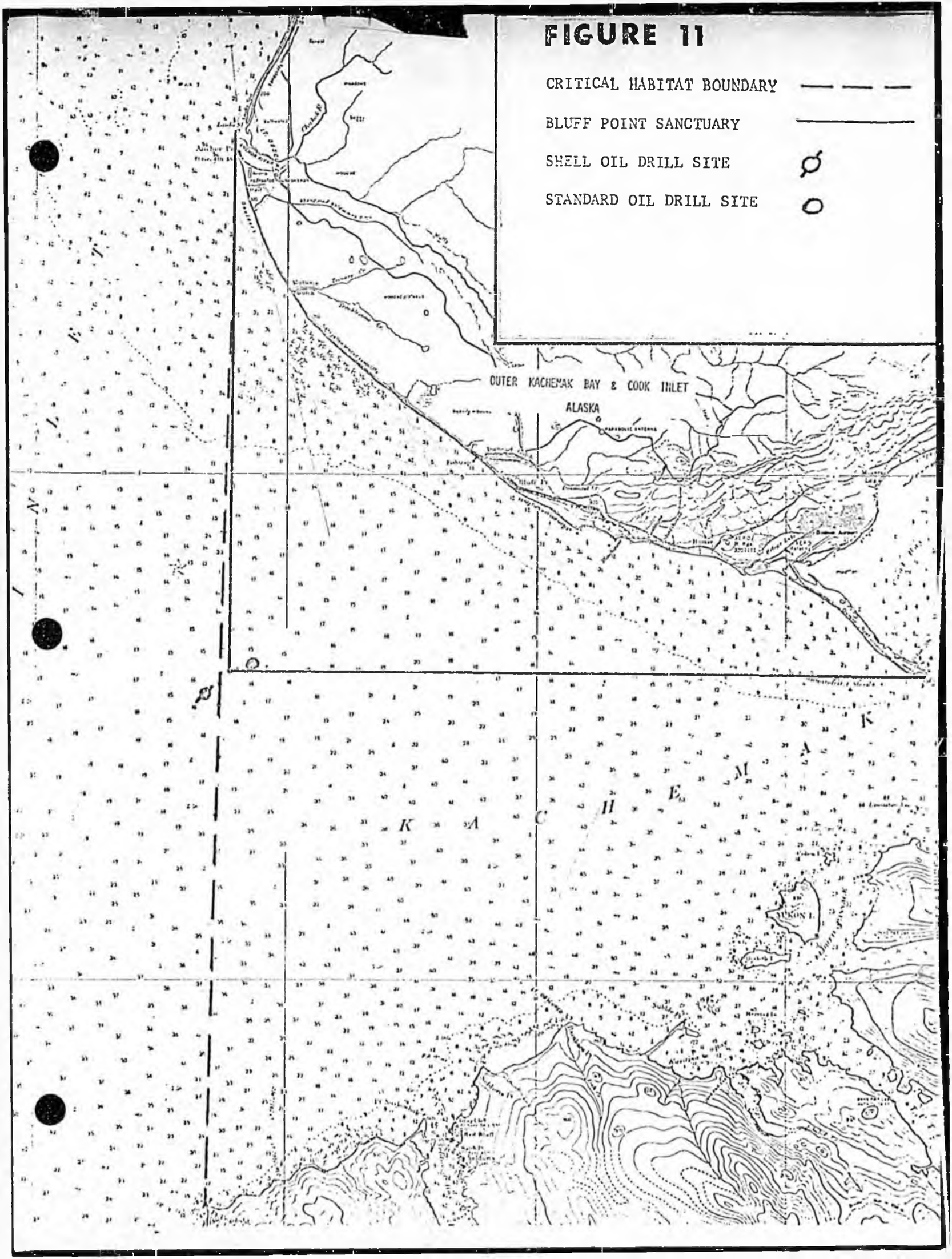


FIGURE 11
CRITICAL HABITAT BOUNDARY
BLUFF POINT SANCTUARY
SHELL OIL DRILL SITE
STANDARD OIL DRILL SITE
OUTER KACHEMAK BAY & COOK INLET
ALASKA
PERSON I.